TECHNICAL ACTIVITY CARRIED OUT BY CENTRES / OVERSEAS CHAPTERS

Name of Centre / Overseas Chapter:	Durgapur local centre

Title of Activity:	One Day Seminar on "Sustainable Development in Manufacturing Process"		
Activity under Divisional Board	Production Engineering Division (PRDB)		
Date:	3rd May 2018	Venue:	Seminar Hall DIATM

Mr R K Roy, Chairman delivering his welcome address and sitting (l to r) Mr S G Khune, Dr P K Sinha, Mr D Sinha, Mr M N Bandyopadhyay

Dr N Banerjee, Professor, Mechanical Engineering Department, NIT Durgapur delivering his presentation

In Inaugural Session the distinguish dignitaries on the dais were : Mr S G Khune, Executive Vice President Graphite India Ltd., Durgapur as Chief Guest, Mr D Sinha, Managing Director, The Durgapur Projects Ltd as Guest of Honour and Dr P K Sinha, Principal, DIATM Rajbandh 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 and said that sustainability is an important development goal for humanity in modern society. Manufacturing is a central feature of many economic development pathways, and in this sense casting and forging are therefore a necessary focus for sustainable development strategies.

Chief Guest, Mr S G Khune, Executive Vice President Graphite India Limited addressed the audience in a very lucid manner and said that managing operations in an environmentally and socially responsible manner – "sustainable manufacturing"– is no longer just nice-to-have, but a business imperative. Companies across the world face increased costs in materials, energy, and compliance coupled with higher expectations of customers, investors and local communities. Many businesses have already started to take important steps towards green growth – ensuring their development is economically and environmentally sustainable. Their pioneering experiences largely show that environmental improvements go hand in hand with profit-making and improved competitiveness. However, many small and medium-sized businesses (SMEs), that account for approximately 99% of all enterprises and two thirds of employment across the OECD, have not yet embraced these great opportunities. They may be struggling with their short-term survival, or cost pressure from clients, or lack of knowledge and resources to invest in environmental improvement, or simply not know where to start. If your business is looking to tackle sustainability – what it means, how it relates to your business, and how you can benefit from greener production - the OECD Sustainable Manufacturing Toolkit is a great place to start. Measuring performance is a vital first step to improvement. The OECD Sustainable Manufacturing Toolkit provides a set of internationally applicable, common and comparable indicators to measure the environmental performance of manufacturing facilities in any business size, sector or country. He concluded with the comments that Global Workplace Solutions, shows that over 96% of 18-45 year olds want their employer and workplace to be environmentally friendly or at least environmentally aware. Over 70% of all respondents would like to share printers and have recycling bins in the office, while 47% want to have water saving devices and solar panels installed on site.

Guest of Honour, Mr D Sinha, Director Durgapur Projects Limited in his address he said that we have set up factories and utilised the resources that the nature made available for us but in lieu of that we have spoiled the nature through uncontrolled emissions. We have spoiled the Air, Water and the Soil all together, the environment. Economy needs production. Development in Manufacturing Process is the backbone of a country. A country is considered developed if it is economically developed. Economical Development is possible through proper utilisation of resources by application of modern technology and its continuous updation. Resources does not include only natural resources, it includes human resources, financial resources, innovative studies on a sustainable basis and application of improved technologies in manufacturing process. Doing all these together are "Organising' and who does it is the "Entrepreneur". In spite of availability of the resources India has not been able to make optimum utilisation of all its resources for a considerable period of time. To go for developed manufacturing process, we had to look for technological collaboration. Technological development requires Research and Development. It calls for Research Scholars, Scientists and Engineers. India could cultivate such brains capable of doing such research but had not been able to retain them. "Brain Drain" from India to developed countries helped those countries to further develop every unit. But, now the priority has since shifted from "Productivity" to "Environment". One has to ensure compliance of Pollution Norms at the cost of production and profit. We have done enough damages to the Environment. But now Law of the Land does not allow any further harm to environment. In order to control pollution, several Acts have been enacted. The major Environmental Acts enacted in India are Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment Protection Act 1986 and allied Acts are Wildlife (Protection) Act, 1972 and Forests (Conservation) Act, 1980 .In order to ensure compliance of the provisions prescribed in those Acts, there are Quasi Judicial Authorities at National level i.e. Central Pollution Control Board and for States, State Pollution Control Board. Future Engineers need to know this requirement of compliance of Industry and should make them acquainted accordingly.

