

Name of Centre :		Durgapur local centre	
Title of Activity:		All India seminar on "Solar & other Renewable Energies, their Potential and Future Prospects in India"	
Activity under Divisional Board		ENDB	
Date:	9 th & 10 th September 2016	Venue:	Seminar Hall, NHIT



Lighting of Lamp by Prof (Dr) T K Saha in inaugural session



Prof S K Rakhsit delivering his address

The Inaugural program started with welcome address by Past Chairman, Prof Tilak Roy and with floral bouquet to the **Chief Guest Prof (Dr) Tapas Kr Saha, NIT Durgapur, Guests of Honour, Prof S.K Rakhsit of NHIT & Mr Sharwan Joshi, Director JMKC Group.**

Prof Tilak Roy explained the theme in a lucid manner and rolled the topic for discussion and presentation after lighting of the lamp.

Chief Guest Prof (Dr) T K Saha gave a presentation on "Solar Photovoltaic Power System and Control of the Generation" He started with global energy scenario & historical and projected world energy supply and demand. He told that 1 million barrel of oil equivalent (boe) = 2×10^9 kWh & all natural sources are fast depleting and they are also the largest polluter of the environment. He gave an idea of visible impact of renewable energy in the Indian energy scenario during the last five years & stated that renewable energy is contributing about 12.96 per cent in the national electricity installed capacity. He told that –

- Decentralized and Distributed applications have benefited millions of people in Indian villages by meeting their cooking, lighting and other energy needs in an environment friendly manner.
- Reduction in drudgery among rural women and girls engaged in the collection of fuel wood from long distances and cooking in Smoky kitchens, minimization of the risks of contracting lung and eye ailments
- Employment generation at village level, and ultimately, the improvement in the standard of living and creation of opportunity for economic activities at village level.

He also explained the energy security, energy access and mentioned that most parts of India receive good solar radiation 4-7Kwh/sq.m. He gave a description of Jawaharlal Nehru National Solar Mission which is one of the major global initiatives in promotion of solar energy technologies, announced by the Government of India under National Action Plan on Climate Change. Mission aims to achieve grid tariff parity by 2022 through large scale utilization and

rapid diffusion and deployment of solar technologies across the country at a scale which leads to cost reduction and helping local manufacturing and support infrastructure.

He concluded with the statements that more than 80 companies, with installed capacity of over 1.8 GW make PV modules (As of March, 2012). 15 companies manufacture solar cells (> 700 MW installed capacity). Manufacturing of various raw materials, components, devices and systems is coming up/expanding (Poly silicon, wafers, glass, EVA, back sheet, grid inverters, off-grid BoS, structures etc.) Production capacity of 3-5 GWp likely by 2020.

Guest of Honour, Mr Sharwan Joshi –JMKC Group gave presentation on Opportunities which are prevailing in India are that India is one of the fastest growing free market democracy, 4th largest economy, average GDP growth @ 8% , 2nd largest Rail network, 334 airports, 12 major ports & 187 minor ports, 400 Million telephone connections, 5th largest power market, Strong IT & Engineering base. He presented the current power scenario and stated that -Installed Capacity: 150 GW, Power Growth is 6% Power Trading is 3% & per capita consumption: 700 Kwh with a transmission Capacity: 21 GW. He also mentioned about power mix -Renewable 10%-15141mw, Nuclear-3%-4120mw, Thermal 52%-81484mw, Gas 11% 16386mw, Hydro 24% 36917mw. Further he addressed the unmet challenges, unmet demand and also stated that India is the 4th Largest Carbon Emitter. He presented the aim and objective and expectations which is 100000mw by 2022.

He finally concluded with the remarks -Solar advantage for India-300 sunny days in a year, 5-7 kWh/m², large scale Solar Thermal Plants, SPV providing lifeline energy, SPV for Railways, Telecom towers, DSM in urban areas, SPV Roof-tops/ Battery charging. Also the Solar Heating & Cooling systems, India investment opportunities, strong and clear policy framework providing enabling environment. Structures in place to facilitate power trading open access etc. Power sector growth (5%) yet to catch up with GDP growth rate (8%) – creating market demand. Large supply-demand gap in power sector. Very large potential of RE yet to be tapped.

Guest of Honour, Prof S K Rakhsit addressed about how we can manufacture solar cell and how we can produce power. He told that the untapped power from SUN can be a savior in future and all will be independent from large power plant and subsequently pollution will be reduced. He talked about various sources of renewable energies and applications.

After a question and answer session which was very interesting, vote of thanks was given by Mr R K Roy Honorary Secretary for the inaugural session.

Next day on 10th September in the valedictory session Chief Guest was Prof (Dr) Sujay Basu of Jadavpur University, Guests of Honour were Mr Joy Chakraborty, Divisional Engineer WBREDA & Prof (Dr) S N Mahato of NIT Durgapur.

Chief Guest Dr Sujay Basu deliberated on energy science and type of renewable energies available cheaply production cost, equipment needed and maintenance aspects. He deliberated a case study and techniques of solar power generation. He told that prospect is bright and Govt. has already taken many steps and some of them are Solar PV Programme, Solar Thermal Programme, Bio-energy Programme, Wind Energy, Battery Operated Vehicle, Rabi Rashmi Housing Complex, Power Generation through Municipal Solid Waste, Power Generation through Agricultural Residue and Rice Husk, Energy Park, Tidal Energy, Mini- Micro Hydel, Awareness, Solar Mission. He concluded with the information that WBREDA has given importance to providing basic lighting systems in the non-electrified areas using Solar Energy, Wind Energy, Biomass Energy etc. WBREDA has also taken leading role in utilizing mini and micro hydel energy in collaboration with WBSEDCL in hilly areas.

Guest of Honour, Mr Joy Chakraborty, Divisional Engineer, WBREDA told about the activities of WBREDA and vividly told that West Bengal Renewable Energy Development

Agency is a state nodal agency under the department of Power and NES, Government of West Bengal. WBREDA was created in the year 1993 with the following objectives:

Implementation of Renewable Energy Programme, Popularizing and creating awareness on use of renewable energy standardization of Renewable Energy Technologies in West Bengal, Promotion of Renewable Energy Technology in supplementing conventional sources of energy. He presented the future prospects which are of major nature are –solar street lighting, biogas proram, solar pv power plant, solar cooker, improved chulla etc. He ends with his remark that West Bengal Electricity Regulatory Commission has declared price capping for Solar Energy including other sources of Renewable Energy for providing encouragement to the investors.

Guest of Honor, Prof (Dr) S N Mahato, Professor, NIT Durgapur presented on wind energy and its impact .He gave a deliberation of use of Induction Generator (as for wind generator. He presented the design aspects and application part. Over the past few decades, there has been an increasing use of induction generator particularly in wind power applications. In generator operation, a prime mover (turbine, engine) drives the rotor above the synchronous speed. Stator flux still induces currents in the rotor, but since the opposing rotor flux is now cutting the stator coils, active current is produced in stator coils, and motor now operates as a generator, and sends power back to the electrical grid. Based on the source of reactive power induction generators can be classified into two types namely standalone generator and Grid connected induction generator. In case of standalone IGs the magnetizing flux is established by a capacitor bank connected to the machine and in case of grid connection it draws magnetizing current from the grid. He explained all about global and Indian scenario and technical terms associated with it

There were few more presenter on the topic and finally in valedictory session vote of thanks was given by Honorary Secretary, Mr R K Roy after many clarifications from speakers.

Name of Centre :	Durgapur Local Centre		
Title of Activity:	Lecture Meeting on 'Universal Brotherhood, Values & Ethics in today's Professional Life'		
Activity under Divisional Board:	ICC		
Date:	11/09/2016	Venue:	IEI, Durgapur Local Centre



Mr M Hanumantha Rao delivering his lecture and seen (l to r) Mr J Konar, Mr D Lahiri and Mr R K Roy



A view of audience

An evening lecture meeting was arranged on Brotherhood day on the topic on 'Universal Brotherhood, Values & Ethics in today's professional life' on 11th September 2016 at IEI, Durgapur Local Centre premises to give an idea of observing this day in context of Swami Vivekananda's first lecture in Chicago, America on this day in 1893.

At the beginning Mr D Lahiri, President, Vivekananda Kendra Kanyakumari in his speech introduced Mr M Hanumantha Rao, Treasurer, VKK as Chief Guest and keynote speaker of the day. He talked about the function of VKK to expedite the publicity of Swami Vivekananda's idea and materialistic thought for the improvement of India as a whole. He narrated how the Durgapur unit of VKK is working and functioning for the welfare of public of the locality.

Mr M Hanumantha Rao in keynote address said that how Swami Vivekananda went to America at the age of 30 and got him introduced to the strong personalities of America to get an opportunity to represent his motherland India at the International platform of religious conference held on 11th September 1893. He expressed his wonder how a man of poor country like India reached upto that level without having any short of backing from India by the so called intellectual community. On this day in his speech in Cikago religious conference Swamiji earned their attraction with reverence by his single word 'Brothers & Sisters of America'. The American people so moved and charmed gave nonstop clapping which all the people of different countries of different cultures saw with wonder. In his speech Swamiji always spoke the truth of Hindu religion and tried to establish the eternal truth of humanity before the rest of the world.

At the end there was a question answer session where many people asked and Mr Hanumantha Rao beautifully answered the questions and satisfied all.

Later at the end vote of thanks was given by the Honorary Secretary to all of the audience for their lively participation and to the speaker for his knowledge which he percolates to the audience.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		49 th Engineers' Day Celebration	
Activity under Divisional Board:		ICC	
Date:	15/09/2016	Venue:	IEI, Durgapur Local Centre Visvesvaraya Auditorium



Prof (Dr) Harish Hirani delivering his Guest of Honour address and sitting on the dais (l to r): Mr J Konar, Mr Arun Kr Rath and Mr R K Roy



A View of audience

The Institution of Engineers (India), Durgapur Local Centre celebrated the 157th Birth Anniversary of Bharat Ratna Sir M. Visvesvaraya and 49th Engineers' Day on 15th September 2016 at their institution premises. Mr. Arun Kumar Rath, CEO, SAIL, DSP graced the occasion as Chief Guest and Prof. (Dr) Harish Hirani, Director, CSIR-CMERI was Guest of Honor. Prof (Dr) S S Roy, NIT Durgapur & Mr P Shaw, Dy. General Manager (CHRD), SAIL, DSP were guest speakers. The function was started with the garlanding of the bust of Bharat Ratna Sir Visvesvaraya and a documentary film on his life.

Mr. R K Roy, Honorary Secretary in his introductory address he recalled the life of Sir M Visvesvaraya. He also focused that the rapid pace of technological change requires everyone to continue learning throughout life. He referred to his greatness not only in respect of his knowledge but also his devotion to work with honesty and dedication to the development of our mother land. He was an example of himself and we cannot express in a single word his love and faithfulness to the nation.

Mr. J Konar, Chairman, Durgapur Local Centre in his welcome address highlighted the theme 'Skill Development for Young Engineers to Reform the Core Sector: Vision 2025' and emphasized the young students to come forward with creative thinking to strengthen the pace of technological development

Addressing the gathering, the Chief Guest Mr. Arun Kumar Rath paid his tribute to Bharat Ratna Sir M Visvesvaraya and put stress on ideal role of engineers with their knowledge to work with devotion for the development of the country and this will make the country to stand on its own feet as the time needs. He urged even the old engineers to come forward with their knowledge and experience to help the industries whenever it is required. He proposed all the engineers should work to achieve the goal. He gave stress on use of steel and to develop skills for use of steel in different purposes. Steel being a core sector there is enough scope of multi skill development.

Prof (Dr) Harish Hirani in his address as Guest of Honour, highlighted the life and work of Sir M Visvesvaraya and appealed to the young engineers to follow the path of him in their practical life of work wherever they be. It is the utmost duty of the growing and young engineers to establish themselves as real engineers in the field of work so that any sort of plan can be materialized successfully. He also asked all the engineers to come forward for the nation building purposes with their full devotion and honesty to the work. He also told that CMERI has well built lab for multi skill development and the way CMERI is working, many scopes will be generated in future.

After the address of Chief Guest and Guest of Honour, they were felicitated as Eminent Engineers. The felicitation programme was conducted by Dr Chinmoy Samajdar.

In the technical session Mr P Shaw, Dy. General Manager, SAIL/DSP gave a presentation on Multi skill and stated that The World Bank retained the 7.6% growth rate for India in 2016-17, which it said could accelerate to 7.7% in 2017-18 and 7.8% in 2018-19 in its India Development Update- Financing Double Digit Growth report. "The challenge for the Indian economy is to activate the stalled engines - agricultural growth and rural demand, trade, and private investment, while ensuring that demand from urban households and public investments - the working engines of the economy, do not run out of fuel," the report said. The five sectors, which are identified with the expectation to create majority of employment are Infrastructure, Auto, Building & Construction, Textiles and Transportation. Within a short span of time of less than ten years, a lot of skilled manpower is need to be developed, required by the market driven approach. The requirement of skilled manpower in all the major sectors of the country is not only a matter of national urgency, but also it is increasing in scale. Government of India has set a target to impart the necessary skills to 500 million people by the year 2022. Shortage of the required skills is one of the major constraints for the pass out engineering cadre for continuing growth of Indian economy. Different employer surveys addressed this knowledge gap and emphasize upon analysis and development of the classified skills for improved productivity. Different national and international bodies have carried out survey and analysis on this growing aspect of engineering fraternity and expressed concerns about the skills and knowledge at all level of workforce. As per the analysis of employer's feedback, specific skills can be categorized as core employability skills, communication skills and professional skills.

The second technical talk of the seminar was delivered by Dr. Shibendu Shekhar Roy, Associate Professor, Department of Mechanical Engineering, NIT, Durgapur and the topic was "Importance of skill development in the area of Virtual Prototyping and 3D Printing or Additive Manufacturing". In his talk, he addressed the need to compress product development time for the survival of the product manufacturers in this competitive market. He also mentioned that in order to achieve such goal, Engineers and Technologists need to be used modern tools and techniques such as virtual prototyping tools, 3D printing or additive manufacturing and rapid tooling techniques etc. Additive manufacturing (formerly known as Rapid Prototyping) is an emerging technology which will be revolutionizing the core manufacturing industries with its ability to turn digital data into physical parts. It's distinct ability to manufacturing complex shapes and structures has already made it invaluable for the manufacturing of prototypes and functional parts of different industries like automobile, aerospace, consumer products, consumer electronics, jewellery, bio-medical, construction, food etc.

The technical session was conducted by Prof Himansu Bikas Goswami.

After an interesting question and answer session the programme was concluded with the vote of thanks proposed by Hony. Secretary, Mr. R. K. Roy.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One Day Seminar on 'Mode of Ship Propulsion-Pros & Cons'	
Activity under Divisional Board:		MRDB	
Date:	28/09/2016	Venue:	Briddi Hall, Kolkata



Left to right-Er Goutam Sen, Er A Mitra and Er S Chakraborty Speakers in the Seminar



Er. R.K. Roy (Hony. Secy. Durgapur Local Centre, IEI), delivering the Vote to Thanks

The seminar was started with a welcome address by Er. Atanu Kumar Mukherjee, Past Chairman, Durgapur Local Centre & Member of MRDB, IEI. In his welcome address he mentioned about the theme and appreciated the initiative taken by the Institution of Marine Engineers, Kolkata Branch, in Co-hosting the Seminar. The Chief guest for the occasion was Er. B.K. Biswas (Ex-Chief Surveyor, Ministry of Shipping, Govt. of India), who spoke of on the requirement of having skilled manpower in the shipping industry, and suggested steps that are to be adopted for solving the same. The Guest of Honor for the occasion Er. P.K. Biswas & Er. Alok Kumar Mitra both reputed Marine Engineers spoke on the need for such one day seminars for the benefit of the members of the Institution of Engineers (India) & the Institution of Marine Engineers to ensure continuous upgradation of knowledge on various aspects of shipboard engineering.

Er. GAUTAM SEN delivered the inaugural lecture & spoke on “Combined Gas, Electric and Steam Propulsion Systems” presently found on ships.

He informed the house that Diesel-electric ship propulsion is a frequent ship-owners choice now a day, especially on passenger ships. Despite the advantages of diesel engines, their primary disadvantage is emission of pollutants. As environmental standards become more stringent, the question of optimal alternative to diesel-electric propulsion arises. COGES (Combined Gas turbine Electric and Steam) propulsion system is one of the proposals for alternative propulsion system, primarily due to significant reduction of pollutant emissions. On the other hand, gas turbines have higher specific fuel consumption in comparison with diesel engines. However, in his opinion, the COGES propulsion system could still be cost-effective in comparison to diesel-electric propulsion, particularly on passenger ships where higher initial investment can be compensated by increasing the number of passenger cabins. His lecture showed a comparison of propulsion systems, which can be utilized as an optimal ship propulsion system.

Er. Alok Kr. Mitra then deliberated on the following modes of ship propulsion with emphasis on their Installation & Operating Costs, along with their Efficiency and their emissions :

- 1) Conventional steam turbine driven propulsion with boiler fired by HFO & LNG boil-off.

- 2) Gas turbine driven propulsion with HFO combustion gas.
- 3) Dual fuel (LNG & DIESEL) slow speed diesel engine directly coupled to propeller.
- 4) Electric motor propulsion controlled by thyristor drive with power from high speed silent DG sets.
- 5) Combined Gas Turbine & Electric Motor Driven Propulsion.

Er. S Chakraborty spoke on the importance of the Environmental aspect of the various systems of propulsions, keeping in view the stringency with which environmental norms are presently being framed & implemented globally. He opined that shipping was the most inexpensive method of transportation of goods presently adopted all over the world, but also spoke on the environmental damage that may be caused by different modes of propulsion for ships & the methodology to be adopted for reducing the damage caused.

The program ended with a lively discussion on the issues raised by the eminent speakers. Er. R.K. Roy (Hony. Secy. Durgapur Local Centre, IEI), delivered the Vote of Thanks & expressed his hope that such seminars would be organized on a regular basis & ensure the participation of greater numbers of members in such events.

Name of Centre :		DURGAPUR LOCAL CENTRE			
Title of Activity:		CELEBRATION OF WORLD HABITAT DAY			
Activity under Divisional Board:		CVDB			
Date:	03/10/2016	Venue:	IEI, Durgapur Local Centre Visvesvaraya Auditorium		

	
<p>Prof H B Goswami delivering his address and sitting (l to r): Mr S Jayal, Mr S P Gupta, Mr A K Mukherjee and Mr R K Roy</p>	<p>Mr A K Mukherjee delivering his presentation</p>

The Institution of Engineers (India), Durgapur Local Centre observed World Habitat Day on 3rd October 2016 at their Visvesvaraya Auditorium.

Mr R K Roy, Honorary Secretary in his introductory address said that in 1985 the United Nations designated the first Monday of October every year as World Habitat Day. The idea is to reflect on the state of our towns and cities and the basic right of all to adequate shelter. It is also intended to remind the world of its collective responsibility for the future of the human habitat.

At the outset Prof H B Goswami, Past Chairman welcomed the members and dignitaries and explained the theme 'Housing at the Centre'. While explaining he told that habitat does not mean a shelter. It means many more things such as a good shelter for accommodation and study room for children, proper sanitization, provision of drinking water etc.

There were Guests of Honour who gave lectures and are as follows:

Mr S Jayal GM Project DSP/SAIL Guest of Honour presented on the topic Indian habitat and present system. He told that as per Global Statistics, 160 crore living in substandard housing, 10 crore are homeless. UN Conf. on Housing & Sustainable Urban Dev in Quito, Ecuador in October 2016 on Increase awareness worldwide for responsibility towards future generation's habitat is going to be held to show the importance of habitation and shelter.

He deliberated further that in India 17.70 lakh homeless (0.15% of population), there is shortage of 1.88 crore houses though India is 124th wealthiest nation.

Further added that 9 crore earn less than Rs. 65 (app.) per day, 9.3 crore slum dwellers 7.5% of population (as on 2011). In Delhi 30 lakh slum dwellers are staying and per capita income barely in India Rs. 80,000/- p.a. only.

He concluded with the deliberation that in India - Pradhan Mantri Awas Yojana launched in 25.06.2015, housing for all by 2022 and 2 crore housing in seven years, Target population from EWG and LIG, Phase-wise development, Target specific groups [Women, EWS, SC, ST].

Mr S P Gupta, GM (CSR) DSP/SAIL Guest of Honour deliberated on the issues of habitation of surrounding villages of DSP township. He explained how the construction support of village schools, provision of drinking water was done. Present project of development of greenery for surroundings is going on. He also described the low cost housing construction and their habitat condition.

