

51st ENGINEERS' DAY

Theme:

“Digital Transformation: A New Industrial Revolution”



Bharat Ratna Sir M Visvesvaraya

September 15 is celebrated every year in the country since 1967 as “Engineers’ Day” to commemorate the birthday of the legendary engineer Sir Mokshagundam Visvesvaraya. Sir Visvesvaraya, an eminent Indian engineer and statesman was born in a remote village of Karnataka, the State that is incidentally now the Hi-tech State of the country. Due to his outstanding contribution to the society, Government of India conferred “Bharat Ratna” on this legend in the year 1955. He was also called the precursor of economic planning in India. His learned discourse on economic planning in India, Planned Economy for India and Reconstructing India, was the first available document on the planning effort of the country and it is still held as the parent source matter for economic planners. A theme of national importance is chosen every year by the Council of the Institution and deliberated at its various State/Local Centres to educate the engineering fraternity in general and the society in particular. This year the 51st Engineers’ Day will be celebrated all over the country and the Council of the Institution has selected the theme as “Digital Transformation: A New Industrial Revolution” to mark the occasion.

Industries around the world are now facing substantial challenges due to recent environmental, societal, economic and technological developments regarding disruptive concepts of Internet of Things, Cyber Physical Systems or Cloud based Manufacturing, which lead to the fourth stage of industrial revolution. Increased digitization which waves out traditional and conventional production concepts including mass production, batch production, continuous process flow and project is the need of the hour. The first industrial revolution utilised water and steam power for mechanizing production. During second industrial revolution, application of power was more with the objective to obtain mass production. During third industrial revolution, industrial automation was introduced, which involved vast application of Electronics and Information Technology. The fourth industrial revolution, termed as Industry 4.0 is empowered by wide range of digital technology not only in digital realm, which involves artificial intelligence, machine learning, advanced robotics and new formation of automation, but also in physical realm including new materials like graphene, genetic advances as well as biological realm which involves sensors, Internet of Things, Block Chain and Distributed Ledgers, 3D Printing, autonomous vehicles like drones, so on and so forth.

Thus Industry 4.0 is focussed on creating intelligent products, processes and procedures that leads to ubiquitous connectivity of people, things and machines. The vision of Industry 4.0 is likely to be adopted worldwide and it might influence other initiatives and cooperative efforts. In general, there are nine key technological components that progressively make up the foundation of Industry 4.0: Autonomous robots, big data, augmented reality (AR), additive manufacturing, cloud computing, cyber security, IoT, system integration, and simulation.

On a digital platform, Industry 4.0 is applied with three mutually interconnected factors, namely

- ❖ Digitization and integration of any simple to complex technical - commercial relation,
- ❖ Digitization of products and service offers and
- ❖ New market models

All these human activities are interconnected through State-of-the-Art communication system, which include Internet of Things, Internet of Services and Internet of People.

There are three principal approaches in Industrial 4.0 concept, namely horizontal integration, vertical integration and integrated digital engineering. Horizontal integration refers to integration of different information systems, applied principally for production planning and process control. Vertical integration refers to integration of information at different hierarchical levels, which allows preventive actions to avoid any defect. Integrated digital engineering enables the collection and exchange of production data throughout the entire chain involved in product development and leads to reduction of large amount of production data accumulated throughout the life cycle.

According to India Brand Equity Foundation (IBEF), Government of India has set an ambitious target of increasing the contribution of manufacturing output to 25% of Gross Domestic Product (GDP) by 2025, from 16% currently. IoT, being one of the most important aspects of Industry 4.0 for India, is expected to capture close to 20% share in global IoT market in the next five years. According to IBEF forecast, the IoT market in India is projected to grow at a CAGR of more than 28% during 2015-2020. Government of India has taken initiatives such as Green Corridors and ‘Make in India’.

The Institution of Engineers (India) being the apex body of engineers in India is committed for holistic development of the country and believes that Digital Transformation will usher in a new Industrial Revolution.