He concluded by saying that 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. The design, production, manufacture all must follow the standard and law to advance our country further.

Guest of Honour, Dr P K Sinha spoke on the issues on the topic 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,manufactiting,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 Honour, Dr B Haldar, Professor, NIT, Durgapur deliberated with the history of the manufacturing processes. He said that Since the seventies of the last century the growing public concern over the environmental pollution of our planet together with its endangered flora and fauna posed a formidable challenge to the existing industrial production system. The usual earlier trend of excelling one's own production in blind segregation to its effect on environment can neither be justified nor be permitted; now the efficacy of any production method is judged not in segregate but in aggregate, not locally but globally.

Probably the most significant impact of this novel global outlook had been in the field of mechanical engineering in general and in particular on "Manufacturing Process"; because, every step of modern human civilisation is highly dependent on the products of manufacturing or production processes, be it an early inefficient toddle or the present gigantic leap. To face this challenge, sustainable manufacturing has become the driving force for Innovative products, processes and systems for next generation manufacturing: the manufactured products will use processes that minimize negative environmental impacts, conserve energy and natural resources, are safe for employees, commun-

ities, and consumers and are economically sound.

Sustainable manufacturing includes: (a) manufacturing of "sustainable" products, and (b) sustainable manufacturing of all products. The former includes: manufacturing of renewable energy, energy efficiency, green building, and other "green" & social equity-related products, and, the latter emphasizes: sustainable manufacturing of all products taking into account the full sustainability/total life-cycle issues related to the products manufactured. But it is apparent that solution of the problem does not lie within the plant or production unit; it is to be judged in totality with the societal perspective: (1) well-being and economic growth, (2) level and quality of education, and (3) freedom of expression and thought. In the developing countries like ours where the old human-labour intensive less-efficient and non-eco-friendly production system is still contributing the major part (though the GDP share of manufacturing sector in India itself is a mere 7.5% compared to 20% in developed countries), sustainable development has thrown a big poser. In the coming years, use of automaton with artificial intelligence in organised sectors will further limit the scope of traditional employment related to manufacturing processes. Therefore, it is a serious juncture to identify the future course of development in manufacturing process/product of our country. However, the best of all opportunities seems evident, when we look at a larger perspective beyond adapting and updating; Sustainable Development has opened a whole new sphere in manufacturing technology; the green technology and eco-friendly engineering are revealing huge scopes of advancement in the fields of solar-hydro-wind-bio sources with more and more new chances. With many unconventional energy sources in our country are awaiting our attention, it is really a win-win situation demanding fresh outlook to take up the challenge. The day calls for the job-creators to fulfill their dream, not the job-seekers liking to live within ones self-drawn comfort zone and work in the monotonous traditional way.

Guest of Honour, Dr N Banerjee, Professor of NIT Durgapur said that population of the globe is increasing like anything. It is a big challenge to arrange the minimum requirements for the habitats for future. The natural resources are depleting day by day. It is estimated that if the natural resources are used at present rate then very soon we will be requiring two more earth like planets to accommodate our future generations. If the natural resources are recycled and used in environment friendly ways then only there lies a ray of hope. Sustainable manufacturing is one of the way by which the above problem can be addressed. Sustainable Development Goals (SDG) is set by different countries of the globe keeping mind the future prospect of the mankind. The following article is only a small attempt to stress the need of sustainable manufacturing.

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.