Mr Atanu Mukherjee, Past Chairman and Former Chairman of Rotary international, Durgapur presented on the improvement of an attempt to “**Sensitise to Sanitise**” campaign by Rotary Club of Durgapur Central In India, nearly half of the population – 597 million people – defecate in the open, a problem that the Indian government seeks to end by October 2019 through Swachh Bharat Abhiyan (Clean India Mission). Women and girls are particularly vulnerable when they lack access to proper water and sanitation. To address the problem through the “Sensitise to Sanitise” campaign it involves the construction of toilets in households, schools and communities as well as improving access to water. The multi-pronged approach also includes a program to raise awareness about the importance of sanitation and to create a demand for toilets through behaviour change communication and community-led total sanitation. Under Durgapur Municipal Corporation, consisting of 10 Nos. of toilets in each block along with underground reservoir, overhead tanks & pumps have been built & awaiting dedication to the beneficiaries. Water supply is to be received from the Durgapur Municipal Corporation. These have been built through the Global Grant Scheme (GG1529103) of Rotary International under ‘Water & Sanitation Projects’ by the Rotary Club of Durgapur Central (3240) & the Rotary Club of Walsall Saddlers (1210) United Kingdom. Total Project Cost – Rs.12 lacs; Number of Beneficiaries – 360 persons.

He also told that three numbers of Toilet Blocks in different locations of Village Banshibera & Hanumanchatal, Three numbers of Toilet Blocks in different locations of Village Sundhiara, Kanksa Block, consisting of 10 Nos. of toilets in each block along with a tube well, have been built & awaiting dedication to the beneficiaries. These have been built through the Global Grant Scheme (GG1529103) of Rotary International under ‘Water & Sanitation Projects’ by the Rotary Club of Durgapur Central (3240) & the Rotary Club of Walsall Saddlers, (1210), United Kingdom.

Total Project Cost – Rs.12 lacs; Number of Beneficiaries – 400 persons. Five numbers of Toilet Blocks in different locations of Village Trilokchandrapur, Kanksa Block, consisting of 45 Nos. of toilets & 5 Nos. of tube-wells, were built & handed over to the beneficiaries in August 2014. These were built through the Global Grant Scheme of Rotary International under ‘Water & Sanitation’ by the Rotary Club of Durgapur Central (3240) & the Rotary Club of Walsall Saddlers, (1210), United Kingdom. Total Project Cost – Rs.19 lacs; Number of Beneficiaries – 500 persons.

Vote of thanks was given by Hony. Secretary, Mr. R K Roy after an interesting question and answer session which was not only lively but gives an opportunity for members to interact between them and speakers.

Name of Centre :	Durgapur Local Centre
Title of Activity:	World Standards Day on 'Standards Build Trust'
Activity under Divisional Board:	MMDB & ELDB
Date: 30/10/2016	Venue: Visvesvaraya Auditorium, Durgapur Local Centre



Mr R K Roy delivering his address and sitting (l to r) Prof N K Roy and Mr M N Bandyopadhyay



Prof N K Roy delivering his address



Mr Amitabha Bhattacharyya delivering his address

The Institution of Engineers (India), Durgapur Local Centre observed World Standards Day on 30th October 2016 at their Visvesvaraya Auditorium.

The day was started by screening short film show on 'Imagine a World without Standards'.

At the outset, Mr R K Roy, Honorary Secretary in his introductory address said that the 14 October was specifically chosen to mark the date, in 1946, when delegates from 25 countries first gathered in London and decided to create an international organization focused on facilitating standardization. Even though ISO was formed one year later, it wasn't until 1970 that the first World Standards Day was celebrated. In his address he explained the importance of the today's theme '**Standards Build Trust**'. He highlighted that Standards connect us with reliable modes of communication, codes of practice and trusted frameworks for cooperation. Introducing common interpretations on reciprocal sides of a communication or transaction, standards are essential to mutually beneficial trade and resource efficient international commerce.

Mr J Konar, Chairman welcomed the Guests and Participants. He talked on standard of civil engineering and implications on modern day construction activities in roads and building. Explanation of themes delivered by Prof H B Goswami. The theme was explained with the points that standard will improve quality and development.

Guest of Honour, Prof N K Roy of NIT Durgapur deliberated that standards connect us with

reliable modes of communication, codes of practice and trusted frameworks for cooperation. Introducing common interpretations on reciprocal sides of a communication or transaction, standards are essential to mutually beneficial trade and resource efficient international commerce. Social interaction relies on common respect for fundamental sets of norms, concepts or meanings – international standards codify these norms to ensure that they are accessible to all. A product or service conforming to an international standard is imbued with a trusted symbol of quality, safety or compatibility. Standards speak to the diversity of our interconnected world, introducing uniformity at the interfaces where we need to be certain that we are speaking on the same terms. International standards are essential for products to work together smoothly and for people to communicate easily. He also mentioned that standards set out common rules and parameters so that products can work with each other.

Guest of Honour, Mr Amitabha Bhattacharyya former GM SAIL/DSP delivered on the topic International Standards – Creating Confidence Globally. He talked and elaborated global product decision, global product development. While deliberating he told that In international markets, success depends on satisfying the market demands. The product or service must be suitable and acceptable for its purpose. Product policy abroad: firm must decide which aspects of a product need to be adapted and which can be standardised. Standardisation policy: offering a uniform version of a product in all of its foreign markets. Adaptation policy: offering a product to targeted foreign consumers altered to specific tastes, preferences and needs. Adaptation can concern all the characteristics of the product. Decision between standardization and adaptation is not mutually exclusive rather it is a matter of degree. A certain degree of adaptation of a product is required in international markets. McDonalds example: Pork in India! Advantages to pursuing a standardised approach: cost economies, a consistent brand image and simplification of planning and control. Standardising a product can ultimately lead to failure. Main advantage of an adaptation policy is probability that sales and revenue will be increased due to appropriateness to the specific needs of the markets. The major drawback is the complex organisation and implementation issues of a product adaptation policy in all foreign markets. Ultimately, the individual company will decide.

At the end there was lot of interesting questions from audience and which were answered by the speakers and vote of thanks was given by Honorary Secretary, Mr R K Roy.

Name of Centre :	Durgapur Local Centre		
Title of Activity:	Celebration of Energy Conservation Day		
Activity under Divisional Board:	ELDB		
Date:	14/12/2016	Venue:	Visvesvaraya Auditorium Durgapur Local Centre



Mr. M Debdas delivering his Chief Guest address and seen (l to r):: Mr. R. K Roy, Mr B Pal, Mr J Chakraborty and Mr M N Bandyopadhyay



Mr J Chakraborty delivering his presentation

The Institution of Engineers (India), Durgapur Local Centre observed Energy Conservation Day on 14th December 2016 at their Visvesvaraya Auditorium. The Chief Guest was Mr Mahendra Debdas, Chief Engineer, DVC, DSTPS Andal and Guests of Honour were Mr. Joy Chakraborty, Divisional Engineer, WBREDA, Kolkata and Mr. Bivas Pal, Control Engineer of DVC, MTPS.

The programme was started by screening short films show on 'Green Program_ Water Conservation & Energy Conservation Animation Video' & 'Roof Mount Wind Turbine'.

At the outset, Honorary Secretary, Mr. M N Bandyopadhyay in his introductory address welcomed the members present and explained the significance of World Energy Conservation Day. He said that World Energy Conservation Day is celebrated on 14th December globally to highlight the importance of energy consumption and its use in our day-to-day life, its scarcity and its impact on sustainability of global eco systems. It focuses our concentration on significant issues facing the future of mankind with respect to energy. This Day serves to spell a sense of urgency on the issues involved. It is a day for building up awareness regarding- Need for energy conservation, - Energy efficiency- Frugality in energy use.

Mr. R K Roy, Chairman, Durgapur Local Centre in his welcome address he highlighted that Conventional Energy use is a major source of global warming, which has the potential of making the earth uninhabitable. As we all aware of the threatening fact that reserves of all conventional forms of energy are fast depleting. Every day the human population across the world uses energy for leading a civilized life. These resources are critical input of human development which comprises providing adequate food, shelter, clothing, water, sanitation, medication, schooling, transportation, industrial applications, access to information, etc. In short, energy affects all facets of activities related to everyday and modern life. Per capita energy consumption is often considered an important indicator of development. As people and nation's progress, consumption of energy will increase.

Mr M Debdas in his Chief Guest address highlighted that the need for energy conservation and economical use of energy arises basically because of its features of universal usage, fast depleting resource and impact on climate change. Need of Energy management: 'It means

saving energy in businesses, public-sector/government organizations, and homes. Much of the importance of energy saving stems from the global need to save energy but, if you're a homeowner looking to save energy, don't be put off by the fact that this article focuses more on non-residential buildings.

Mr. Joy Chakraborty in his address deliberated on 'Climate Change, Sustainable Life Style, Renewable Energy in convergence with Energy Efficiency'.

While deliberating on importance of Renewable Energy he mentioned that there is population who has not yet got the access to electricity. It is also required to reduce Green House Gas (GHG) emission (coal based power station is one of the major source of GHG emission) which causes Global Warming and Climate Change. He told that it is required to provide a (renewable) power supply which would be functional at the time of grid failures and even at natural calamity/disaster as more reliable Power Supply, adding an additional source.

It is a system having long life, maintenance is easy and recurring expenses are not so high.

He told that energy efficiency It is required to ensure efficient use of appliances through procurement of efficient appliance, maintenance & up keeping of appliance in efficient manner and also its optimum utilization. He explained the convergence of Renewable Energy & Energy efficiency and told that it will provide:

- More efficient use of energy (whether it is Renewable or Non-Renewable)
- Reduce the capacity and cost of installation of Renewable energy systems.
- Ensure optimum utilization of investment.
- Reduce Green House Gas Emission (producing electricity from coal requires 03 liters of water and emits an average of 830 gm of Co₂ in the atmosphere. So reducing consumption of one unit of electricity corresponds to avoidance of emissions of 830 gm of Co₂ in the atmosphere and savings of 03 liters of water)
- Optimum utilization of Natural Resources
- Reducing electricity bill

He gave examples of a 750sqft flat and explained how energy conservation can be made with selection and replacing the appropriate equipment & steps to be taken for practical proposition.

Mr. Bivas Pal in his address explained on the topic 'Energy Efficiency in Thermal Power Plants' and highlighted that the energy efficiency will contribute to energy conservation. He also said that the *following energy efficient equipment have been provided in 500 MW in MTPS, DVC units:*

- VFD for ID fans
- Steam Turbine driven BFPs
- Natural draft cooling tower

Speed control of BFP for Drum level control various systems taken for energy conservation in Mejia Thermal Power Station (MTPS).

At the end of the session there was a question and answer session and vote of thanks was given by Mr. M N Bandyopadhyay, Honorary Secretary.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		Technical Visit at Shyamsunderpur UG Mine, Bankola Area, ECL	
Activity under Divisional Board:		MN	
Date:	24-01-2017	Venue:	Shyamsunderpur UG Mine, Bankola Area, Ukhra ECL, West Bengal



A view of V.T. Centre, Sarpi Project, SS Pur Colliery



A view of the Sarpi Project, SS Pur Colliery

The Institution of Engineers (India), Durgapur Local Centre organized a technical visit at Shyamsunderpur UG Mine, Bankola Area, ECL which is 15 Kilometers from Durgapur and it is in the district of Burdwan, West Bengal for firsthand experience of the working of coal mines, where Durgapur Technicians' Chapter was fully involved. This tour was conducted on 24th January 2017 and started at 08:00 a.m. Total 24 (twenty four) members comprising Sr. Technician, Technician and Corporate members participated in the visit.

Before starting the visit of underground coal mines of Shyamsunderpur UG Mine, Bankola Area, ECL, Shri R. Dutta, Sr. Manager briefed about the ECL & underground mining technology. He said that after nationalisation of non-coking coal mines in India during 1973, this mine was taken over by the Indian government and came under Eastern Coalfields Limited (ECL, a subsidiary of Coal India Limited). Worldwide, coal is an extremely important fuel as it is most abundant and widely distributed fossil fuel source and energy from coal is cheaper. About 29.6% of primary energy needs are met by coal (source: BP Statistical June, 2011) and 39% of electricity is generated from coal. About 70% of world steel production depends on coal feedstock. Coal mining has had a lot of developments over the recent years, from the early days of men tunneling, digging and manually extracting the coal on carts to large open cut and long wall mines. Presently new technology of equipments like Continuous Miner packages are adopted here for fast and friendly coal procurement.

Members visited the underground mine, accompanied by Shri Ranadeep Bhattacharjee, Asst Manager (Mining) who briefed about the Colliery & Underground technologies. The present area of Shyamsundarpur Colliery spreads over 533 Ha of land between Latitude of 88600°N to 91750°N and Longitude of 176250°E to 180000°E. The general texture of the surface ground is sand stone mixed with laterite boulder, moram at places and earth. There are several workable seams namely RIX, RVIII T2, RVIIIB1, RVII, RVIIA, RVI, RV & RIV lying within a depth varying from 35 mtr to 316.5 mtr and thickness varying from 2.2 mtr to 8.35 mtr. Before the Nationalisation of Coal Industry, Sarpi & Shyamsundarpur Colliery were two different collieries. The mine was nationalized by coal authority on 31.01.1973. Since Nationalisation in the year

1973, Sarpi merged with Shyamsunderpur Colliery and became part of it. First Pit opened at Shyamsundarpur Colliery (ESP Unit) on 05.12.1946. ESP unit of the colliery is working from 05.12.1946 established by M/S Sarpi Kajora Coal Co. Limited. First pit opened at Sarpi on 23.12.1950. On 12.05.2004 at eastern part of Bankola Colliery and became a part of it through Mine boundary adjustment (215 Ha land). Annual production of the colliery was less than 2 lakh tone in past when manual loading method was running. After that SDL machine has been introduced on 23.02.2001 at RVII seam of ESP unit and RVII B1 seam on 28.02.2001, LHD machine has been introduced at RVII seam on 15.07.2008 & Continuous Miner has been introduced on dated 28.08.2010. At present evacuation of Coal is done by conveyor belt in the entire colliery.

Continuous miners typically have a cutting head that is 3.3m wide. The machine is usually "sumped in" between 0.5m and 0.75m at roof level, with the rear stab jack on the machine lowered if required, and then the head is sheared down to floor level. This cycle is repeated 7 to 8 times and the roof and floor are trimmed level during the cycles. The continuous miner can sump and shear down whilst waiting for the return of the shuttle car. As the boom enters the pile of coal on the gathering apron, loading rates into the shuttle car are very high.

The cutter head usually loads around 8 tonnes per 500mm sump in a 3.5m seam (1.4m³/tonne). This equates to one shuttle car load. When the miner opens the roadway width out to 4.8m the second cut width is then only 1.5m and one sump of 1000mm is required to fill one shuttle car. The sump distance should be varied according to seam height and cut width to match, where practicable, the shuttle car capacity. Ensuring that the shuttle cars carry the maximum payload and that the 'in-cut' waiting time is kept to a minimum greatly increases productivity.

The technical visit was a grand success and gave a huge and detailed practical exposure to all the students and members regarding the Mining engineering subject and also of other related engineering areas like Mechanical, Chemical and Electrical Engineering areas. The exposure gave a very good practical knowledge to all the students of our Institution. Thanks were given by past Hony. Secretary and Chairman, Durgapur Technicians Committee, Mr S. Islam to the colliery authority, officers and the workers who gave lectures and explained the mining of coal most practically.

Name of Centre :		Durgapur local centre	
Title of Activity:		One day seminar on "Industrial Safety and Maintenance in Modern Industries"	
Activity under Divisional Board:		ICC	
Date:	17 th February 2017	Venue:	Conference hall Durgapur Institute of Polytechnic



Seen: (L to R) Mr M N Bandyopadhyay, Mr P V Deshpande, Mr S K Roy Choudhury, Dr P K Sinha, Mr R K Roy



Lighting of Lamp by Prof (Dr) P K Sinha, Director, DIP in inaugural session

The seminar started with an welcome address by chairman Mr R K Roy and mentioned about the theme and importance of the topic. Chief guest was Mr P V Deshpande former DGM DSP/SAIL & a consultant of safety and guest of honor were Mr S K Roy Choudhury former coke oven maintenance engineer and consultant & Mr P N Jagtap Production engineer MACKEL ISPAT & FORGING LTD.

Director of DIP Dr P K Sinha explained the importance of safety and various laws related to safety. He told how cost incurred if an accident happened.

Mr P V Deshpande, Chief Guest during his presentation and lecture, started with the purpose of safety and standards of safety. He explained how the safety products should be used and why? He explained the use of Safety appliances i.e. Safety Helmets, Safety Shoes, Safety Gloves, Safety Belts, Safety Goggles etc. He explained the concept of safety at work with the explanation of Creating a Safety culture, monitoring safety activities of plants/units, evolving safety systems in operation and construction, keeping abreast of latest developments. He told that amidst all developmental initiatives and thrust on productivity, cost, quality etc., it becomes imperative that appropriate strategies & programmes are to be developed and implemented for mitigating the challenges emerged in respect of safety & health for improving overall business performance in a sustainable manner. In a large modern industry the new thinking envisages clearly that all accidents are preventable and "Accident-Free" product is a practical goal for the future. Excellence in safety & health requires excellence in all aspects of operations which ultimately results in better business performance. Experience shows that the most companies are also the safest.

He then explained what are the causes of accidents and how those can be prevented. He refers to few case studied of a steel plant and from a modern plants. He gave examples how accidents happen and how the accidents can be prevented. He discussed about behaviour based Safety & role of Automation & Control in improving safety. He describes how a power tool % hand tool can be used .Precaution to be taken in construction sites and handling

electrical equipments. Explaining the importance of permit he told how it can save life and prevent loss of production. He concluded by summarizing all points and narrating some case studies.

Guest of Honour, Mr S K Roy Choudhury explained the maintenance and relationship with safety. He explained the different type of maintenance & explained the formal definition of maintenance is “that function of manufacturing management that is concerned with day to day problem of keeping the physical plant in good operating condition”. He told that the good maintenance practice is an important system in operation. In an era where industries are focusing on 24 hours operation to maximize production, machines are pushed to its absolute limits to cope with this demand. As utilization increases, the rate at which the machine parts get worn out increases thus the frequency of failure increases rapidly. To combat this problem and ensure that machines continue to operate at its optimum, maintenance work is carried out. One of the branches of maintenance technique which is carried out to prevent occurrences of failure before it happen is known as Preventive Maintenance (PM). However, performing PM may not be as easy as it requires great co-operation from the maintenance, production and management departments.

He explained the objectives which are minimize loss of productive time, minimize repair time & cost, keep productive assets in working condition, minimize accidents, minimize total maintenance cost, improve quality of products. He also explained the five types of maintenance which are breakdown maintenance or corrective maintenance, preventive maintenance, predictive maintenance, routine maintenance, planned maintenance. He further explained control of maintenance which are authorized by an official, maintenance schedule, issue materials against proper authorization, maintenance budgets, equipment records etc.

He explained the benefits which are greater safety, decreased production down time, fewer large scale & repetitive repairs, less cost for simple repairs, less standby equipment required, better spare parts control, proper identification of items. He further explained about scheduling of maintenance and reliability through maintenance. He concluded with the remarks that to ensure effective implementation of activities, it is important that the production facilities need to be maintained in good working condition & maintenance reduces cost, machinery breakdown etc. He further added that production machinery is becoming more and more complex and maintenance personnel must keep pace. Special training programs to maintain worker skill level & subcontracting service, companies production workers maintain own equipment, computer assistance in maintenance are few modern technique. Therefore maintenance management is an important aspect for any organization.

Guest of Honour, Mr Prashant N. Jagtap explained the importance of OHSAS 18001 in modern industries and how they have implemented the safety system at their works Mackeill Ispat & Forging Ltd. He gave an overview of OHSAS 18001– Occupational Health and Safety Management Systems –Specification and OHSAS 18002 – Occupational Health and Safety Management Systems – Guidelines for the implementation of OHSAS 18001 and how they correspond to other management standards designed to manage quality and environmental issues. OHSAS 18001 is a specification giving requirements for an Occupational Health and Safety OH&S Management System, to enable an organization to control its OH&S risks and improve its performance. It does not lay down specific performance criteria or give detailed specifications for the actual structure or form of the management system. He told that The General Safety encompasses almost all aspects of safety namely the Safety Management System, Electrical Safety, Fire Safety, Mechanical Safety, Maintenance, physical & chemical and construction safety. He told that in their works they take care of common hazards and control measures in construction industry, building and other construction workers act, 1996 and central rules 1998, roles and responsibilities of supervisor at construction sites., tool box meeting, work permit system, introduction to working at height and safety in the use of ladder, safety in scaffolding, safety in tunneling & excavation., electrical safety during use of temporary

electrical installation, safety in welding & gas cutting operations, safety in use of mobile cranes and earth moving equipments, safety in concrete work, safety in demolition and under pinning, overview of other statutes related to construction safety except bocw act & rules, occupational health hazards & control measures in construction work. He gave some practical examples and concluded the presentation.

At the end, Mr M N Bandyopadhyay Hony. Secretary Durgapur Local centre, gave vote of thanks after an interesting question and answer session and with some words of safety and maintenance aspects.

Name of Centre :		Durgapur local centre	
Title of Activity:		One day seminar on "Emerging Antenna Technology for Modern Communication Systems"	
Activity under Divisional Board:		ETDB (Electronics and telecommunication division)	
Date:	21 st February 2017	Venue:	Conference hall NSHM Knowledge campus



Prof (Dr) Prabir Kr Bose delivering his Chief Guest Address and sitting (L to R) Mr R K Roy, Dr Durbadal Mondal, & Mr M N Bandyopadhyay



Lighting of Lamp by Prof (Dr) P K Bose, Director, NSHM in inaugural session

The seminar started with a welcome address by chairman Mr R K Roy and mentioned about the theme and importance of the topic. **Chief Guest was Dr Prabir Kr Bose, Director NSHM, and Guests of Honour were Dr Apurba Ghosh, Associate Professor, UIT, Burdwan and Dr Durbadal Mondal Associate Professor, NIT Durgapur.**

Dr Prabir Bose in his Chief Guest address talked about the history of antenna and described the philosophy behind the improvements. He told that Nowadays, a continuous progress in new generation services offered to the users of communication systems led to the need for very rapid development of both backbone and access networks. The strongest growth is visible for wireless systems, which offer mobility, flexibility, ease of installation and modernization of the network. Modern wireless devices: mobile phones, laptops, tablets etc., stimulate the development of services that combine simultaneous transmission of voice, data and multimedia content, resulting in the need to ensure the requirements for the transmission parameters for each of them. These requirements include: high capacity, high data rate, the security of transmitted information, system reliability, scalability and flexibility. To use the advantages of fiber optic communication, while leaving the benefits of wireless transmission, such as flexibility and the ability to develop and modify the structure of the network, an idea of Wireless over Fiber (WoF) systems has been widely introduced. He also said that our idea was designing and investigation of photonic antenna stations for bidirectional transmission in the last mile. Three different photonic antenna stations in the last mile WoF links have been tested. For construction of antenna stations commercially available optoelectronic devices have been used. The solutions differ from each other by the mean of ensuring separation between transmitting and receiving modes of operation.

A smart or adaptive antenna is the most suitable for wireless communication, especially for 3G and 4G systems. The key property of the intelligent technology is the ability to respond automatically by changing an appropriate radiation pattern. The best solution will be the possibility for dynamic reconfiguring of the antenna aperture. Many solutions of the reconfigurable antennas have been described diodes.

Guest of honour, Dr Apurba Ghosh presented scope and objectives of existing methods of current measurement using optical sensors. He explained the methods with block diagram and basic configuration of OCT adopted. He described the overall system which comprises of electrical sub system, optical sub system and electronic subsystem. Experiment results discussed which are electrical parameters of aluminum bus bar, current through aluminum bus bar, internal ckt of signal processor, simulation of signal processor, laboratory testing of signal processor and system test results.

He also highlighted that the schematic arrangements of the shunt configuration, performance evaluation and then conclusion with future prospect. He also explained three optoelectric effect namely faraday effect, pockel effect and kerr effect which can be applied to measure large current He compared effects and told that faraday effect is most suitable due to its linearity.

He concluded by saying that with these two effects have many practical applications in fiber optics and data storage as well as research into the future of optical technology. He also explained how the radiation took place through antenna and efficiency can be increased for a better efficiency.

Guest of honour, Dr Durbadal Mondal presented the subject radiation pattern synthesis for modern wireless communication. He explained broad side pattern and end fire pattern along with planner array related to optimal radiation pattern of linear adaptive antenna array obtained using Genetic Algorithm (GA) for reducing the side lobe level (SLL) and imposing nulls at prescribed interfering directions. He also explained the classical optimizing technique and meta heuristic optimization technique. He further explained generation of optimization algorithm. He describes that antenna arrays with inter-element spacing as integral multiple of wave length λ has been absent in practical implementations despite their highly directive main lobe; the disuse is primarily attributed to the presence of grating lobes. This letter proposes a modification in a linear antenna array whereby the grating lobes are suppressed by up to 100% with an additional improvement in the directivity of main lobe and reduction in other side lobe levels. A new array factor is synthesized by replacing the individual elements in a linear array with a pair of elements called discrete dipole elements (DDEs); a background theory of spatial hard windowing is proposed for the synthesis of array factor. Array factors of linear array made of eight DDEs are compared with those of an eight element linear isotropic array to validate the claims. The proposed DDE array is then fabricated using monopole antennas; a good agreement between measured, simulated and analytical results is seen. He said that Different Fitness functions have been used for performance study of GA for achieving optimal current distribution on the array aperture. Null imposition is considered in this paper in three different ways such as null at single point, multiple directions and nulls in a wide spatial range. The same fitness function has been used here to impose deeper nulls at various desired directions as well as for creating wide nulls. The minimum SLL is achieved for a 20 element isotropic array at approximately -51dB whereas a deeper null of approximately -99dB has been imposed at 40°. The relation between the fitness functions and the excitations are also discussed. It also shown that the SLL reduction approach can be extended to the array pattern with main beam steered to desired user. Multiple objectives such as null placement as well as side lobe suppression are simultaneously achieved with a single fitness function in single-stage optimization.

At the end Mr M N Bandyopadhyay, Honorary Secretary Durgapur Local Centre, gave vote of thanks after an interesting question and answer session.

Name of Centre :		Durgapur local centre	
Title of Activity:		One day seminar on "COMPUTER VISION"	
Activity under Divisional Board:		CPDB (COMPUTER ENGINEERING DIV)	
Date:	24 th February 2017	Venue:	Durgapur Institute of Advanced Technology & Managements computer lab and Seminar Hall



Mr R K Roy, Chairman, Durgapur Local Centre delivering his welcome address and seen (L to R) Dr Debashis Nandi, Professor NIT Durgapur, Dr P K Sinha, Principal, DIATM , Mr K Roy, GM, Rahul Foundation, Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre & Dr Chandan Koner, HOD B C Roy Engg. College, Durgapur



Lighting of Lamp by Prof (Dr) P K Sinha, Principal, DIATM, Rajbandh in inaugural session

The seminar started with a welcome address by Mr R K Roy, Chairman, Durgapur Local Centre. In his welcome address he mentioned about the theme and highlighted that Computer vision is an interdisciplinary field that deals with how computers can be made to gain high-level understanding from digital images or videos. From the perspective of engineering, it seeks to automate tasks that the human visual system can do. Computer vision tasks include methods for acquiring, processing, analyzing and understanding digital images, and extraction of high-dimensional data from the real world in order to produce numerical or symbolic information, e.g., in the forms of decisions. Understanding in this context means the transformation of visual images (the input of the retina) into descriptions of the world that can interface with other thought processes and elicit appropriate action. This image understanding can be seen as the disentangling of symbolic information from image data using models constructed with the aid of geometry, physics, statistics, and learning theory.

Chief Guest was Dr P K Sinha, Principal DIATM & Guests of Honour were Dr Debashis Nandi from NIT Durgapur and Dr Chandan Koner, HOD of Computer Engineering of Dr B C Roy Engineering College Durgapur.

Chief Guest, Dr P K Sinha in his address explained the importance of image processing and cited few applications. He told how the image transformation can be made with matlab. He further explained how the image can be enhanced. He concluded with the explanation of video processing and sited few application areas which are computerized photography (e.g., photoshop), space image processing (e.g., hubble space telescope images, interplanetary probe images), medical/biological image processing (e.g., interpretation of x-ray images, blood/cellular microscope images), automatic character recognition (zip code, license plate recognition), finger print/face/iris recognition, remote sensing: aerial and satellite image interpretations, reconnaissance, industrial applications (e.g., product inspection/sorting).

Guest of honour, Dr Debashis Nandi presented the topic Digital image processing and said that there has been a renewed interest in digital image processing in recent years due to a number of factors like an increasing availability of powerful microcomputers and workstations with very large capability, a significant improvement in the capabilities of the image acquisition equipment and display devices and a significant reduction in the cost of computation and image acquisition. These have led to a rapid increase in the application of digital image processing techniques such as in astronomy, seismology, medical applications, radar and so on. Although the mathematical support was well defined, digital image processing was not used due to high computing power and large dimension of mass storage devices requested. The latest evolution in hardware development made these requests affordable enough to make domains that traditionally used analog imaging to switch to digital images. The basic task of digital image processing in medicine is source image enhancement. Images received from various medical devices (X-ray, Magnetic Resonance Imaging (MRI), X-Ray based Computer Tomography (CT) a.s.o.) usually not very clear and containing noise are filtered by using low level image processing algorithms (denoising, sharpening, edge detection) with parameter values tweaked for the specific problem and enlarging the amount of useful information offered to the medical specialist that interprets it. This is fully done by computers. Medical image processing has become one of the most important fields in medical applications. Nowadays, basic image processing and visualization techniques are frequently used. However, there is a great demand for high level image processing algorithms to analyze and visualize anatomical and pathological image structures in a user oriented mode, faster and better compression methods, design and implementation at medical insight level of integrated systems and linking them via Internet to become the ultimate medical tool of modern medicine. He along with his two scholar conducted hands on after lunch.

Guest of honour, Dr Chandan Konar presented the topic on Security and Image processing and computer network, network security, authentication, digital signature and TVA. In his presentation he explained the each of above and gave practical examples. He gave an first hand explanation of **Network Security**. The success of e-age and m-age will solely depend on how reliably and accurately the data will flow of over networks and Internet. Network security involves methods or practices used to protect a computer network from unauthorized accesses, misuses or modifications. Networks owned by different organizations require different levels of security. He also explained the Information Security & principles of Information Security and then he told that using image steganography security can be provided to any image which has to be sent over the network or transferred using any electronic mode. There is a message and an image that has to be sent. The image is divided into 'n' no of parts. The first step is process of converting the actual message into ciphertext using the Advanced Encryption Standard (AES) 256 bit algorithm. In the second Step is the cipher text is embedded into first part of the image. Third step is encryption performed on each part of the image. These individual parts are combined and create single encrypted image. This final encrypted image is sent to the receiver. At the receivers end decryption of the encrypted image is performed. The first step is dividing the encrypted image into the 'n' no of parts. The second step is decryption performed on each part of the image. Third step is taking the first part of the decrypted image and decrypt the embedded cipher text. Then merge or combine the all the decrypted parts and create the single output image and concluded the presentation.

Other speaker is General Manager, Rahul Foundation, Mr Krishnendu Roy in his address said that such types of activities organized by Durgapur Local Centre, IEI is highly praiseworthy and students will be benefited more. Rahul Foundation will support Durgapur Local Centre in future.

There were few other speakers also and briefly explained their experiences on image processing.

The program ended with a lively discussion on the issues raised by the eminent speakers. Er.

M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre delivered the Vote of Thanks & expressed his hope that such seminars would be organized on a regular basis & ensure the participation of greater numbers of members in such events.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One day seminar on "Role of Engineers for the Successful Implementation of Swachh Bharat Programme"	
Activity under Divisional Board:		Chemical Engineering Division	
Date:	3 rd March 2017	Venue:	Conference Hall, DIATM, DURGAPUR



Sitting (l to r): Mr R K Roy, Chairman DLC, Dr A K Das, Guest of honor, Prof(Dr) B K Dutta, Chief Guest, Dr P K Sinha, Principal, DIATM, Dr Gora Ghosh, Guest of Honour, Mr K Roy, GM, Rahul Foundation, Mr M N Bandyopadhyay, Hony. Secretary, DLC



Lighting of Lamp by Prof (Dr) B K Dutta, Former Chairman, WBPCB in inaugural session

The Institution of Engineers (India), Durgapur Local Centre in association with Chemical Engineering Department of Durgapur Institute of Advanced Technology & Management, Rajbandh organized a one-day seminar on 'Role of Engineers for the successful implementation of Swachh Bharat Programme' on 3rd March 2017.

The inaugural function was held in the presence of distinguished Guests, Eminent Engineers, Scientists, Academicians, Research Scholars, and Researchers. The Chief Guest Former Chairman, WBPCB, Prof (Dr) B K Dutta, Inaugurated the function by lighting the lamp.

Chairman of the Local Centre Mr R K Roy welcomed the honourable guests, speakers, delegates and audience. In the welcome speech he informed about the importance of the theme and highlighted that It is a most important topic which our kids and students must know and be aware of this mission. He also briefed about the activities of the Institution.

Before starting of main program Short films were also shown on the theme 'Swachh Bharat implementation Programme'.

Chief Guest was Prof (Dr) B K Dutta, Former Chairman of WBPCB. Prof Dutta's topic was 'Municipal solid waste Management'. His lecture was based on the theme how Engineers can contribute for *Swachh Bharat*. He started with sanitation and scientific disposal of solid waste. In his presentation he showed some design of low cost sanitation items and explained how problem of water can be solved. An example he gave was named as bio digester developed by DRDO. He gave presentation on Hazards of MSW disposal, legal provisions, technologies available for MSW disposal, the scenario of India and world. He discussed about three major aspects i.e. social, scientific & engineering. He explained the major concern which is MSW collection, transportation, disposal and proper treatment.

He further presented and explained that MSW may be compostable, recyclable and inert material with examples of each type. In his explanation he described the history of Solid waste management (SWM) which started from 6500BC. Jerusalem is one of the first to show the SWM management process. In India total population may be around 115cr and waste generation is 0.3-0.6kg/head/day. Estimated quantity may be 573000tons/day. Average collection may be 22 to 60%. Recycle is 21%.

He concluded by mentioning rules (SWM rules) of 2000 and 2016. In the rules of yr 2000, rules were silent about the responsibilities of waste generators but addressed in the version of 2016. Duties of waste generators also mentioned. He gave concept of RDF (refused derived fuel) and at least 5% of RDF can be used with other fuel. He finally concluded with the description of WTE (WASTE TO ENERGY) scheme, mentioning the systems. He told that however, it has been clearly declared that the campaign is not only the duty of the Government but each and every citizen of the country is equally responsible to keep the nation clean or *swachh*.

Guest of Honor, Dr Gora Ghosh, Former Scientist and Deputy Director of CFRI presented on the topic 'Coal and the environment-a challenge to the engineers for Swachh Bharat project implementation. He told about the coal utilization and environment challenges like destruction of forest, biodiversity, disturbance in aqua areas etc. He mentioned about use of fuel cell, magneto hydro dynamics and carbonization. He concluded with the address that coal is very inefficient and huge cause of global warming and challenge for clean world. He described clean coal and described burning coal with carbon sequestration and said storage (css) underground may preferred but may lead to more problem in future. He told swachh bharat program is not only related to toilets in slums and villages but also require cleaning of every place. He also mentioned that in the areas where mining took place the SWACHH Bharat program is very much active and only recently major corporate houses such as L&T, DLF, Vedanta, Bharti, TCS, Ambuja Cements, Toyota Kirloskar, Maruti, Tata Motors, Coca Cola, Dabur, Aditya Birla, Adani, Infosys, TVS and many others have earmarked budgets for Swachh Bharat projects. According to one estimate Rs 1000 Crore worth of various cleanliness projects are in the pipeline by corporate sector. These projects include building toilets in distant villages, running workshops on behavioural changes, waste management, and water hygiene and sanitation activities among other things. Therefore, adequate and appropriate sanitation facilities are a pre-requisite for the socio-economic development of the country. Today's school children will be tomorrow's leaders, employers and resources and it is imperative to provide basic amenities to them in order to have a healthy, productive workforce.

Guest of Honour of the function, Dr A K Das, Professor, DIATM shared the some important objectives of the Swachh Bharat Abhiyan: Following measures are to be taken

- To eradicate the system of open defecation in India.
- To convert the insanitary toilets into pour flush toilets.
- To remove the system of manual scavenging.
- To make people aware of healthy sanitation practices by bringing behavioural changes in people.
- To link people with the programmes of sanitation and public health in order to generate public awareness.
- To build up the urban local bodies strong in order to design, execute and operate all systems related to cleanliness.
- To completely start the scientific processing, disposals reuse and recycling the Municipal Solid Waste.
- To provide required environment for the private sectors to get participated in the Capital Expenditure for all the operations and maintenance costs related to the clean campaign.

He also told under the SWACHH BHARAT mission Engineers has a very serious role to play to

design toilets, design rain water harvesting system, use of solar cell and related design, Municipality Waste Disposal process engineering, tree plantation etc. E-waste collection and disposal is an important area and reusing e waste will reduce the volume of e waste generation, reusing of equipment after little modifications is a method of waste disposal in India. Usually used for computers and cell phones, this can be effective for reducing e waste. Some other methods are to have SWACHH BHARAT are –

Landfill: It is one of the methods of e waste disposal in India, although it can invariably pose serious threats to the environment.

Incineration: A controlled combustion process, this is a method in which the waste material is burned in specially designed incinerators at a very high temperature. It reduces the waste volume and some of the environmentally hazardous substances are transformed into less hazardous ones.

Few more speakers i.e. Dr P K Sinha, Principal, DIATM and Mr. K Roy, G M Rahul Foundation, Dr. D Ghosh of Chemical Engineering Department, DIATM, Dr. P Sarkar, HOD, Chemical Engineering Department, DIATM and Prof H B Goswami, Council Member, IEI also addressed in the seminar.

Mr M N Bandyopadhyay, Honorary Secretary of the Centre proposed vote of thanks to all dignitaries and participants and guests for their valuable support in organising the seminar.

Name of Centre :	DURGAPUR LOCAL CENTRE		
Title of Activity :	All India seminar on "Recent trends in Applied Sciences and Humanities and its influence on technological and socioeconomic development"		
Activity under Divisional Board :	ICC		
Date:	7-8 March, 2017	Venue:	Library Hall, DIATM, DURGAPUR

	
Lighting of Lamp by Prof (Dr) Subrata Kumar Dey, Pro Vice Chancellor, MAKAUT	Chief Guest, Prof (Dr) Subrata Kumar Dey delivering his inaugural address and sitting (l to r): Prof H B Goswami, Dr P K Sinha, Dr R Goswami, Mr Santimoy Dey and Mr M N Bandyopadhyay, Hony. Secretary

The seminar begins with welcome address by Past Chairman, Prof H B Goswami as present chairman was not available. Prof Goswami said that 'Applied Science' is usually considered as a bridge or a connection between Physics, Chemistry and Engineering. Applied Science is distinguished with "pure" by a subtle combination of factors such as the motivation and attitude of researchers and the nature of the relationship to the technology or science that may be affected by the work. For example applied physics is rooted in the fundamental truths and basic concepts of the physical sciences but is concerned with the utilization of scientific principles in practical devices and systems, and in the application of physics in other areas of science.

In the inaugural session following personalities were present:

1. **Dr Subrata Kumar Dey, Pro Vice Chancellor MAKAUT --Chief Guest**
2. **Mr Santimoy Dey, Director Himadri Chemical—Guest of Honour**
3. **Dr Raghupati Goswami, Advisor, Rahul Foundation-- Guest of Honour**
4. **Dr P K Sinha, Principal, DIATM--- Guest of Honour**
5. **Dr B P Mukherjee, Former Head of Physics NIT, Durgapur--- Guest of Honour**

Chief Guest of inaugural session was Dr Subrata Kumar Dey-Pro Vice Chancellor of MAKAUT (Maulana Abul Kalam Azad University of Technology) whose inaugural address started with the explanation of interrelation between science, applied science and technology. He told that science is the systematic way of acquiring knowledge through observation and experimentation, whereas technology is the practical application of science. Technology is used to design products that improve the quality of human life. In other words, applied physics is rooted in the fundamental truths and basic concepts of the physical

sciences but is concerned with the utilization of these scientific principles in practical devices and systems. Engineering & Technology is a subject of applied science. A scientist looks for fundamental truths; an engineer uses these truths to develop technology. He told that we all should rethink about environmental condition and should try to find out solution where applied science and technology can work together. He talked about the use of solar power and other alternative power and gave example of nuclear power. He also explained the human genome and impact in our society. He concluded by saying that holistic approach should be taken to reduce gap between economic gap and social gap by the scientist and engineers.

Guest of Honor, Dr P K Sinha talked about the foundation of technology and gave example of induction theory & said that Engineering is the use of arithmetic, logical, financial, social, and viable learning with a specific end goal to create, design, assemble, maintain, examine and make structures, machines, devices, frameworks, parts, materials, and procedures. The discipline of engineering is to a great degree expansive, and includes a scope of more particular fields of designing, each with a more particular accentuation on specific zones of connected science, technology and sorts of utilization. He said that technology is the accumulation of procedures, abilities, routines and procedures utilized as a part of the creation of products or services or in the achievement of destinations, for example, experimental examination. Technology can be the learning of procedures, processes, and so on or it can be inserted in machines, PCs, gadgets and manufacturing plants, which can be worked by people without detailed information. The human species' utilization of technology started with the change of resources into basic tools. Technology has numerous impacts. It has aided grow more propelled economies. He concluded with by saying that there may be a difference could be that applied science does research, but research with an application (engineering, medicine, etc). 'Regular' science does research with no application in mind; it's just to discover phenomenon and model observations. Engineering is not about research, it's about using ideas and models that are already known to construct something. In practice, it can be pretty hard to differentiate between those fields.

Guest of Honor, Mr Santimoy Dey, Director Himadri Chemical, Hooghly said that technology can be regarded as primary source in socio economic development and various technological developments contribute significantly in the developments of underdeveloped countries. Applied science development and economic growth are truly related to each other. The level of development in applied science is also important determination of socioeconomic growth. The rapid rate of growth can be achieved through high level of technology. Recent trends of technology are basically ubiquitous mobile connectivity, internet of things, virtualization, business in the cloud, big data, analytics, clustering of technology skills, talent, collaborative creation and consumption, creating a new industrial revolution. He described the socio economic benefit of IOT. He concluded with contribution to GDP growth and said that findings from various countries confirm the positive effect of technology influence on socio economic market growth. He gave example that 10% increase in broadband penetration is associated with a 1.4% increase in GDP growth in emerging market and mentioned that technology has affected the economy through direct job creation.

Hony. Secretary IEI DGP Mr M N Bandyopadhyay gave vote of thanks for inaugural session after a question and answer session

The speakers of the first day technical sessions who presented were

Sl No	<u>Speaker</u>	<u>Topic</u>
1	Mr Ashim Basu	Time management now and early age
2	Dr S Sahoo NIT DGP	Fractional quantum hall effect of interacting electrons in graphene
3	Ms Deepshikha Dutta	Material hybridization with enhanced

biodegradability by starch dispersion in
LDPE Matrix

Speakers of second day technical session were

1. Mr S Sarkar, Vice President, Matix Fertilizer & Chemicals Ltd-spoke on problems and challenges of fertilizer industry project implementations
2. Mr S G Khune, Vice President, Graphite India Durgapur-Production process of Graphite Electrode and Human factor
3. Ms Maitreye Deb, Assistant Engineer, Matix Fertilizer & Chemicals Ltd-How a new & fertilizer plant works
4. R P Tiwari, Training Manager, Meija Thermal Power Station (DVC)- On thermal power plants generation and distribution
5. Dr Aniket Chakraborty-Asst. Professor, Jalpaiguri Engg. College-Jurassic park to Armageddon : Introduction to Earth science- on earth and climate/environment sc problems and solutions

In valedictory session Chief guest was Mr Amit Biswas, Former GM DSP/SAIL and Guests of Honour were Mr K Roy, GM, Rahul Foundation & Mr Banibrata Mukherjee, Former GM, DSP/SAIL.

The valedictory session Chairman, Mr R K Roy welcomed all the participant and dignitaries and summarized the total sessions. He spelt out the resolutions and explained the importance of applied science and management in industry.

Chief Guest, Mr Amit Biswas gave a presentation on “Paradigms and its impact in today’s business scenario” .He intimated that paradigm shift is a major change in how some process is accomplished. A paradigm shift can happen when new technology is introduced that radically alters the production process of a good. For example, the assembly line created a substantial paradigm shift not only in the auto industry, but in all other areas of manufacturing as well.

He told that as the business scenario is highly competitive, a high degree of uncertainty prevails. The reason behind it is due to series of change which may be due to technological, social, governmental and environmental. He explained the effect of paradigm and said that many organizations in the world have gone into extinction because of paradigm paralysis and those which have withstood the adverse situations and survived could see the future and act accordingly taking their employees along with them as a TEAM through paradigm flexibility. He further added Paradigm shifts can require that entire departments be eliminated or created in some cases, and millions or even billions of dollars of new equipment purchased while the old equipment is sold or recycled. Paradigm shifts have become much more frequent in the past hundred years, as the industrial revolution has transformed many social and industrial processes. This process is likely to become even more commonplace in the future as our rate of technological advancement increases.

He concluded by saying that today good organizations not only need to see the future but create a future for sustainability. It requires a sincere effort to tap the potential of the existing technology, small innovations from grass root level, effective road map for cost reduction and waste reduction, looking into the social results and care for the environment-multi faced activities in contrast to production ,productivity and profit oriented activities a couple of decades ago.

Guest of Honour, Mr K Roy addressed the audience and said that earth has limited resources and frittering away the resources will stop all research activities in all field and especially in applied science. All Engineers have a role to utilize the resource very judiciously keeping in mind that humanity today is facing the problem of scarcity with huge population in India. There are changes everywhere particularly in information technology, digital technology and engineering, power engineering sector, water resource and engineering, nano technology, road transport & highway engineering and many other field. All fields have a

significant contribution by applied science. Research on nano material is an example. It can improve characteristics of a material related to strength, corrosion, fatigue failure, scratch resistance. Also there can be self cleaning surface and all these further can be developed by working together by the applied scientist and engineers.

He concluded with the view that in India there are plenty of scope in space science, 3D printing artificial intelligence and robotics. India can be a great country with its high potential of young energetic engineers and scientist and many more success will come in future like in space engineering

Guest of Honour, Mr Banibrata Mukherjee spoke on the issues of utilization and maintaining of machines. He described the maintenance procedure in a large industry. He pointed out the 5 point- program noted by Honorable President, Mr Navinchandra B Vasoya which are continuing education & skill development, start up initiative, initiative for women empowerment in engineering, outreach programme with industry and placement drive.

He said that to achieve those an engineer should have a knowledge of TPM (Total Productive Maintenance) and is a holistic approach to equipment maintenance that strives to achieve perfect production .The benefits are no break downs, no small Stops or slow running, no defects and in addition it values a safe working environment means no accidents. He said that TPM emphasizes proactive and preventative maintenance to maximize the operational efficiency of equipment. It blurs the distinction between the roles of production and maintenance by placing a strong emphasis on empowering operators to help maintain their equipment. He concluded how the implementation of a TPM program creates a shared responsibility for equipment that encourages greater involvement by plant floor workers. In the right environment this can be very effective in improving productivity (increasing up time, reducing cycle times, and eliminating defects).Finally he ended with a case study explanation for cost reduction by TPM.

The recommendations which are outcome of seminar are:

1. Applied science progressed in many fold particularly in nano technology & benefit to be percolated to engineering field for funding (by private as well as Govt.) in research areas of nano technology of materials development in engineering
2. Environment protection and laws is still not properly adopted by the society. More strict laws to be formulated to bind the people and society to avoid further depletion of resources (in view of swachh bharaat program and to make the program successful)
3. Application of fuzzy logic is still in nascent stage and to be applied in large scale
4. For skill development basic science course also to be taught along with technical subjects in lower level (ITI etc)

After the lecture session and valedictory sessions of the seminar an question answer session continued and a vote of thanks was given by Hony. Secretary, Mr M N Bandyopadhyay.

Name of Centre :	Durgapur local centre		
Title of Activity :	'VLSI to Embedded World'		
Activity under Divisional Board	ETDB		
Date :	21 st March 2017	Venue :	Seminar Hall DIATM



Dr P K Sinha delivering his address and sitting (l to r): Mr R K Roy, Dr Indranil Hatai, Dr Ashis Kr Mal, Mr M N Bandyopadhyay



Prof (Dr) Ashis Kr Mal delivering his presentation

The seminar started with an welcome address by chairman Mr R K Roy and he mentioned about the theme and importance of the topic. **Chief Guest was Dr Ashis Kumar Mal of NIT Durgapur and Guests of Honour were Dr P K Sinha, Principal DIATM and Dr Indranil Hatai of IEST, Shibpur.**

Chief Guest, Dr A K Mal explained the definition that the VLSI (Very Large Scale Integration) is the process of creating an integrated circuit (IC) by combining thousands of transistors into a single chip. **VLSI** began in the 1970s when complex semiconductor and communication technologies were being developed. The microprocessor is a **VLSI** device & explained the fields related to the VLSI and Embedded Systems and especially those directly related to aspects of practical applications .He told that embedded system is the term used to any computing system that is used to perform a limited or specialized task. Unlike a general purpose computer that can perform a wide variety of tasks and is very complex, an embedded system is rather simplistic and does not have unnecessary hardware. ATMs, routers, calculators, and mobile phones are a few examples of devices that have embedded systems in them. On the other hand, VLSI stand for Very Large Scale Integration, which is a term used to describe the complexity of an integrated circuit by giving a generalized idea of how many transistors are within the circuit. Integrated circuits that contain thousands of transistors in a single package are classified as VLSI with other terms like MSI or ULSI among others, used to describe other integrated circuits with fewer or more transistors. With improvements in technology and the manufacturing processes of integrated circuits, it is now relatively easy to produce VLSI IC's at a very minimal cost. It then makes sense for manufacturers to take advantage of this fact and use VLSI IC's to reduce the complexity of their circuit boards. Manufacturers have even developed VLSI integrated circuits that combine multiple functions into a single chip instead of being discrete parts to reduce their costs even further as it is cheaper and more energy efficient than having discrete components. A couple of examples of devices that have been combined would be Wi-Fi and Bluetooth transmitters in a single card and routers that now have switches embedded in them. Due to the age of the term and the advancement of technology, the term VLSI has almost become obsolete. Most computing systems, embedded or general purpose, have integrated circuits that contain thousands, millions, and even billions of transistors within a single

package. It is difficult to find integrated circuits that contain less than a thousand transistors. There is really no point in distinguishing whether and embedded system uses VLSI chips or not.

Guest of honor Dr P K Sinha told that an embedded system is a computing platform that performs a specialized task while VLSI is a measure of the complexity of an integrated circuit. VLSI integrated circuits are very commonplace in embedded systems. He added that a huge majority of integrated circuits used in embedded systems and general purpose computers are VLSI and there is really no point in using the term. He told that a combination of hardware and software which together form a component of a larger machine. An example of an embedded system is a microprocessor that controls an automobile engine. An embedded system is designed to run on its own without human intervention, and may be required to respond to events in real time. Application areas he mentioned are TV, stereo, remote control, phone / mobile phone, refrigerator, microwave, washing machine, electric tooth brush, oven / rice or bread cooker, watch, alarm clock, electronic musical instruments, electronic toys (stuffed animals, handheld toys, pin balls, etc.), medical home equipment (e.g. blood pressure, thermometer).

Guest of honor Dr Indranil Hatai deliberated with the points that required to communicate with outside world PC System is composed of ,keyboard, monitor, parallel port (printer port) & serial port + USB where as embedded System are with sensors (e.g. in automobile: acceleration sensor, seat sensor),actuators (e.g. in automobile: valves for airbags) etc. He also told that Power dissipation is an important factor in the design of CMOS VLSI circuits for battery and externally powered applications in embedded computing. He gave an overview of a set of techniques that are suitable for CMOS technology and are readily usable by the VLSI system and circuit designer Supply-voltage-scaled CMOS is presented as a low-power approach for digital logic which offers a wide range of design points for trading off energy (and power) for circuit speed. Circuit and architecture techniques are presented which were originally developed for high performance, to sustain performance levels when the supply voltage is reduced. Finally, reduced-swing signaling, clock-powered logic, and stepwise charging are presented as techniques that can outperform supply-voltage-scaled CMOS for important design problems such as energy-efficient signaling. He concluded with security issues, software coding and testing, threat nodal analysis and inter operability. The increasing heterogeneity and complexity of VLSI systems has made the use of C++ popular for building simulation and synthesis models at higher levels of abstraction. He concluded with the case studies of applications.

There were other speakers who are Ms Kabi Gupta, HOD, ECE DIATM & Ms S Saha & Ms Nabanita Sinha Roy.

The program ended with a lively discussion on the issues raised by the eminent speakers. Mr. M N Bandyopadhyay, Honorary Secretary, Durgapur Local Centre delivered the Vote of thanks & expressed his hope that such seminars would be organized on a regular basis & ensure the participation of greater numbers of members in such events.

Name of Centre :	Durgapur Local Centre		
Title of Activity :	Celebration of World Water Day		
Activity under Divisional Board :	CV		
Date :	29/03/2017	Venue :	VISVESVARAYA Auditorium, Durgapur Local Centre



Mr R K Roy delivering his welcome address and seen (l to r): Prof (Dr) Samar Kr Nandi, Prof (Dr) Kalyan Adhikari & Mr M N Bandyopadhyay



Prof (Dr) Kalyan Adhikari delivering his presentation

World Water Day- 2017 was celebrated at Durgapur Local Centre of the Institution of Engineers (India) with an Inaugural Meeting and a Technical Seminar on 29th March, 2017 on the theme "Wastewater".

Before starting of inaugural session a film was shown on 'Wastewater Treatment Plant (DDSD)'.

At the outset, Mr M N Bandyopadhyay, Hony. Secretary presented the introductory address and said that each year World Water Day highlights a specific aspect of freshwater. Under the theme 'Water and Wastewater', the year 2017 provides an important opportunity to consolidate and build upon the previous World Water Days to highlight the symbiosis between water and wastewater in the quest for sustainable development.

The inaugural session was presided over by Mr R K Roy, Chairman of the Centre. In his welcome address he highlighted that the World Water Day is held annually on 22 March as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. An international day to celebrate freshwater was recommended at the 1992 United Nations Conference on Environment and Development (UNCED). The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day. Each year, World Water Day highlights a specific aspect of freshwater. In 2015, World Water Day has the theme "Water and Sustainable Development". In 2016, the theme is "Water and Jobs," in 2017 "Wastewater" and in 2018 "Nature-based Solutions for Water".

In the evening, a very impressive and informative lecture was presented by **Chief Guest, Prof. (Dr) Kalyan Adhikari, HOD, Earth & Environmental Studies, NIT Durgapur** in his presentation on the topic of 'Wastewater'. He deliberated that Less than 3% of the world's water is fresh – the rest is seawater and undrinkable.. Of this 3% over 2.5% is frozen, locked up in Antarctica, the Arctic and glaciers, and not available to man. Thus humanity must rely on this 0.5% for all of man's and ecosystem's fresh water needs. Per capita water needs is 1588meter cube. Estimated deficit is 327km³ which is 29% .The uses are Domestic use 8%, Industrial use 22%, Agricultural use 70%.He further told that according to the

international norms, a country can be categorized as 'water stressed' when water availability is less than 1700 m³ per capita per year whereas classified as 'water scarce' if it is less than 1000 m³ per capita per year. In India, the availability of surface water in the years 1991 and 2001 were 2309m³ and 1902 m³. However, it has been projected that per capita surface water availability is likely to be reduced to 1401 m³ and 1191 m³ by the years 2025 and 2050, respectively. The Per capita water availability in the year 2010 was 1588 m³ against 5200 m³ of the year 1951 in the country .He discussed about the Unsustainable water withdrawals for irrigation.. Irrigation has been a key component of the green revolution that has enabled many developing countries to produce enough food to feed everyone. More water will be needed to produce more food for 3 billion more people. But increasing competition for water and inefficient irrigation practices could constrain. Globally, roughly 15 - 35% of irrigation withdrawals are estimated to be unsustainable. He also told that Water for energy. After agriculture, industry is the second largest user of water. However the amount of water used varies widely from one type of industry to other no water, no business.The largest single use of water by industry is for cooling in thermal power generation. Water returned to river or lake for reuse within days. He gave an example with a case study at Finland paper mill & use of process water. A modern paper mill in Finland has reduced the amount of water used per unit of output by over 90% over the last 20 years: thanks to change from chemical to thermo mechanical pulp, and installation of a biological wastewater treatment facility that permitted recycling of water.

Another example is a textile firm in India reduced its water consumption by over 80%, by replacing zinc with aluminium in its synthetic fiber production, by reducing trace metals in wastewater thereby enabling reuse and by using treated water for irrigation by local farmers. A modern microchip manufacturing plant in Malta was able to reduce its water consumption by over 70% in the late 1990s.

He also described the process of treating waste water and recovers those. He concluded with the comments of reuse of waste water which are Agricultural reuse, Urban/Landscape reuse, Industrial reuse, Domestic/Residential reuse, Groundwater, Potable Reuse. He completed with the mentioning of applications in agriculture, industry, landscape irrigation, domestic use etc. He also told about the problems arises by using the waste water and concluded by explain different modes of treatment are required to recycle and reuse different types of wastewater and pros and cons which are

Pros:

- Conserve potable water
- Reduce effluent to environment

Cons:

- Health & safety precautions necessary
 - Careful planning needed
- Thus, the wastewater can be perceived as a valuable resource in the circular economy and its safe management as an efficient investment in the ecosystems.

Guest of Honor, Prof (Dr) Samar Kr Nandi, HOD, Civil Engineering Department, NHIT Durgapur delivered his address on the topic 'World's Water –Crisis'. He started with the explanation of what is waste water and with the view of global water consumption in 20th century.Although we are withdrawing only 10% of renewable water resources, and consuming only about 5%, there are still problems for human use. Water is unevenly distributed in space and in time — and we are degrading the quality of much more water than we withdraw and consume. He described the process of reuse and treatments. He concluded with the limitation of treatment and precaution to be taken.

After lively discussion from the eminent speakers, the programme ended with vote of thanks from Honorary Secretary, Mr. M N Bandyopadhyay.

Name of Centre :	Durgapur Local Centre		
Title of Activity :	One day seminar on 'Renewable Energy and Prospects in India'		
Activity under Divisional Board :	ELDB		
Date :	31 st March 2017	Venue :	SEMINAR HALL- DIATM



Dr P K Sinha, Principal, DIATM delivering his address and sitting (l to r): Mr R K Roy, Chairman, IEI DLC, Prof (Dr) N K Roy, EE Deptt. NIT, Durgapur, Mr A K Panda, Dy. Director, Army HQ, Dr A K Das, Dean of Students DIATM and Mr M N Bandyopadhyay, Hony. Secretary IEI, DLC



Lighting of Lamp by Mr A K Panda, Dy. Director, Army HQ, New Delhi, in inaugural session

The seminar started with an welcome address by Chairman, Mr R K Roy. In his address he highlighted the theme of the seminar and he said that the renewable energy in India comes under the purview of the Ministry of New and Renewable Energy (MNRE). Newer renewable electricity sources are targeted to grow massively by 2022, including a more than doubling of India's large wind power capacity and an almost 15 fold increase in solar power from April 2016 levels. Such ambitious targets would place India amongst the world leaders in renewable energy use and place India at the centre of its International Solar Alliance project promoting the growth and development of solar power internationally to over 120 countries.

He also said that the India was the first country in the world to set up a ministry of non-conventional energy resources, in early 1980s. As of September 30, 2016 India's cumulative grid interactive or grid tied renewable energy capacity (excluding large hydro) reached about 44.24 GW. 61% of the renewable power came from wind, while solar contributed nearly 19%. Large hydro installed capacity was 43.11 GW as of September 30, 2016 and is administered separately by the Ministry of Power and not included in MNRE targets.

The dignitaries on the dais were: Mr A K Panda Dy. Director, Army Head Quarter, New Delhi as Chief Guest, Dr N K Roy, Professor, NIT Durgapur, Dr A K Das, Dean of Students, DIATM, Mr Joy Chakraborty, Divisional Engineer, WBREDA and Dr P K Sinha, Principal, DIATM as Guests of Honour. Mr R K Roy, Chairman, Durgapur Local Centre and Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre.

Chief Guest, Mr A K Panda firstly explained the definition of renewable energy and stated that energy from a source that is not depleted when used, such as wind or solar power. He explained the energy forms such as mechanical, electrical, tidal, wind, solar, geo thermal etc. He discussed the scope of renewable energy, research organization activities, Govt. of India policies, developments, applications and recommendations. He also discussed the effects on which energy conservation depends. He discussed see beck effect, peltier effect, hall effect, piezo effect, photo electric, photo voltaic effects, electro osmosis

etc. He discussed the IE Rules 2005 and relation with non renewable energy. He gave an idea of working of BEE, BIS, DRDO, IREDA, NEERI, PCRA etc. His discussion was continued with the explanations of working of solar cell and applications related to community power generations, transport, food processing and cooking, green building and infrastructure, agriculture and horticulture, alternate fuel production, energy storage, telecommunication, safety and security and back up for conventional plant.

He further discussed about the constraints which are ToT (Technology transfer), dedicated course curriculum, lack of vocational training, apathy in policy implementation, non availability of regulator, non committal corporate houses, hurdles from PIL, RIT etc.

He recommends compulsory investment 15% by corporate house, updation of ISO Standard 10217 and ISO 9050. Massive campaign and awareness among people and young generations, skill development units for making renewable energy system maintenance and manufacturing.

Guest of Honour, Dr N K Roy covered the areas which are energy resources and its conversion, disparity in world energy distribution, uses of energy sources and changing pattern, emission issues, need for renewable energy, challenges /status of renewable energy in India, aspiration of 1.3 billion Indian towards clean energy. He also explained from basics of energy conversion from solar cell to electricity. He mentioned that 2015-16 was an extraordinary year for renewable energy. Renewable are now cost competitive with fossil fuels in many markets and are established around the world as mainstream sources of energy. Cities, communities and companies are leading the rapidly expanding "100% renewable" movement. Distributed renewable energy is advancing rapidly to close the energy access gap. He told most renewable energy comes either directly or indirectly from the sun. Sunlight, or solar energy, can be used directly for heating and lighting homes and other buildings, for generating electricity, and for hot water heating, solar cooling, and a variety of commercial and industrial uses. The sun's heat also drives the winds, whose energy is captured with wind turbines. The Earth's rotation also contributes to the winds, particularly through the Coriolis effect. He further explained that Along with the rain and snow, sunlight causes plants to grow. The organic matter that makes up those plants is known as biomass. Biomass can be used to produce electricity, transportation fuels, or chemicals. The use of biomass for any of these purposes is called biomass energy. He continued that not all renewable energy resources come from the sun. Geothermal energy taps the Earth's internal heat for a variety of uses, including electric power production and the heating and cooling of buildings. Flowing water creates energy that can be captured and turned into electricity. This is called hydroelectric power or hydropower. Other renewable sources are tidal energy and energy from ocean & hydrogen. He gave data for target for Indian population. He concluded with the mention of data that India's target is 100GW by 2022.

Guest of Honour, Dr A K Das deliberated with a statement that in 2016 carbon dioxide level in the world crossed 400 parts per million. Power sector in India is producing about half of all carbon di oxide emission in the country (805 million tons) .Coal is the most contributing component of carbon di oxide emission. Power plants in India are emitting 0.94kg/kwh. As on December 31st 2016 the installed capacity are Wind Power: 28,700.44 MW (57.4%), Solar Power: 9,012.66 MW (18.0%), Biomass Power: 7,856.94 MW (15.7%), Small Hydro Power: 4,333.85 MW (8.7%) & Waste-to-Power: 114.08 MW (0.2%). By 2022 target of solar power target is 100GW (20GW utility scale solar projects+ 40GW roof top solar projects+ 40GW Ultra mega park solar projects) & target for other sources are 60GW wind power, 10GW biomass, 5GW small hydel. There are challenges which are storage, grid performance and shock absorbing of intermittent power surge. He gave case studies of small hydel power and of biomass.

Guest of Honour, Mr Jay Chakraborty stated that Oil and coal are still being drilled and mined..With a new understanding of the limitations of oil, gas and coal, technology has been developed with an eye to using non renewable energy as efficiently as possible. Cars are now smaller and continue to improve gas mileage to conserve fuel.

Although it's fashionable today to look toward renewable energy of solar, wind or geothermal potential, we still must rely on fossil fuels to provide most of the energy we use. But Burning oil and coal produce greenhouse gases as a byproduct that damages our atmosphere. Protecting the environment we live in is

a driving force for development of renewable energy source. Renewable energy is the future of power throughout the world in the opinion of many people. When you use fossil fuels you are harvesting a resource that cannot be replaced. There is a limited amount of coal that can be mined and eventually the oil wells will run dry. We know the immense amount of energy sent to the earth from the sun and it seems logical we should be able to harness that power. The fuel for solar energy is free from the sun. The process of solar energy production is that of capturing the sun's energy when it reaches the earth. This is done through solar panels. The high cost of solar panels has been a deterrent in the past but Chinese manufacturers are now producing solar panels selling for almost 50% less than panels sold ten years ago. The problem with solar energy is that power can only be generated during hours when the sun is shining. At night or on cloudy days, solar panels are useless for creating electricity. For this reason, the focus of research is on ways to store energy from daytime hours to provide a constant power source that can be used at any time of the day or night. Currently, this requires batteries and adds a considerably amount of the cost of solar power. For a home located in a remote area, solar panels have proven useful in providing power. Even simple solar collection systems can provide hot water and more complex systems can run the systems of an entire home. One drawback of solar power is the size of panels. Commercial use of solar energy requires a large amount of land where sunlight is unobstructed in order to position a sufficient number of solar energy collection devices. Solar energy works best in warm climates where the sun's rays are strongest.

Prof H B Goswami, Council Member, ELDB while presenting deliberation his paper he said that India consumes 3.7% of the world's commercial energy & 5th largest consumer of energy globally. Due to rapid economic development and increasing population there is a high demand for energy. A sustained 8 % GDP growth requires an annual increase of commercial energy supply from 3.7% to 6.1% renewable energy production is the solution.

Challenges are – 1) optimal pricing of power generation from the renewable energy sources, 2) Quality and consistency issue of renewable energy, 3) Cost of technology development and production need to be reduced significantly from current level though reduced a large percentage & 4) We need to increase utilisation of renewable energy for rural applications with grid interactive renewable energy generation system.

At the end Mr M N Bandyopadhyaya, Hony. Secretary, Durgapur Local Centre, summaries the seminar theme and mentioned all types of renewable energies and their prospects in India. He also mentioned that India is the centre for International Solar Alliance (ISA) with headquarters in National Institute of Solar Energy (NISE), Gwalpahari, Gurgaon. He then gave vote of thanks after an interesting question and answer session and mentioned some papers for further reading of the theme of topic.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One day seminar on 'Enabling Sustainable Development in Mechanical Engineering in the context of Make in India'	
Activity under Divisional Board:		MCDB	
Date:	3 rd April 2017	Venue:	Seminar hall DIATM



Prof (Dr) H Hirani delivering his address and sitting (l to r): Mr R K Roy, Dr P K Sinha, Mr D Sinha and Mr M N Bandyopadhyay



Mr S G khune, Executive Vice President, Graphite India Ltd delivering his address

The seminar started with a welcome address by Chairman, Mr R K Roy. In his address he highlighted the theme of the seminar.

In augural session the dignitaries on the dais were: Prof (Dr) H Hirani, Director CSIR-CMERI, Chief Guest, Mr D Sinha, Director, DPL, Guest of Honour, Dr P K Sinha, Principal, DIATM, Guest of Honour. Mr R K Roy, Chairman, Durgapur Local Centre and Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre.

Chief Guest, Prof (Dr) H Hirani addressed the audience in a very lucid manner what are present day technologies and in what way the resources are consumed. He made the audience the meaning of "Make in India" which he describes as manufacturing a complete product in India and not bringing the parts from outside and assembled in India. For achieving the same we have to be innovative and develop our own technology. He further added the meaning of sustainable. He gave examples of Maruti where by technology transfer engines are manufactured in I.NDIA. He suggested that we have to give stress on innovation and creation through innovative idea. Downloading from internet or plagiarism will not help our country to make a sustainable country. While addressing He gave examples of innovation and told that two bull is costing 70,000/- where as one tractor is costing Rs 75000/- Tractor is the replacement for bulls and make in India (all parts) with the technology supplied by CMERI. Then gave example of solar tree and filters in car/bike which can be making in India and also will help for our sustainability. He further added that damaged mobile, electronic goods should be disposed off in a scientific manner. The reason is heavy metal in those components will ultimately poison our water. He concluded mentioning some advancement in mechanical engineering in CMERI Durgapur which has an impact on society for a sustainable development.

Mr D Sinha in his Guest of Honour address he mentioned his views to the audience and said that every engineer must look in to the matter that engineering products and developing manufacturing processes do not consume irreplaceable resources. Engineers often apply the term to the design of long-lived products for ease of maintenance under less than ideal conditions. Sustainability is built on recycling, generating more resources, and reducing the pressures of consumption on those resources from population growth and affluence. Sustainability also means economic growth without

shortchanging the future. He also told that there are many spare parts used in the plant supplied by local manufacturer. Drawings were made by plant engineers and guided the manufacturer during making of the parts and thus helping to make in India process without any wastage for sustainability

Dr P K Sinha in his **Guest of honour address he highlighted the burning issue of today's seminar** and said that looking at the definitions of sustainability we can see that it's most important aspect is the future. A sustainable society is where the needs of the future generations and is far seeing enough. He gave an example and said that following are some points to take care & they are Conservation of Materials, Conservation of energy & environmental quality. He told that sustainable management is the application of sustainable practices in the categories of production, manufacturing, businesses, agriculture, society, environment, and personal life by managing them in a way that will benefit current generations and future generations. He further added that development involves a progressive improvement of economy in the society. A development that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting, but physical sustainability cannot be achieved if considerations are not considered to the changes to resources and in the distribution along with costs and benefits. Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation.

Guest of honor, Mr S G Khune, Vice President, Graphite India Ltd. told that all Industry should note that their energy consumption which is produced from thermal power plant is polluting the biosphere and reducing fossil fuel stocks.. Recent improvements in energy efficiency and a shift towards less energy-intensive sectors have helped limit consumption. But the process must be accelerated to reduce per capita consumption and encourage a shift to non polluting sources and technologies. The simple duplication in the developing world of industrial countries' energy use patterns is neither feasible nor desirable. Changing these patterns for the better will call for new policies in urban development, industry location, housing design, transportation systems, and the choice of agricultural and industrial technologies.

Dr S N Maity, Principal Scientist, CSIR-CMERI in his Guest of Honour addressed on sustainable of Mechanical Engineering by intimating the design of solar tree and its structure. Solar tree is a method of taking less land than the conventional one and cost effective. He detailed the system and told that generation of power from solar will help us to Enabling Sustainable Development in the context of 'Make in India'.

Guest of honor Dr N Banerjee Professor of NIT presented on automobile aspects and pollution. He deliberated upon the use of smart car and sensors used. Some parts like engines are modified in India for suitability in India. Sensor making also in great swing to facilitate make in India program. For sustainability there must be zero accident campaign, low emission and high milage/litre of fuel. Research is now in India full swing and very soon more technological advancement will follow. He talked on social benefit and economic value of automotive industry. He mentioned about the negative impact of automobile emission and specially tail pipe emission. He concluded with some solutions and mentioning a comparison of current and future needs.

Guest speaker, S Ghosh, Asst Professor of DIATM Mechanical Engineering department presented with lecture on **Scope for using underutilized Hydraulic sources a Re-emphasis on the role of Hydram** where he started with concept of fluid system which he defined as the device in which power is transmitted with the help of fluid (liquid or gas) under pressure. Most of these devices are based on the principles of fluid static and fluid kinematics. Hydraulic Ram Pump is such type of Fluid devices. The people living in the hills face difficulties in raising crops to meet their daily needs due to lack of assured source of water and energy. The installation and maintenance of conventional pumping systems using diesel or gasoline or other forms of energy such as solar or electrical driven pumps are usually unaffordable for poor, remote communities living in the North East of India. To address this issue a field experiment was conducted in a hilly terrain of Assam University, Silchar to

install a hydraulic ram pump with constructed polyethylene lined rain-cum-roof water harvesting structure (26500 L capacity and 2 m depth) and evaluate the pump performance for the on-site feasibility. He explained hydraulic ram which is a Pump which raises water without any external power for its operation. When large quantity of water is available at a smaller height, a small quantity of water can be raised to a greater height with the help of Hydraulic ram. It works on the Principle of water Hammer. On characteristics he told There is no other external energy input (e.g. human, animal, fossil fuel, etc.) that makes the ram work other than the energy of water passing through the pump. Its operation will continue 24hours in a day, 7days in a week so as long required volume of water continues to flow through it. Water has to come from a location higher than the ram. Only a small portion of this water (around 25 % or less) is pumped up, the remainder passing out of the ram and must be drained to a lower location. The vertical distance to which water can be pumped up from the ram is significantly higher than the vertical distance from its source to the ram – up to 30 meters delivery height per 1 meter of supply fall, although typically the most efficient is within a ratio of 10:1 or less. He explained all parts and explained hydram. He explained all parts and experimental set up. He then concluded with Based on the result is obtain, it can be concluded that If the delivery head is increased then delivery discharge is decreased so the efficiency of the pump is decreased. He stated that if the head loss (mainly frictional loss) is considered then the delivery head is increased then efficiency of the hydram is increased. He also further intimated that If the delivery pipe diameter is decreased compare to supply pipe diameter then the supply head is increased so the Efficiency of the Hydram is increased. If the supply head is increased then delivery head is increased then the performance of the pump is increased. Double acting Ram can be used for increase the pump performance as well as so many delivery pipes can be attached in this Hydram. Large amount of flowing water can flow in six Hydraulic Ram Pumps in one supply tank.

The program ended with a lively discussion on the issues raised by the eminent speakers. Mr. M N Bandyopadhyay, Honorary Secretary, Durgapur Local Centre delivered the Vote of thanks & expressed his hope that such seminars would be organized on a regular basis & ensure the participation of greater numbers of members in such events.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One day seminar on 'Design, Manufacturing and Systems for Green Engineering & Technology'	
Activity under Divisional Board		ENDB	
Date:	4 th April 2017	Venue:	Seminar Hall DIATM



Prof (Dr) A N Mullick delivering his address and sitting (l to r): R K Roy, Prof (Dr) B Haldar, Dr P K Sinha, Mr S Bera & Mr M N Bandyopadhyay



Prof (Dr) B Haldar delivering his address and sitting (l to r): R K Roy, Prof (Dr) A N Mullick, Dr P K Sinha, Mr S Bera & Mr M N Bandyopadhyay

The seminar started with a welcome address by Chairman, Mr R K Roy. In his address he highlighted the theme of the seminar. He gave examples of power generation through wind and bio gas. He also talked about sensors and of solar power.

In augural session the dignitaries on the dais were: Prof (Dr) A N Mullick, HOD, Mechanical Engineering department, NIT Durgapur, Chief Guest, Prof (Dr) B Haldar, Professor, NIT Durgapur, Guest of Honour, Dr P K Sinha, Principal, DIATM, Guest of Honour & Mr S Bera, HR, Hyundai, Eastern Region. Mr R K Roy, Chairman, Durgapur Local Centre and Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre.

Prof (Dr) A N Mullick in his Chief Guest address discussed the subject matter with some examples. He addressed the fact that the pollution and toxicity changes everybody's life on Earth—not just those who are polluted, but also those who are polluting! Maybe it is time for all researcher, industry persons and academics to realize that we are all in the same boat and it is our common interest to change our polluting, toxic products, processes, factories and systems for sustainable, energy efficient green solutions & greening makes excellent business sense also. In a free society, consumers have a lot of power, and can change entire industries by purchasing only environmentally friendly, green products—designed and made in green, sustainable factories. He concluded with the explanation of ecological foot print and carbon foot print. He concluded by saying that green technology encompasses green chemistry, green nano technology, green building, green information technology and green energy. Design should be such that with main production by minimizing hazard materials as by product. Production of nano materials is possible without toxic materials. Green building concepts should be more popular.

Guest of Honour, Prof (Dr) B Haldar in his address he pointed out the audience that the steel sector and thermal sector must taken actions to control emissions from produces. SAIL is installing Coke Oven Battery with coke dry quenching system and land based pushing

emission control system. De-sulphurisation plant for treatment of Sulphur in Coke Oven Gas. New sinter plant with ESPs for process exhaust and system for space dust extraction along with waste heat recovery from Sinter Coolers. Installation of High capacity (4060 m³) state of the art blast furnaces. Installation of top pressure recovery turbines at the blast furnaces. Installation of gas based power plant.

Implementing green manufacturing and technology in design is the first step towards sustainable production, has been growing in interest and importance over the last few years. The opportunities for developing advanced manufacturing capabilities while, at the same time, reducing the impact of manufacturing on energy use, water and resource consumption and, overall, green house gas emissions and carbon footprint are numerous directions of green manufacturing are the discussion point.

Dr Ananta Kumar Das, Professor of Chemical Engineering department, DIATM in his Guest of Honour address he presented and gave a view of thermal power plant water utilisation and how the quality can be maintained. He said that water in power plant is like blood of human body. It is used in all steps of power plant processes like steam generation, cooling purpose even as drinking water. So it is evident that fundamental knowledge in water chemistry is must for all power plant personnel. As water is a universal solvent it dissolves most of salts and gases etc. The water containing salts causes problem of scale formation and corrosion in heating surface and ultimately damages the equipments and efficiency. Acidic and alkaline characteristics of water do havoc while being used in power plant. Hence, power plant personnel need to have fundamental knowledge about water characteristic, controlling of corrosion, scale formation, methods of purification and testing methods of water etc. In this paper the water treatment technologies related to external(pre-treatment), internal treatment(Boiler drum), De-mineralised plant adopted in power plant to control the menace like corrosion and scale formation. Consumption of water can be controlled by way of preventing leakage and hot spots. Good water will give rise the life of equipment and there by reduction of waste.

Mr S. Bera in his Guest of Honour address talked about the present scenario of Automobile Sector in India. He said there is a huge demand of skilled engineers and technicians in the automobile sector. He highlighted the Automotive Mission Plan 2016-26: Salient points of AMP-2026 are

- The Indian Automotive industry to be a top job creator – 65 million additional jobs
- The Indian Automotive industry to be one of the prime movers of Manufacturing sector and “Make in India” initiative
- The Indian Automotive industry aims to increase exports of vehicles by 5 times and components by 7.5 times
- Specific interventions are envisaged to sustain and improve manufacturing competitiveness and to address challenges of environment and safety

Prof H B GOSWAMI, Council Member and Professor, DIATM spoke on solar energy and development of Solar Power Tree – an innovation that uses up minimum land and yet generates maximum energy from the Sun by SPV method. He compared the land use of solar tree and conventional ways. this was innovated in CMERI by scientist Dr S N Maity principal scientist. The conventional method is compared and it was shown that land use in solar tree method is less and helping the environment with a design which is a green technology and engineering. The cost is Rs 3 LAKHS PER KW at present and can be installed easily.

Other speaker is **Mr Koushik Sarkar of Asansol Engineering College** who gave presentation on Wave Energy and explained the topic. He said waves are generated by the wind as it blows across the sea surface. Energy is transferred from the wind to the waves.

Wave energy is sometimes confused with tidal energy which is quite different. Waves travel vast distances across the ocean at great speed. The longer and stronger the wind blows over the sea surface, the higher, longer, faster and more powerful the sea is. He told that the characteristics are that it is constantly generated and do not depleted. It can be harnessed close to the shore. It is estimated that 0.2% of ocean untapped energy provide power sufficient for the entire world. He explained the technology and linear generator associated with it. He concluded by saying that wave energy technology is currently at the same stage as that of wind energy technology. Increasing fossil fuel prices will drive the growth of wave energy. Wave energy is continuous, predictable and immense source of energy compared to other source of renewable energy wave energy technology is expected to become competitive by 2025 with projected technology improvement with cost reduction.

Other speakers were Mr S Dey, AGM, SAIL, DSP & Prof P Dutta, DIATM. They discussed about the present design and manufacturing in the consideration of Green Technology.

The program ended with a lively discussion on the issues raised by the eminent speakers. Mr. M N Bandyopadhyay, Honorary Secretary, Durgapur Local Centre delivered the Vote of thanks & expressed his hope that such seminars would be organized on a regular basis & ensure the participation of greater numbers of members in such events.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One day Seminar on 'Next Generation Cooperative Networking System'	
Activity under Divisional Board:		CPDB	
Date:	13 th April 2017	Venue:	Albert Einstein Hall, Dr. B. C. Roy Engineering College



Sitting (l to r): Mr R K Roy, Prof (Dr) Amitava Sinha, Prof H B Goswami, Prof (Dr) Subrata Nandi, Prof R K Samanta & Mr M N Bandyopadhyay



Prof (Dr) Amitava Sinha delivering his address

The seminar was started with the welcome address from Mr R K Roy Chairman Durgapur Local Centre and he told that the topic on Cooperative Networking has attracted intensive attention from researchers not only in academia, but also in industry. Inspired by the attractive features and potential benefit of cooperative networking, industry has made significant efforts on the implementation of cooperative networks.

Inaugural session the dignitaries on the dais were: Prof (Dr) Subrata Nandi, Computer Sc. & Engineering NIT Durgapur, Chief Guest, Prof (Dr) Amitava Sinha, Principal, Dr B C Roy Engineering College, Guest of Honour, Prof R K Samanta, Dr B C Roy Engineering College, Guest of Honour. Mr R K Roy, Chairman, Durgapur Local Centre, Prof H B Goswami, Council Member, IEL and Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre.

Chief Guest, Dr. Subrata Nandi presented the topic on 'Intelligent Transportation System in Developing Regions: Issues and Challenges'. In his presentation he talked about some of the criticalities that are commonly observed in Indian road scenarios: the rash driving of the vehicles, and the chaotic behaviour of public transport services. In order to gauge the 'chaoticity' of the transport, automatic Identification of Public Bus Stops and characterising the waiting time of public buses is of significance in the domain of Intelligent Transportation System and public interest. Surveys suggest that the existing systems and algorithms cannot be merely replicated in the context of developing regions, because of the kind of heterogeneity and chaotic situation prevalent in their transport system, in contrast to the orderly and much regulated system of the developed world. Moreover, a significant fraction of population residing here is not so tech-savvy, hence crowd-sourced based strategies renders useless. Either novel algorithms/techniques are required or the existing ones have to undergo suitable adaptation and innovation to suit the contrasting characteristics of developing regions. Using customized hardware, we present the stoppage pattern analysis of public bus GPS traces of more than 2000 km for a 20 km route of Durgapur, a suburban city (West Bengal, India). We have revealed that 53.03% of the travel time for the selected route has higher predictability with Standard deviation of 30.73%.

Another critical issue in this connection is rash driving of the vehicles. Rash driving is one of the primary reasons for road fatalities. However, the existing literature seldom talks about precise quantitative measures to assess behaviours like rash driving during traffic analytics. Moreover, the subjective factors like broken road patches, high peak bumps (or some time known as speed breakers in some countries), poor night illumination etc. have not been taken into consideration in the existing driver rating systems. This paper develops a methodology for fair and effective driver rating using a dynamic time warp (DTW) method, based on their behavioural observations as captured by smart phone sensors (GPS, accelerometer, light sensor etc.). The value of the correlation of coefficient between the system rating and a manual rating is found to be more than 70% for our proposed system, Safe Drive, when tested extensively for bumps along a 7 km city road patch. The system can be extended to provide a comprehensive driving score by including other road features like pot holes, sharp turns etc., in addition to bumps.

Guest of Honour, Prof (Dr.) Amitava Sinha while addressing the gathering, he said that Cooperative system in networks are gaining an increasing interest in information and communications technologies since such networks can improve communication capability and provide a fertile environment for the development of context-aware services. Cooperative communications and networking represent a new paradigm which involves both transmission and distributed processing, promising significant increase of capacity and diversity gain in wireless networks. Over the last few years, fundamental research has demonstrated the great potential of cooperative wireless networking in increasing system capacity and enlarging the coverage area as well as enhancing quality of service (QoS) by taking advantage of cooperative diversity and multiplexing. Consequently, cooperative wireless networking has become one of the widely recognized features for future wireless communication systems.

Dr. R. K. Samanta, Guest of Honour presented topic Wireless Network: Today & Tomorrow. In his presentation he talked about the demand of high quality services through convenient personal communication systems (PCS) has fueled dimensional research and development in wireless communication and networking. As a result, different wireless technologies like WLL, Wireless LAN (WLAN), CDMA, GSM, UMTS, LTE, GPRS, WSN, MANET, Bluetooth and satellite networks have emerged in the last two decades. Future networks need IP convergence, portability and scalability among the existing networking technologies, seamless roaming, secured high quality services with real-time multimedia traffic without changing the core part of the existing communication networks. To fulfill these goals, the present networking systems are required to work in cooperation to ensure technology independence, high mobility, seamless roaming, high security and authentication, faster data rate, guaranteed Quality of Services (QoS) to mobile users.

Guest speaker Dr. C. Koner, Member Computer Engineering Division of Durgapur Local Centre delivered his valuable speech on the subject. He said that the 3G mobile communication system has been developed to speed up the data communication. The influence of the Internet and IP technology has extended to enlighten the cellular area in high speed data transmission. Data rates reach upto 2 Mbps or more for 3G mobile communications, opening opportunities for extensive wireless multimedia services. 4G mobile system is a hybrid network which envisaged encompassing a multitude of wireless networking technologies which include Ad-hoc network, Mobile (3G and 2G systems) network, Wireless Local Area Network and Satellite radio networks. These wireless networks are interconnected by IP backbone network. So 4G mobile network is moving towards for adopting packet switching technology to meet its promised performance and throughput.

Guest speaker Prof. Dinesh Pradhan explained the following:

Wireless sensor network has various applications in both military and civilian sectors. But they

are susceptible to security attacks once deployed as the nodes are unattended and unprotected. Due to limited battery and memory constraints, conventional security solutions are infeasible. There are many security threats to a WSN among which Selective forwarding attack is very dangerous and can easily degrade network performance. In this type of attack the culprit selectively drops a packet sometimes while transmitting at other times. Thus it is very difficult to detect as packet loss may also be due to unreliable wireless communication. So defensive mechanism against selective forwarding attack is very crucial which is obtained based on secure hash algorithm.

Mr M N Bandyopadhyay, Honorary Secretary Durgapur Local Centre gave a vote of thanks after an interesting question and answer session. He also thanked those for opening students' Chapter of Computer Science and Engineering department at B C Roy Engineering College and the seminar was ended with a note of recognition to those who organized the seminar.

Name of Centre:		The Institution of Engineers (India), Durgapur Local Centre	
Title of Activity:		Lecture Meeting on Thermal Power Plants of DVC	
Activity under Divisional Board:		ELDB & MCDB	
Date:	09/05/2017	Venue:	Seminar Hall, Durgapur Steel Thermal Power Station, DVC, Andal



Dr D V Rajan, Superintending Engineer, DSTPS, DVC delivering his presentation



A View of Audience

The Institution of Engineers (India), Technicians' Chapter of Durgapur Local Centre organized a lecture Meeting on Thermal Power Plants of DVC which was arranged by the Authority of DSTPS, DVC, Andal on 9th May 2017. Dr D V Rajan, Superintending Engineer, DSTPS, DVC, Andal delivered his lecture vividly on Thermal Power Plant. In his deliberation he highlighted the working of power plant and told that the total capacity of DVC at present is 7920 MW and future target is 12000 MW. He also told that DSTPS Andal was inaugurated on 03/08/2007 and was in service commercially on 23/03/2012 (Unit-I), 13/03/2013 (Unit-II) and also he informed that the DSTPS achieved the top most award among all power plants of DVC during the year 2015-16.

Name of Centre:			The Institution of Engineers (India), Durgapur Local Centre
Title of Activity:			Interaction session between the Head of the Project of DSTPS, DVC with the visitors of IEI, Durgapur Local Centre
Activity under Divisional Board:			ELDB & MCDB
Date:	09/05/2017	Venue:	Conference hall, Durgapur Steel Thermal Power Station, DVC, Andal



A view of interaction with the Head of DSTPS, DVC, Andal



A view of visitors of IEI, Durgapur Local Centre

An interaction session during the visit at DSTPS, DVC, Andal, Mr C S Jha, Chief Engineer & Head of Project was held on 9th May 2017 at DSTPS, DVC conference hall.

Mr Jha in his address welcomed all the Student (Technicians' & Sr Technicians') and Corporate members of IEI, Durgapur Local Centre along with the high officials of DSTPS, DVC. In his address he highlighted the present situation and growth of DVC. He also requested to the gathering to expose their views about the positive and negative sides of DVC if any. During the session many members asked various questions about power plants and in that relation Mr M Debdas, Chief Engineer (O & M), DSTP, DVC explained the matters lucidly and satisfied all participants to all of their the queries.

At the end of the session Mr Jha requested Mr S K Ghosh, Dy Chief Engineer (Mechanical), DSTP to guide the members for the site visit.

Name of Centre:		The Institution of Engineers (India), Durgapur Local Centre	
Title of Activity:		Technical Visit at Durgapur Steel Thermal Power Station (DSTPS), DVC	
Activity under Divisional Board:		ELDB & MCDB	
Date:	09/05/2017	Venue:	Durgapur Steel Thermal Power Station, Andal

	
<p>Seen: Mr M Debdas, CE (O & M) along with the members of IEI, Durgapur Local Centre in front of the Main Gate</p>	<p>A view of Power Plant DSTPS, DVC, Andal</p>

The Institution of Engineers (India), Technicians' Chapter of Durgapur Local Centre organized a technical visit at Durgapur Steel Thermal Power Station (DSTPS), DVC, Andal, Burdwan (West) for getting firsthand knowledge of the running Thermal Power Plant. In that visit total 24 (twenty four) members along with Corporate members took part.

Mr Sanjoy Ghosh, Dy Chief Engineer (Mechanical), DSTP, DVC explained the practical operation of Power Plant in the control panel and said the total generating capacity is 1000 MW (2 x 500 MW). After that he requested Mr S Islam, AE (Mechanical), DSTPS, DVC who is also the Member of IEI, to explain the total operation of power plant in site wise. During the visit Mr Islam accompanied with members IEI in different sites e.g. Boiler, Ash handling Plant, CW Pump House, Cooling Tower, Ash recovery system, condenser etc.

The technical visit was a grand success and gave a huge and detailed practical exposure to all the students and members regarding the Electrical & Mechanical engineering subjects and also of other related engineering areas like Chemical and Electronics engineering areas. The advantage of the tour is that Past Hony. Secretary Mr. S Islam, Mechanical Engineer who is presently from a power generation sector (DVC) also accompanied the group and guided the students, members with a vivid technical explanation and the exposure gave a very good practical knowledge to all the students and members of our Institution.

Name of Centre :		Durgapur Local Centre	
Title of Activity:		One day Seminar on 'Alternative source of Energy, its utilization & impact on Environment'	
Activity under Divisional Board		ELDB	
Date:	10/05/2017	Venue:	Seminar Hall, Rahul Foundation



Dr P K Sinha delivering his address and see (l to r) Dr A K Das, Mr R K Roy, Prof B Majumdar, Dr T K Saha & Mr M N Bandyopadhyay



Mr M N Bandyopadhyay delivering his vote of thanks speech

The Inaugural Session started at 10:30 a.m. on May 10, 2017. The dignitaries on the dais were: Prof (Dr) B Majumdar, Professor of Jadavpur University as Chief Guest, Dr P K Sinha, Principal, DIATM as Guest of Honour, Prof (Dr) T K Saha, NIT Durgapur as Guest of Honour, Prof (Dr) A K Das, Professor, DIATM as Guest of Honour. Mr R K Roy as Chairman, IEI, Durgapur Local Centre and Mr. M N Bandyopadhyay as Hony. Secretary, IEI, Durgapur Local Centre.

The seminar started with a welcome address by Chairman, Mr R K Roy. In his address he highlighted the theme of the seminar. He mentioned the impact of present thermal power plant on environment and benefits of renewable energy.

Chief Guest, Prof B Majumdar gave keynote address and power point presentation on Hydro Power and specifically on SHP (Small hydro power). He started with the deliberation of advantages and disadvantages of hydro power plant. He told that this energy is obtained from the fall of the water from a height to a level below which causes the movement of hydraulic or turbine wheels. Hydropower harnesses the power of moving water. He mentioned the advantages which in short are It's a renewable energy, so it's good for the environment. It decreases the effect of greenhouse gases. It controls the risk of floods. Doesn't produce carbon dioxide. It is also High energy yield. It is completely safe for people, animals or property. It doesn't generate heat or emits pollutants. There are some disadvantages but advantages overcome the disadvantages. Some disadvantages are The construction of dams can flood towns and cities. Destruction of nature. Alteration of ecosystems. Also there may be Loss of fertile land. There may be Sediment loss. It also alters the normal development of biological life (animal and plant) of the rivers. Reservoirs generate germs and diseases by stagnation. He further added that recently, SHP or mini hydro plants, more respectful with the environment and beneficial for technological progress, achieving a good performance and a reasonable economic viability. The potential to generate power from small / mini / micro hydro projects up to 25 MW (known as SHP) station capacity has been assessed at around 20,000 MW.6474 potential sites with an aggregate capacity of 19,749 MW have been identified. 1016 small hydro projects with an aggregate capacity of 3970 MW have been set up and 236 projects with an aggregate capacity of 768 MW are under implementation. (Till 31stDecember 2014). MNRE's aim was to install about 7,000 MW

by the end of 12th Five Year Plan (FYP) i.e. 2017. The small hydro projects normally do not encounter the problems associated with large hydro projects such as construction of dams, deforestation and resettlement. The projects have potential to meet power requirements of remote and isolated areas. The plants have long useful life and the generation cost is almost inflation free. The plants help in conserving fossil fuels and are beneficial to environment as they substitute thermal power thereby reducing carbon emissions. These factors make small hydro power as one of the most attractive renewable source of grid quality power generation. Clearances required to set up SHP projects vary from State to State. He discussed the purpose of SHP which may be social sector or commercial sector. He discussed about the water mill & said that it was observed that the traditional Water mills are operating at a very low efficiency of around 15% to 20%. A large number of Water mills have been found in disuse. Under the Water mill programme of the Ministry, new designs of water mills have been developed with efficiency 2 to 3 times that of the traditional Water mills both for mechanical application as well as for generation of electricity. This will improve the productivity of Water mills and supply of electricity to remote localities. This is basically a scheme which is directly benefiting the local people living in the difficult remote and hilly areas of Himalayan & sub Himalayan region of the country. They are the owners of Water mills and fully involved & responsible for running of their Water mill.

Invited speaker & Guest of Honour, Dr T K Saha delivered that the renewable Energy (RE) solves the sustainability problem associated with conventional fuels used for power generation as these sources are non-exhaustible and relatively clean. Further, RE is also an economical off-grid energy solution for remote locations. The 11th Five Year Plan realized the significant role of new and renewable energy to enhance the domestic energy supply options as well as the need to diversify energy sources. The 12th Five Year plan's strategy aims to develop the RE sector through capacity addition in wind power, small hydro power, solar power, and bio-power. Thus the RE space in the country is going to witness a large number of RE projects in coming years. Renewable Energy projects are cleaner energy generation options in comparison to other technologies. The zero dependence on fossil fuels makes it a preferred choice in comparison to non-renewable energy options.

It is evident that the CO₂ emissions from wind and solar power are much lower than that of coal or natural gas based energy generation. Government of India (GoI) has estimated CO₂ emission from power generation based on the projected capacity addition of 75,785 MW during 12th Five Year Plan and 93,400 MW during 13th Five Year Plan. Table 1 represents estimated CO₂ emissions from non-renewable sources. He told that the average CO₂ eq. emission factor reduces by ~0.167 kg/kWh by including renewable energy in the total energy mix of the country. With an anticipated increase in RE at the end of the 13th Five Year plan the emission factor is projected to go down further when compared with 12th Five Year plan numbers. However wind power projects are not completely emission free. RE technologies reduce the amount of GHG produced by substituting the fossil fuels used in producing electricity. However, some GHG emissions are embodied in all renewable technologies. These emissions relate to the energy from fossil sources used in the production and manufacturing of equipments, waste disposal, recycling, etc. However, these life cycle emissions are significantly lower than those coming from conventional sources of power.

Invited speaker, Dr P K Sinha made an illuminating power point presentation. In his address he focused with the statistics of renewable energy. He discussed the current scenario of power sector in India focusing on the growing share of renewable energy. He said that the stage is set that India can now shift to a more focused renewable energy policy. Further, the ministry has already initiated the process of developing solar and non – solar power on a large scale. India has targeted around 20 GW of renewable energy in the 12th Plan. Solar power would be a major contributor in achieving this target. Dr Sinha also discussed the possible areas where there is a need of action. He gave explanation of generation of solar power. He told that Solar panels convert the sun's light into usable solar energy using N-type and P-type semiconductor material. When sunlight is absorbed by these materials, the solar energy knocks electrons loose

from their atoms, allowing the electrons to flow through the material to produce electricity. This process of converting light (photons) to electricity (voltage) is called the photovoltaic (PV) effect. Currently solar panels convert most of the visible light spectrum and about half of the ultraviolet and infrared light spectrum to usable solar energy. Solar energy technologies use the sun's energy and light to provide heat, light, hot water, electricity, and even cooling, for homes, businesses, and industry. Solar cells convert sunlight directly into electricity. Solar cells are often used to power calculators and watches. They are made of semiconducting materials similar to those used in computer chips. When sunlight is absorbed by these materials, the solar energy knocks electrons loose from their atoms, allowing the electrons to flow through the material to produce electricity. This process of converting light (photons) to electricity (voltage) is called the photovoltaic (PV) effect.

Invited speaker Dr A K Das deliberated that it is well known that the energy policies of many regions around the world are focusing on carbon emission reductions. As a result, there has been a significant shift away from fossil fuel dependence and focus on increased levels of renewable sources of electrical energy dominated by solar photovoltaic (PV) and wind technologies (especially where a lack of the majority renewable resource (hydro) is available). The typical arguments against solar PV and wind technologies are predominantly related to issues of cost and integration into the overall power system. The differentiation from classical generation technologies (coal, gas, hydro and nuclear fired technologies) is as a result of their future power output not being controllable and thus deemed to be non-dispatchable resources. Worldwide installed capacity of solar PV capacity is of 2013, 138.8 GW of solar PV capacity was installed worldwide which is dominated by Europe (mostly Germany), Asia Pacific (including China) and the Americas. Installed solar PV capacity worldwide has grown even faster than installed wind capacity with more than 5x as much installed solar PV capacity at the end of 2016 compared to 2003. The IEA predicts solar PV capacity to grow even faster than wind capacity into the future with predictions of 1 700 GW by 2030 (>12x 2013 levels) and 4 670 GW by 2050 (>33x 2013 levels) based on their high-renewable scenario with most of this growth expected to come from China (and other Asian countries), USA, India and the Middle East with Africa growing from a small base in 2016.

He concluded by deliberating that Considering that energy policies of many regions around the world are focusing on carbon emission reductions there has been a significant shift in focus on renewable energy sources. The typical arguments against these technologies of cost and integration are as a result of their future power output not being controllable and thus they are deemed to be non-dispatchable resources. Electrical energy storage can provide value in this regard in a number of applications considering the increased penetration of solar PV and wind.

Invited speaker Dr Sourj Banerjee while giving his address he told although both solar and wind power receive the most media attention as alternative and abundant energy sources, wind has long been seen as the favorite among corporations. Although not cheap to implement, wind power systems historically are less costly than solar power systems, however this trend could be on the brink of changing for good, as it was widely reported in 2016 that solar systems were more economically efficient than wind systems. Within the next decade, solar power is even likely to fall to half the cost of traditional fuel sources. Wind is still largely seen as a more powerful and consistent source of energy, plus the fact that wind turbines emit less carbon dioxide is also a win for wind. But many see solar power leading the charge in the next wave of clean energy for organizations large and small. Additionally, wind turbines are decidedly more controversial than their solar counterparts as they take up significant space and can be seen for miles; solar panels are more unassuming, and thus less disruptive to urban and rural landscapes. Unlike wind turbines, solar power can be sourced from anywhere, including urban areas. As the cost of renewable energy continues to decrease, companies have less of a reason to run from this responsibility. He told that the various benefits of RE (contribution to reducing electricity price volatility and energy imports thereby increasing energy security and positively contributing to

reduction in Current Account Deficit, minimal impacts on the local environment compared to conventional sources and its ability to mitigate Climate Change through reduced green house gas emissions), the GoI has taken a considered view of significantly increasing the uptake of RE from 2015-16 till 2022. The aim is to have an installed capacity of 175 GW by 2022, which implies an ambitious *compound annual growth rate or CAGR* of 25% over the next 7 years. He concluded with deliberation that presently, renewable energy accounts for ~12% of India's total installed power generation capacity, and approximately 5% of the total generation. The Government of India aims to reach a renewable energy capacity of 175 GW by 2022. 100 GW of this is planned through solar energy, 60 GW through wind energy, 10 GW through small hydro power, and 5 GW through biomass-based power projects. Of the 100 GW target for solar, 40 GW is expected to be achieved through deployment of decentralized rooftop projects, 40 GW through utility-scale solar plants, and 20 GW through ultra-mega solar parks. Considering these targets, renewable (solar, wind and hydro) will account for ~10% of the total energy mix, by 2022 (IESS 2047).

- **Prof H B Goswami, Council Member, ELDB** presented the environment impact of solar and wind power. He told that research results demonstrate that the wind and solar power are superior to fossil fuel based power in terms of reducing greenhouse gas emission, when viewed over the entire life cycle of the technology. As India's energy demand grows, an increase in RE deployment in the overall energy mix of the country can reduce CO₂ emissions at the national level in the long run.
- The following paras are summarize the environmental and socio-economic impacts associated with operational activity that may cause an impact on the environmental and social attribute; the actual impact; the law, act or policy that is used/can be used to manage the issue. Impacts have been analyzed at the site level for environmental and social attributes of air, noise, water, biodiversity, human health and safety, community and land
 - 1) Some problems with wind power generation
 - Wind farm operations do not result in air pollution.
 - Noise pollution was not reported by local residents for any of the projects
 - Movement of blades and supporting infrastructure noise is negligible
 - Tree felling for site clearing and approach road construction
 - Disruption to movement of birds/bats
 - Disruption to birds movements can be of high if the wind farms are on the movement corridor of such species
 - 2) Solar farms
 - Solar farms operations do not result in noise pollution
 - Use of water during operations to clean solar panels.
 - Unscientific disposal of transformer oil and batteries used during operations
 - Some tree felling to clear site may occur
 - Solar projects are land intensive, requiring 5-7 acres of land per MW12

As is evident from above, the environment and social impacts of the wind and solar farms are negligible if the projects are not developed in ecologically sensitive zones.

Biodiversity impacts of both wind and solar projects are either very low or negligible. It is for these reasons that the clearances required for RE projects are not stringent. As long as the projects are developed on wasteland or agriculture land, they don't have significant biodiversity effects or long term irreversible impact on the local environment.

He concluded with the points which are The country has taken aggressive stance and has plans to derive 15% of the power from RE sources by 2020 (this is three times the activities planned by MNRE in 2008). In order to meet the country level targets, RE projects will need special encouragement. The support is also encouraged due to the low green house gas (GHG) footprint of RE projects.

Since RE technologies have relatively (compared to other energy options) lower ecological

footprint hence such projects should not be treated at par with conventional infrastructure projects. Further backing from the state and central government in forms of tailored subsidy support and quick project clearance will encourage investments in RE sector.

The program ended with a lively discussion and Mr M N Bandyopadhyaya, Hony. Secretary, Durgapur Local Centre offered the formal vote of thanks. He also summarized the deliberations given by the eminent speakers and gave his own comments.

Name of Centre:		Durgapur Local Centre	
Title of Activity:		National Technology Day	
Activity under Divisional Board:		ETDB	
Date:	11/05/2017	Venue:	Visvesvaraya Auditorium, Durgapur Local Centre

	
<p>Prof H B Goswami delivering his address to the audience and sitting (l to r): Mr R K Roy, Mr M N Bandyopadhyay, Mr P Shaw and Dr. C Samajdar</p>	<p>Mr P Shaw delivering his presentation</p>

National Technology Day celebrated with a befitting manner in the Institution of Engineers (India), Durgapur Local Centre. The inaugural session was presided over by Mr R K Roy, Chairman of the Centre. Mr M N Bandyopadhyay, Hony. Secretary presented an introductory address. The programme was graced by Mr P Shaw, Dy General Manager (CHRD), SAIL, DSP as Keynote speaker and Guest of Honour and Dr C Samajdar, Dy. General Manager (PR), SAIL, DSP as Guest of Honour.

Before starting the main programme few short films were shown e.g. (i) Bazpayee visits in Nuclear Test Zone, (ii) How Powerful are Indian Nuclear Weapons & (iii) DRDO Achievements in 2016 _ A look back at a year in Indian.

At the outset, Mr M N Bandyopadhyay, Hony. Secretary of Durgapur Local Centre in his introductory address he highlighted that the National Technology Day is a very special day for Indian Technology since 1999. It is so significant because India achieved a huge technological advancement on the day. The first, indigenous aircraft "Hansa-3" was test flown at Bangalore on this day. Not only this, India also performed successful test firing of the Trishul missile on the same day. India also executed three successful nuclear tests, carried out at Pokhran, in Rajasthan May 11.

Mr R K Roy, Chairman of Durgapur Local Centre welcomed the guests and audience. He briefed about the significance of the day and said Every year, 'National Technology Day' is observed across India on May 11. This day glorifies the importance of science in day-to-day life and motivates students to adopt science as a career option. National Technology Day is being commemorated to celebrate the anniversary of first of the five tests of Operation Shakti (Pokhran-II) nuclear test which was held on 11 May 1998 in Pokhran, Rajasthan. Apart from Pokhran nuclear test, on this day first indigenous aircraft Hansa-3 was test flown at Bangalore and India also conducted successful test firing of the Trishul missile on the same day. Considering all these achievements 11 May was chosen to be commemorated as National Technology Day. To commemorate this day, Technology Development Board (TDB) has instituted a National Award. This award is conferred on to various individuals and industries.

Guest of Honour, Mr P Shaw in his presentation he talked on Innovation and creativity and

its importance for technology development in India. He explained the term innovation and told that bringing a new idea to life, increased customer value are associated with the explanation of the term innovation. He gave example of steam engine of 1712 and development in subsequent years. He gave examples of innovation and transformation of wheels and tyres, nails, compass, press, aeroplane, engine for car, peniciline, type writer, vacuum tube which are the products of innovation but over the years further innovation virtually abandoned them and a new one substituted them. For example type writer and vacuum tube which are obsolete now. He discussed 4 classes of problem solving which are exploitation, exploration class 2 and 3 and exploration class 4. He discussed about strategic innovation which is summation of idea, customer value and strategic fit. He concluded with the presentation of innovation in bank a/c and customer, mobile and car. Every now and then there is a huge development and obsolete is quicker than thought of human. He mentioned further development of 760km/hr train and coffee power (power generated from waste) and concluded.

Guest of Honour, Dr C Samajdar told that first nuclear test was at Pokhran in 1974 named as Smiling Buddha successful nuclear bomb test on 18 May 1974. The bomb was detonated on the army base, Pokhran Test Range (PTR), in Rajasthan by the Indian Army under the supervision of several key Indian generals. Pokhran-I was also the first confirmed nuclear weapons test by a nation outside the five permanent members of the United Nations Security Council. Officially, the Indian Ministry of External Affairs (MEA) claimed this test was a "peaceful nuclear explosion" and after that India progressed with the technology innovation and pokhran –II India on May 11. This day glorifies the importance of science in day-to-day life and motivates students to adopt science as a career option. National Technology Day is being commemorated to celebrate the anniversary of first of the five tests of Operation Shakti (Pokhran-II) nuclear test which was held on 11 May 1998 in Pokhran, Rajasthan. He concluded with by saying that creation with new idea is the base of technology and engineering in our country progressed due to the talent of young stars in different field. The make in India is the main force behind recent space missions and electronics area.

At the end Hony. Secretary, Mr M N Bandyopadhyay offered a vote of thanks to all.

Name of Centre:			Durgapur Local Centre
Title of Activity:			World Telecommunication and Information Society Day
Activity under Divisional Board			ETDB
Date:	17/05/2017	Venue:	IEI, Durgapur Local Centre



Mr R K Roy delivering his welcome address and seen (l to r): Mr Swarup Das, Prof (Dr) Amitabha Sinha, Dr Subrata Nandi, Mr Diganta Sarkar and Mr M N Bandyopadhyay

Prof (Dr) Amitabha Sinha delivering his address and sitting (l to r): Mr R K Roy, Dr Subrata Nandi, Mr Diganta Sarkar and Mr M N Bandyopadhyay

The Institution of Engineers (India), Durgapur Local Centre observed World Telecommunication and Information Society Day on 17th May, 2017 evening at their Visvesvaraya Auditorium. The dignitaries on the dais were: Prof (Dr) Amitabha Sinha, Principal, Dr B C Roy Engineering College, Durgapur as Chief Guest, Prof (Dr) Subrata Nandi, Computer Sc. & Engineering Department, NIT Durgapur as Guest of Honour, Mr Swarup Das, Founder Director, 4 Loops Solutions and presently Vice President (Technology) Ensium as Guest of Honour, Mr Diganta Sarkar, SED, NEB, BSNL Durgapur as Guest of Honour & Mr T K Dutta, Former DGM, SAIL, RDCIS as Guest Speaker. Mr R K Roy as Chairman, IEI, Durgapur Local Centre and Mr. M N Bandyopadhyay as Hony. Secretary, IEI, Durgapur Local Centre.

Before starting the main programme few short films were shown e.g. (i) History of ITU, (ii) Big data will change our world, (iii) How Big data making big impacts & (iv) Explaining big data.

Mr R K Roy, Chairman, Durgapur Local Centre welcomed the gathering and briefed the significance of the celebration and touched upon the history and development of World Telecommunication Union. He said that the 17 May marks the anniversary of the signing of the first International Telegraph Convention and the creation of the International Telecommunication Union. World Telecommunication Day has been celebrated annually on 17 May since 1969, marking the founding of ITU and the signing of the first International Telegraph Convention in 1865. It was instituted by the Plenipotentiary Conference in Malaga-Torremolinos in 1973. This year the theme for 2017 is "Big Data for Big Impact," which will explore the power of big data for development and examine the opportunities to convert unprecedented quantities of data into information that can drive development.

At the outset, Mr M N Bandyopadhyay, Honorary Secretary of Durgapur Local Centre in his introductory address briefed about the day and said the purpose of **World**

Telecommunication and Information Society Day (WTISD) is to help raise awareness of the possibilities that the use of the Internet and other information and communication technologies (ICT) can bring to societies and economies, as well as of ways to bridge the digital divide. The theme for WTISD-17, "Big Data for Big Impact," focuses on the power of Big Data for development and aims to explore how to turn imperfect, complex, often unstructured data into actionable information in a development context.

The Chief Guest, Dr Amitabha Sinha in his address he talked on the Challenges and Opportunities. He told that it's easy to get caught up in the hype and opportunity of big data. However, one of the reasons big data is so underutilized is because big data and big data technologies also present many challenges. One survey found that many big data projects are never completed. This finding was repeated in a second survey that found the majority of on-premises big data projects aren't successful. While Hadoop and the surrounding ecosystem of tools are lauded for its ability to handle massive volumes of structured and unstructured data, the software isn't easy to manage or use. Since the technology is relatively new, many data professionals aren't familiar with how to manage Hadoop. Add to that the fact that Hadoop frequently requires extensive internal resources to maintain, and many companies are left devoting most of their resources to the technology rather than to the actual big data problem they are trying to solve He concluded with the cost aspects and ended with the opportunities While the number of big data challenges can be overwhelming, it also presents an opportunity. Those businesses who are able to identify the right infrastructure for their big data project and follow best practices for implementation will see a significant competitive advantage. Entrepreneurs have also capitalized on big data technology to create new products and services.

In his presentation, Dr Subrata Nandi highlighted some application & challenges. He explained the concept of big data and topics of big data analytics covered were disaster, transportation and environment. He explained data with 4V (Data at rest, Data in motion, Data in many forms, Data in doubt).He told that by the end of 2020 the digital universe will reach 44 zettabytes (One zettabyte is approximately equal to a thousand exabytes or a billion terabytes) i.e. 10 fold increase from 2013 as data volume is increasing exponentially. He further added that 6 million people use digital media that generates about 2.5 quintillion (10¹⁸) bytes/day. He explained all the features and explained volume, velocity, variety and veracity and their importance. He gave example of smart phone and told that we are giving our world a digital nervous system. He also deliberated about the surakshIT android application & 4 tier hybrid ad-hoc architecture associated with it He concluded with the AQM (air quality monitoring) and the features of devices and with the results and their analysis for outdoor and indoor air quality.

Mr Swarup Das in his presentation he explained that the hype is because of its enormous potential, many companies in USA has spent billions of \$s, technology is still maturing; data collection points are not well established yet. He told that new jobs are now created and they are Data Scientists. The new emerging job role, expected to grow in demand many folds. They're part mathematician, part computer scientist and part trend-spotter. The job is not a new one, it existed before called data-analysts. The scale of Big Data has added a new dimension to it..Programmers and testers. Need to know new technologies such as NOSQL, Hadoop. Data Analysts & traditional data scientists working on lower volume of data. He told that Indian Education System is 20 years behind the IT industry & still teaching only Java which was invented in 1995 .It is possible to run crash courses with Industry Experts &more advanced programming frameworks like Cloud technologies Hadoop, NOSQL etc and concluded.

In his presentation, Mr Diganta Sarkar deliberated the topic and said every 2 days BSNL create as much information as we did from the beginning of time until 2003.He told that It is

expected that by 2020 the amount of digital information in existence will have grown from 3.2 zettabytes today to 40 zettabytes. The total amount of data being captured and stored by industry doubles every 1.2 years. He told that every minute BSNL send 204 million emails generate 1.8 million Face book likes, send 278 thousand Tweets, and up-load 200,000 photos to Facebook. Around 100 hours of video are uploaded to YouTube every minute and it would take you around 15 years to watch every video uploaded by users in one day. He further told that The traditional system database can store only small amount of data ranging from gigabytes to terabytes. However, big data helps to store and process large amount of data which consists of hundreds of terabytes of data or petabytes of data and beyond. The storage of massive amount of data would reduce the overall cost for storing data and help in providing business intelligence He told the role of BSNL which is Has Very Stable Backbone which is MPLS enabled.6 IGWs (Kolkata , Chennai , Bangalore, Noida , Bombay, Agartala. Most of the core links have been given protection via Railtel or Power grid OFC link & more penetration up to rural area with proper infrastructure. He told how BSNL is equipped which are GPRS Upgraded to EDGE ,3G WCDMA introduced, BTS converted to Node B and BSC converted to RNC, Bandwidth between NODE B and RNC is increased, HSDPA Technique used for 3G H+ ,GPRS Upgraded to EDGE,3G WCDMA introduced, BTS converted to Node B and BSC converted to RNC, Bandwidth between NODE B and RNC is increased & HSDPA Technique used for 3G H+.He concluded by adding that The infra related process is going on, Urban area is ready. Some modification is required for rural area, MNG-PAN architecture will be implemented shortly for higher volume of traffic. Existing TDM switches will be replaced phase wise by NGN switches, NGN switches can handle voice and data simultaneously, No need for different access equipment for Broadband services and GOI has started project NOFN Joint venture of BSNL, RAILTAIL & Power Grid & BSNL.

Mr T K Dutta in his presentation he talked on 'Human behaviour and interactions'. He said that Big Data is everywhere. Lots of data is being collected and warehoused every day, every moment like web data, e-commerce data, purchases at department/ grocery stores data, Bank/Credit Card transactions data, social network data etc. There are Three "V"s which clarify the idea about Bid data. These are Volume, Velocity and Variety. Gartner, Inc. states that Big data is high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making. Volume: Each day around 2 -3 trillion gigabytes of new data are being generated /created. Velocity: The speed of data and its processing speed (producing near or real time results) and Variety: The different types of data, structured, as well as, unstructured. Gartner, Inc. is an American research and advisory firm providing information technology related insight for IT and other business leaders located across the world. A decade ago, big data was measured in terabytes (or 1,000 to the fourth power in the International System of Units). Today the measure has reached Petabytes. Analysis of these huge data will provide insight into the world we live in and will help to improve it. Today's organizations are utilizing, sharing and storing more information in varying formats like e-mail and Instant Messaging, public websites, wikis, and blogs, Social media sites, data from industrial sensors, wearables and other monitoring devices installed in automation sectors. Regardless of the size of the business or the industry we are in, we have Big Data. The ability to extract high value from this data to enable innovation and competitive gain is the purpose of Big Data analytics. He concluded with the explanation that today's Big Data solutions accomplish in seconds, providing organizations the opportunity to respond to challenges better and faster than at any time in the past. In-depth analysis and utilization of big data will play an important role in promoting sustained economic growth of countries and enhance the competitiveness of companies.

Mr M N Bandyopadhyay, Honorary Secretary proposed the vote of thanks after an interesting question and answer session.

Name of Centre:		Durgapur Local Centre	
Title of Activity:		World Environment Day and one day seminar on 'Connection People to Nature'	
Activity under Divisional Board:		ENDB	
Date:	11/06/2017	Venue:	Visvesvaraya Auditorium, Durgapur Local Centre, IEI



Dr Goutam Sarker and seen (l to r): Mr R K Roy, Mr M K Mondal, Mr T S Reddy, Dr Susmita Dutta and Mr M N Bandyopadhyay

Mr T S Reddy delivering his Chief Guest Address and sitting (l to r) Mr R K Roy, Mr M K Mondal, Dr Susmita Dutta and Mr M N Bandyopadhyay

The Institution of Engineers (India), Durgapur Local Centre observed World Environment day on 11th June 2017 at their Visvesvaraya Auditorium with a one day seminar on 'Connecting People to Nature'. The dignitaries on the dais were: Mr T S Reddy, General Manager, ISP-DSP Plant Centre, SAIL, RDCIS as Chief Guest, Mr M K Mondal, DFO, Durgapur Division as Guest of Honour and Prof (Dr) Susmita Dutta, Chemical Engineering department, NIT, Durgapur as Guest of Honour. Mr R K Roy as Chairman, IEI, Durgapur Local Centre and Mr. M N Bandyopadhyay as Hony. Secretary, IEI, Durgapur Local Centre.

The programme started with screening Short Documentary films on 'Climate Change Effects on People and the Environment' & 'Environmental pollution Animation'.

Mr. M N Bandyopadhyay, Honorary Secretary in his introductory address said that the World Environment Day (WED) occurs on 5 June every year, is the United Nation's principal vehicle for encouraging worldwide awareness and action for the protection of our environment. First held in 1974, it has been a flagship campaign for raising awareness on emerging environmental issues from marine pollution and global warming, to sustainable consumption and wildlife crime. WED has grown to become a global platform for public outreach, with participation from over 143 countries annually. Each year, WED has a new theme that major corporations, NGOs, communities, governments and celebrities worldwide adopt to advocate environmental causes. This year's theme of world environment day celebration is 'Connecting People to Nature', the theme for World Environment Day 2017, implores us to get outdoors and into nature, to appreciate its beauty and its importance, and to take forward the call to protect the Earth that we share.

At the outset Mr R K Roy, Chairman welcomed the guests and members and he explained the theme 'Connecting People to Nature'. In his address he highlighted that the Each World Environment Day is organized around a theme that focuses attention on a particularly pressing environmental concern. The theme for 2017, 'Connecting People to Nature', urges

us to get outdoors and into nature, to appreciate its beauty and to think about how we are part of nature and how intimately we depend on it. It challenges us to find fun and exciting ways to experience and cherish this vital relationship.

He also said that the billions of rural people around the world spend every working day 'connected to nature' and appreciate full well their dependence on natural water supplies and how nature provides their livelihoods in the form of fertile soil. They are among the first to suffer when ecosystems are threatened, whether by pollution, climate change or over-exploitation. Nature's gifts are often hard to value in monetary terms. Like clean air, they are often taken for granted, at least until they become scarce. However, economists are developing ways to measure the multi-trillion-dollar worth of many so-called 'ecosystem services', from insects pollinating fruit trees to the leisure, health and spiritual benefits of a hike up a valley.

Chief Guest, Mr. T S Reddy in his address said that any reduction in energy consumption leads to reduction in GHG emissions (CO₂). Reduction in CO₂ emissions leads to cleaner environment, which is part of sustainable development. Some of the key innovations at R&D which have helped to reduce CO₂ emissions are being discussed here. The key innovations are: Curtain Flame Ignition Technology, BF gas burners for Boilers and WHRS at Sinter Plant.

Curtain Flame Ignition Technology: Conventional Furnaces are longer furnace wherein Roof height is more. Heat transfer mainly through radiation. High temperature zone resides near burner mouth and Heat consumption is high. Innovative idea of Curtain Flame Ignition System introduced. In the new system, Flame is in the shape of Curtain with short and intense flame touching the top of the bed. Ignition of top layer is being done by convective heat transfer instead of by largely radiation. The purpose is to ignite top layer. Installed in thirteen sinter machines in SAIL.

BF gas burner in Boilers at Power Plant-1 of Bhilai Steel Plant (BSP): Power Plant-1 at BSP was equipped with 6 nos. of boilers. Fuels used are: COG, Coal, BFG, and PCM. BSP faced difficulties in identifying suppliers for BFG burners for boiler #6. Project was initiated for BF gas based combustion system in boiler #6. Later on, replaced exiting BFG burners with RDCIS design in remaining 5 boilers. Surplus BF gas was utilized to replace pulverized coal. 6 nos. BF Gas burners of 10,000 Nm³/hr installed and modifications of water tubes were carried out to accommodate BFG burners. Benefits accrued are Burner generate stable flame from burner, BF gas utilization: 50,000-60,000 Nm³/hr and Pulverised coal replaced with surplus BF gas leading to reduction in ash generation by 15,000 t/year and Reduction in CO₂ emissions by 1,00,000 t/year.

Waste Heat Recovery in Sinter Plants: This project led to improvement in productivity by 2.7% (1.388 from 1.351 t/m²/h), Hot water addition in mixing drum for the first time in India, reduction in coke breeze consumption & fixed carbon in return sinter and better life of conveyor and waste heat recovery to the tune of 1.5 to 2 G Cal/hour.

Guest of Honour, Mr M K Mondal in his address highlighted that 'Billions of rural people around the world spend every working day 'connected to nature' and appreciate full well their dependence on natural water supplies and how nature provides their livelihoods in the form of fertile soil. They are among the first to suffer when ecosystems are threatened, whether by pollution, climate change or over-exploitation.

'Nature's gifts are often hard to value in monetary terms. Like clean air, they are often taken for granted, at least until they become scarce. However, economists are developing ways to measure the multi-trillion-dollar worth of many so-called 'ecosystem services', from insects pollinating fruit trees in the orchards of California to the leisure, health and spiritual benefits of a hike up a Himalayan valley.'

Guest of Honour, Dr. Susmita Dutta gave a presentation on 'CO₂ Sequestration with Special Emphasis on Phycosequestration : A Way to Mitigate Global Warming'

She explained Greenhouse effect, Effects of Global Warming Caused by Greenhouse Effect, Global Scenario of Greenhouse gases, Emissions of CO₂ –A green house gas from burning fossil fuels and industrial processes, Greenhouse gas Emissions from Key Industrial Sub-sectors in Million Metric Tons (MMT) of CO₂, Profile of worldwide large CO₂ stationary sources emitting more than 0.1 Mt CO₂ per year, Toxicology of CO₂, Symptoms related to acute CO₂ exposure, Adverse effects of CO₂, Effects of high atmospheric CO₂ on the environment, International response to climate change and CO₂ emission, Indian policies to reduce CO₂ emissions, Carbon sequestration which is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide, their types, which are oceanic, terrestrial and geologic. She explained Algae for CO₂ sequestration vis-à-vis Phycosequestration, Mechanism of CO₂ sequestration by Microalgae, advantages of using algae for CO₂ sequestration, effects of microalgae species on biomass production, major parameters and effect of carbon dioxide concentration. She concluded by giving details of various types of photo bio reactors and Microalgae cultivation techniques.

Other speakers were Dr G Sarker, Prof NIT Durgapur and Sri Atanu Kumar Mukherjee, Chairman, MRDB.

There was a lively question and answer session with active participation from the members.

Mr. M N Bandyopadhyay, Hony. Secretary offered the vote of thanks marking the end of a successful event celebrating the World Environment Day 2017 and seminar on 'Connecting People to Nature'.

Name of Centre:		Durgapur Local Centre	
Title of Activity:		All India seminar on 'Damage Assessment and Advanced NDE Techniques for Industrial Applications'	
Activity under Divisional Board:		MMDB	
Date:	15-16 July, 2017	Venue:	Visvesvaraya Auditorium, Durgapur Local Centre, IEI



Prof H B Goswami, Council Member delivering his address and seen (l to r) Mr R K Roy, Mr A K Saxena, Dr Anit Ganguly, Dr N R Bandyopadhyay, Dr P C Chakraborty and Mr M N Bandyopadhyay



Lighting of Lamp by the dignitaries

Durgapur Local Center of The Institution of Engineers (India) organized the All India Seminar on 'Damage Assessment and Advanced NDE Techniques for Industrial Applications' during July 15-16, 2017 under the aegis of MMDB. Before starting the inaugural session two short films were screened (i) In The Materials Lab, Non-Destructive Testing - Network Rail engineering education & (ii) Non-destructive testing (NDT) at TWI.

Day-1: July 15, 2017

Inaugural program and keynote address:

In augural session the dignitaries on the dais were: A K Saxena, Council Member, IEI, Guest of Honour, Dr A. Ganguly, Professor Steel Chair, NIT, Durgapur, Chief Guest, Dr N R Bandyopadhyay, Council Member, IEI, Guest of Honour, Dr P C Chakraborty, HOD, Metallurgical and Material Engineering, Jadavpur University, Guest of Honour. Mr R K Roy, Chairman, Durgapur Local Centre and Mr M N Bandyopadhyay, Hony. Secretary, Durgapur Local Centre.

The Inaugural Session of the Seminar was presided over by Chairman, Durgapur Local Centre, Mr R K Roy. At the outset he welcomed the Chief Guest and other dignitaries, invited speakers, paper presenter, members & delegates and further briefed the theme of the seminar punctuated with his experience highlighting some case studies.

The Chief Guest and keynote speaker, Dr Amit Ganguly, Ministry of Steel Chair professor NIT Durgapur, in his address spoke about the advances in Science & Technology and concurrently in analytical techniques to evaluate properties of materials/ components/ systems without causing damage. He added that NDT/NDI/NDE is a subject of interdisciplinary interest.

He briefly explained the various methods of NDT which are in use and in a fast changing world of technological challenges and stated that the plants need to sustain uninterrupted operation & eliminate unplanned outages. He explained that utilizing NDE to ensure quality

without harming health of the system/components is a cost - effective step towards: in-service inspection and condition monitoring. His presentation continued with the explanation advanced techniques include : phased array ultrasonic testing (paut), infrared thermography, ultrasonic time of flight diffraction technique (TOFD), remote visual inspection (RVI), robotics, holography, shearography, others.

On reliability aspects he told comparison of NDT methods is significant only if we are referring to the same task. Each method has its own set of advantages /disadvantages and hence some are better or worse suited to a particular application and accordingly reliability needs to be judged. He told that efficiency of NDT depends heavily on personnel training, experience, qualification and integrity. He explained that human skill and knowledge in interpreting data (findings) and capability to ensure flawless application of the system would mean a lot in exploiting the expensive provisions & thus an adequately certified person needs to be in position , for example as developed by the European union as EN 473.

He concluded with the saying analysing and documenting non-destructive failure mode can also be accomplished by high speed camera, recording continuously until the failure is detected. The captured images can be played back in slow motion. Thus we observed briefly the stupendous efforts in action worldwide for a very interesting world of eliminating hazards/economic losses, without performing on the body (non-invasive).

During the inauguration theme address was delivered by Prof (Dr) N R Bandyopadhyay, IEST, Shibpur, the Guest of Honour & Member MMDB, IEI.

He stated that the premature failure of the industrial components before its designed and/or useful life due to in-service damage is a widespread occurrence. The phenomenon like creep, fatigue, oxidation and erosion are the cause damages of the materials to the significant extent. In-service assessment of the damage state in a component as well as the characterization of micro damage in the form of degradation of microstructure and the macro damage in the form of physical flaws are absolutely necessary for ensuring safe operation, prediction the remaining life and implementation of the life extension program.

Nondestructive testing and evaluation (both conventional and advanced) techniques is the major tool for such damage assessment and characterization of the damage to ensure the structural integrity of the engineering components in the industries.

Poignant upon the history of Non-Destructive Testing & Evaluation techniques, which although does not provide a precise starting date for non-destructive testing, its use dates back many, many years. It is said that that flour and oil were used during Roman times to find cracks in marble slabs. For centuries, blacksmiths used sonic NDT when listening to the ring of different metals as they were being hammered into shape; the same technique also used by early bell makers.

We are currently at the early but secure and irreversible stages of a remarkable and far reaching technological revolution. The new insight has permeated traditional and conventional technology leading to marked improvement in materials testing and characterization techniques. Moreover the transformation underway have spawned proliferating clusters of high performance, knowledge based new and advanced technologies. As such the science and technology of Nondestructive testing & Evaluation is presently a broad field that covers variety of testing methods and applications. In terms of methods and techniques the Nondestructive testing modalities rely on different physical phenomena such as the electromagnetism, the acoustic emission, the thermal emission and the penetration of high-energy radiation through materials and structures. This diversity in the Nondestructive testing tools is only matched by its fields of application, which covers the testing of civil and mechanical structures and components, the online monitoring of manufacturing processes and products, and a wide array of other applications including

remaining life assessment technology, a key ingredient of plant and /or components Life Extension.

During the inauguration **soft copy of the Souvenir also released** by Chief Guest and dignitaries on dais. Souvenir contains many quality papers and abstract.

Day 1: Technical session: I :

Invited lecture was presented by Guest of Honor, **Dr Pravash Chandra Chakraborty**, Head of the Department of Material Engineering Department, Jadavpur University on “Fatigue and creep damage of materials”.

He explained that the failure of engineering components and structures occurs due to various reasons. Among them failure occurring due to fatigue and creep damage is of major concern. While fatigue damage is associated with connected with non-steady application of load, creep damage occurs when the service load is above certain critical temperature. The conjoint action of fatigue and creep is more dangerous than pure fatigue or pure creep damage. Since there are numerous applications, e.g. power plants, petrochemical plants, aero engines, where the components are subjected to fatigue, creep and/or creep-fatigue type loading it is very much important to understand the fatigue, creep or creep-fatigue phenomena for the purpose of appropriate selection of materials and also for structural integrity purpose. Numerous investigations have already been carried out on different materials to understand the fatigue and creep damage phenomena and different life prediction methodologies have evolved.

In Technical session –I there were two more invited lecture.

1st invited lecture and presentation was given by **Mr Suvam Chatterjee from GE Alstom** on Welding Procedure Development for High Strength C-Mn-Si (SA299 Gr.B) Steel through Optimization of Normalizing and PWHT Cycles.

He deliberated on SA299 Gr. B - Manganese Silicon Carbon steel (C:0.21%, Mn:1.47%, Si:0.37%) is one of the candid steel for Steam Drum and Mud Drum Application at Sub Critical Power Plant station. Drum plates are first hot rolled at above upper critical temperature for bending & forming operation. But, this thermal operation distorts the metallurgical and mechanical property of the base metal. A subsequently normalizing (around 910°C, Soaking time: 2hrs 30 mints) operations is carried out to restore the micro structural and mechanical property before start of welding. The drum plates are then welded after proper fit up with backing strip by Shielded Metal Arc Welding (SMAW) process and followed by Submerged Arc Welding (SAW) process. But, the Drum gets distorted due to high residual stress induced by welding process. Re-hot rolling of the Drum plate above upper critical temperature again performed to restore proper shape. Then the base metal and weldment experienced a normalizing cycle (around 910°C, Soaking time: 2hrs 30 mints) which is followed by a post weld heat treatment cycle (around 610°C, Soaking time: 3hrs) to restore the micro structural and mechanical property and to reduce the residual stress. So, the base metal is experiencing two normalizing and one tempering cycle. And the weldment is experiencing one normalizing and one post weld heat treatment cycle. Unavailability of commercial data on this particular steel and effect of subsequent thermal cycle on mechanical and metallurgical property act as a prime mover to initiate this scientific study.

In the first part of this research, a Simulation Study of base metal was carried out where the same thermal cycles (two normalizing and one tempering) were induced to study the mechanical and metallurgical property through mechanical test and micro structural characterization. From this investigation, it is found that force cooling after soaking of

normalizing cycle is produce a more uniform microstructure which is validated through higher tensile strength and impact toughness property of base metal. In the second part of this research, the welding procedure was developed. The weldment was first normalized (around 910°C, Soaking time: 2hrs 30 mints) and then post weld heat treated (around 610°C, Soaking time: 3hrs) .Selection of consumable for procedure development was a major tusk in this study. The philosophy of use higher matching consumables is established here through this research work where weldment experienced one normalizing (910°C) and one sub-critical tempering (or PWHT, at 610°C for 2 hrs 30 mint).

2nd invited lecture was presented by Mr D Sarkar Chief Engineer of Test Metal Corporation Group. He mentioned about case studies on Failure analysis & reusability Study of Pylon Erection Crane of 2nd. Hooghly River Project after overload failure at Howrah end. He continued on reusability study of 120 Km. Grooved Copper Contact Wire of Railway Overhead Electrification System at Baroda-Godra line. He explained the failure analysis, reusability study, repairing procedure preparation & inspection during repair of Boiler Drum of Unit. 18 after 54 Nos. Ligament crack at Mulajore Generating Station, CESC Ltd. Kolkata. He further deliberated on failure analysis & reusability study of Steam Turbine Blades after localized blade failure & failure analysis of Titanium Condenser Tube weld at Al-Hiswa Thermal power plant, Republic of Yemen.

The Technical Session I continued in the post lunch period also when other papers presented by **Mr M K Biswal and Mr Vivek Kavishwar** from Pune on various relevant techniques of Damage Assessments by (papers included in Souvenir).

Day 2: July 16, 2017: Technical Session II

Started with an invited lecture and four contributory papers presentation in the **forenoon session** and in the **afternoon technical session** was concluded with the presentation of **two papers**, followed by **valedictory session**.

Invited lecture was delivered by **Mr K J UKE , Principal Scientist** CMERI, Durgapur who spoke on “**Fault Diagonisis of Rotating Machines**”

He discussed on Machinery fault diagnosis and System health monitoring that are performed on system. The monitoring techniques like Vibration analysis, Thermography, Acoustic emission, Wear/debris monitoring, Lubricant analysis, Process measurements are stated to be used. He discussed the case of Cracked impellers in High Speed Multistage Centrifugal Blower. Problems and solutions obtained for reduction of high vibration, unbalance situation. Detection of cracks and working of simulator. He concluded with the remark that the case highlights the difficulties related to in position balancing and importance of the mass removal method in precision balancing. He also mentioned the minimization of vibration by approximate dimensional measurement and mass removal by grinding worked fine.

The other 4 papers which were presented by Mr S Aravindh from Kochi, Mr A Mondal from CMERI Durgapur, Dr Prasenjit Das from CMERI & Mr Samik Dutta of CMERI, Durgapur.

Technical Session III held after lunch and in the post lunch session following three speakers presented their papers and this session was followed by the valedictory session.

- 01) Mr Raj Mukherjee Consultant spoke on Concrete Damage Assessment
- 02) Mr Subrata Roy of CMERI, Durgapur who spoke on Use of NDE as a tool for life assessment of different components.
- 03) Mr Samik Dutta, presented paper on “Characterization Of Materials Using Digital Image Processing”

Valedictory session:

The Valedictory session was graced by the Chief Guest, **Mr B N Singh and Dr K N Ghosh** of NIT Durgapur.

Er R. K. Roy, Chairman, Durgapur Local Centre, IEI on welcoming the dignitaries at the dais briefed the whole two days proceedings of the Seminar and greeted the Guest and invited speakers.

Dr D Ghosh, Scientists, NDT department, CMERI, Durgapur and member of the organizing committee of the seminar also spoke in this session.

In his brief deliberation he mentioned that Non-destructive testing (NDT) is a noninvasive technique for determining the integrity of a material, component or structure. Because it allows inspection without interfering with a product's final use, NDT provides an excellent balance between quality control and cost-effectiveness.

The main goal of NDT, he added, is to predict or assess the performance and service life of a component or a system at various stages of manufacturing and service cycles. NDT is used for quality control of the facilities and products, and for fitness of purpose assessment (so-called plant life assessment) to evaluate remaining operation life of plant components (processing lines, pipes and vessels). NDT inspection of industrial equipment and engineering structures is important in power generation plants, petroleum and chemical processing industries, and transportation sector. State-of the art methodology is applied to assess the current condition, fitness-for-service, and remaining life of equipment. NDT inspection provides basic data to develop strategic plans for extending plant life. In his deliberation he also focused on different conventional NDT techniques and also its applications in various industrial components.

Dr B N Singh talked about Modern Technology, in general, that are used in CMERI pertaining to Characterizations of materials and equipment and its present status.

Prof H B Goswami, Council Member and former Chairman, DLC, IEI summarized the two Days Technical Proceedings of the Seminar and in lieu of conclusion presented the following meaningful recommendations that emerged out of Seminar.

Recommendations:

01) Efficiency of Non destructive Testing and Evaluation since depends heavily on personnel training, its experience, qualification as well as integrity, **IEI in tandem with CSIR Laboratories, having domain expertise and/or in association with ASNT/ISNT should offer various Short term Certificate Courses** to produce quality trained NDT/ NDE Technicians having adequate knowledge on operation of NDT equipment and correct interpretation.

02) In view proliferation of clusters of high performance, knowledge based new and advanced technologies in this field the science and technology of Nondestructive testing & Evaluation is presently a broad field that covers variety of testing methods and applications, therefore **IITs , NITs and IEST like Institute of National Importance as well as reputed NNAC accredited Universities immediately should plan to offer Degree and/or Masters level course on “NDE Science & Technology”** to cater to the need of qualified Scientists and Engineers in this field. This recommendation may be sent to the appropriate authority of MHRD /UGC by IEI.

03) Inadequate availability of standards for testing and training for the non destructive evaluation using radioactive sources, sincere effort should be initiated by the concerned Government Authority for its immediate developed.

04) The cost of manufacture of advanced NDT equipments is, in general, very high. Government support in the form of subsidy and/or soft loan to the Manufacturer /

Entrepreneur to ensure availability of such equipments at reduced the cost, making its wide use in industry feasible.
The concluding remarks and vote of thanks was proposed by Mr M N Bandyopadhyay, Honorary Secretary, Durgapur Local Center after an interesting question and answer.

Name of Centre:		Durgapur Local Centre	
Title of Activity:		Lecture on 'Towards Zero Road Accident'	
Activity under Divisional Board:		ICC	
Date:	20/08/2017	Venue:	Silver Jubilee Hall, Durgapur Local Centre



Mr Parasuram Shaw delivering his presentation



A view of audience

The Institution of Engineers (India), Durgapur Local Centre organised lecture on 'Towards Zero Road Accident' on 20th August 2017. Mr Parasuram Shaw, Dy. General Manager (HRD), SAIL, Durgapur Steel Plant gave presentation.

Mr Parasuram Shaw in his elaborative presentation provided details of Road accidents are one of the most important problems in India. Every year around 5 lakhs accidents takes place on the Indian road due to various reasons. Out of these there are around 1.5 lakh people die in India only.

Organisations loose crore of rupees in compensation and much more than that as business loss. Government spends lot of money in creating awareness towards road safety through various means.

If you see the high way in West Bengal, you find thousands of awareness poster put up by govt. Chief minister herself is part of massive campaign "**SAFE DRIVE SAVE LIFE**". But the results are not visible. West Bengal is one of the highest road accidents causing state in the country.

If you ask people the reasons, they will readily tell e.g. not wearing helmet, poor road condition, traffic rule violation, drink and drive, rash driving etc. But the fact is that 50% of the road accidents are caused due to poor driving skills. 90% of drivers don't know how to brake in emergency. There are many technical reasons which drivers must know before they start driving.

The session '**Towards Zero Road Accident**' is an attempt to bring out some of the real reasons for accidents and creating change in mindset of drivers so as to adopt **Safe Driving Skills** and minimise the chances of accident on the road.

Earlier in his welcome address, Mr R K Roy, Chairman, expressed the endeavours of Durgapur Local Centre to do atleast 1 or 2 such meetings every month. Vote of thanks was proposed by Mr. M N Bandyopadhyay, Honorary Secretary.

Name of Centre:		Durgapur Local Centre	
Title of Activity:		Tree Plantation	
Activity under Divisional Board:		ICC	
Date:	20/08/2017	Venue:	Durgapur Local Centre Campus



Tree plantation by Chairman, Mr R K Roy



A view of tree plantation

The Institution of Engineers (India), Durgapur Local Centre jointly with IEI Alumni Association, Durgapur and IEI, Durgapur Technicians' Chapter organised a "Tree Plantation Programme" on the occasion of Installation Ceremony of IEI Alumni Association, Durgapur. Trees of various species were planted at the hands of Chairman Mr R K Roy, Past Chairmen, Mr T Roy & Prof H B Goswami, Hon. Secretary, Mr M N Bandyopadhyay, Committee Member Mr S Islam, Mr P K Roy of the IEI Durgapur Local Centre. Trees were also planted at the hands of Members of IEI Alumni Association, Durgapur and IEI, Durgapur Technicians' Chapter. On this auspicious occasion a large number of members and their family also took part on that day.

Mr R K Roy in his speech he recalled the benefits of the trees and said that trees are very important part of the planet to provide beauty or shade. There are sundry perspectives of trees in human life such as social, communal, environmental and economic. Trees offer everything which is required by human such as Air, food, house, cloth, energy and beauty. Mr M N Bandyopadhyay, Hon. Secretary, thanked all the participants for overwhelming response.