

Chapter 7

MECON's Journey of Six Decades—A Saga of Engineering Excellence in Iron and Steel



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Abstract Starting as a small design organization, MECON's six decades of glorious journey has witnessed many benchmarks leading to its emergence as one of the premier Indian consultancy and engineering companies, being a Mini Ratna CPSE under Ministry of Steel, Government of India. Over the years, MECON has taken giant strides forward and grown in stature offering turnkey project execution on single point responsibility. Through business diversification and restructuring into three business verticals, viz., Metals, Energy and Infrastructure, it has transformed itself to the needs of changing economic environment and has become a key player in India's industrial and infrastructure progress.

7.1 Genesis and Profile

Steel Industry was reckoned as an engine of economic growth and prosperity of India by the policy planners in the 1950s, as it plays a vital role for development of industries/manufacturing base, infrastructure, strategic self-reliance and also in creation of employment and revenue to National exchequer due to its strong forward and backward linkages to other sectors of the economy. Accordingly, vast resources were mobilized and allocated to develop integrated capability and self-sufficiency in iron and steel manufacturing, with due consideration for development of backward areas with regional balance and employment generation. Towards this endeavour, today's MECON was born with an objective to assimilate and absorb foreign technology and develop indigenous technology base for the Iron and Steel industry and render consultancy and engineering services for integrated steel plants in India. Since then, MECON has become a key player in India's economic development especially in the areas of mining and metals, energy and infrastructure.

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Fig. 7.1 MECON Limited headquarters at Ranchi, Jharkhand

MECON Limited, the erstwhile Central Engineering and Design Bureau (CEDB) consisting of only thirteen elite engineers then, was born in April 1959, as an independent consultancy outfit within Hindustan Steel Limited (HSL), the first public sector steel organization under the leadership of Late Mr. K. M. George as the Head and Chief Engineer.

MECON renders full range of services required for setting up of Greenfield and Brownfield projects from Concept to Commissioning including Turnkey execution in coke oven, agglomeration plant, mini blast furnace, rolling mill and also R&M/AMR schemes. MECON has collaboration agreements with leading global technology providers for equipment design capability to enhance its cutting-edge technology (Fig. 7.1).

MECON has also developed in-house indigenous design for 1.0 Mtpa Coke Oven Battery and 4250 m³ Blast Furnace which was launched by the then Hon'ble Minister of Steel on 21st December 2016 at MECON, Ranchi by brand names "ANGARA 7.1" and "LOHA 4250" respectively.

MECON has also strengthened its footprint in the International market by providing World Class Design, Engineering and Consultancy Services for about 130 assignments in different countries.

Besides steel, MECON also caters to the non-ferrous sector including aluminium, copper, zinc, lead, magnesium and precious metals and mining sector including ferrous, non-ferrous, atomic minerals and fossil fuel minerals (coal and lignite). Due to cyclic swing in metals business, MECON diversified into energy and infrastructure sectors with focus on renewable power and green energy and iconic and institutional infrastructure, green buildings, defence infrastructure and aero-space sector. A glance through the decade-wise development of MECON is depicted in Fig. 7.2.

1960's	1970's	1980's	1990's	21st Century
<p>With India's quest for self-reliance after independence, MECON indigenized the design & engineering of expanding three integrated steel plants at Bhilai, Durgapur and Rourkela.</p>	<p>Played stellar role in the expansion of Bhilai and Bokaro Steel Plants.</p> <p>Spread its wings for overseas business.</p> <p>EPC execution of project in Rolling Mills and Coke Oven Batteries.</p> <p>Entered into Non-Ferrous sectors like Aluminium, Copper and Zinc.</p>	<p>Diversification into Power, Environmental, Material Handling, Chemicals & Petrochemicals, Industrial Automation, etc. and Contributing to projects for port & harbour, water & sanitation management, townships and urban development.</p>	<p>MECON's diversification initiatives to take advantage of the economy with its inherent engineering capabilities. Such initiative proved to be beneficial for the organization during the global recession in metals sector with the private sector reposing confidence in MECON</p>	<p>MECON has emerged as a multi disciplinary force to reckon with, both in national and international arena with diversified areas of activities. Its contribution to India's space and defence programme by way of design of second launch pad of Agni missile and Chandrayan project received wide acclaim.</p>

Fig. 7.2 Growth of MECON limited

7.2 Achievements

MECON has executed a host of outstanding projects in all areas of its business operation. Over 3,500+ Consultancy and EPC assignments have been successfully completed. It has three Engineering Offices at Ranchi (HQ), Delhi and Bengaluru and over 100 project/site/inspection offices on pan India basis (Fig. 7.3).

MECON's Contribution in complete Value Chain of Steel Plant					
RMHS	Coke Oven & BPP	Agglomeration	Iron Making	Steel Making	Rolling Mills
<p>Bulk material handling system Cranes & Hoists Stores/warehouse</p> <p>130 Mt Bulk Material Handled</p> <p>400+ km Conveyor Length</p>	<p>Coke oven batteries CDCP Coke sorting plant Gas condensation Other by-products</p> <p>44x COBs</p> <p>9x CDCP</p> <p>15x BPPs</p>	<p>Pellet Plants Sinter Plants</p> <p>19x Sinter Plants, 47.5 Mt</p> <p>11x Pellet Plants, 36.65 Mt</p>	<p>Blast Furnace (mini, medium, large) Stoves Direct Reduced Iron Plants (coal & gas based)</p> <p>54x Blast Furnaces, 25.7 Mt</p> <p>33x DR Plants, 8.73 Mt</p>	<p>Basic Oxygen Furnace Electric Arc Furnace Casters</p> <p>38x BOF & EAFs, 24.4 Mt</p> <p>30x Casters, 28.7 Mt</p>	<p>Hot & Cold Rolling Mills Flat : Plate, HSM, CRM, CSP, etc. Long : Bar, Wire Rod, Structural, URM, USM, etc. Strip Processing & Finishing Lines Special Plants</p> <p>100x Rolling Mills, 50 Mt</p>

Fig. 7.3 MECON's contribution in complete value chain of steel plants

Special Project - Second Launch Pad, ISRO



Fig. 7.4 The second launch pad project executed for ISRO

7.2.1 Projects in Strategic Sectors

- Second Launch Pad, ISRO (Fig. 7.4)
- Development of Uranium Mines for UCIL
- Geotechnical Centrifuge, IIT Mumbai
- Project Seabird Phase-IIA Dockyard and Fleet Base Buildings at Naval Base, Karwar
- Solvent Extraction Plant to recover Rare Material (Yellow Cake) for Heavy Water Board at Tuticorin
- Integrated Engine Testing Facility of IPRC—Semi Cryo for ISRO, Mahendragiri, TN
- Naval Aircraft Yard at Goa and Kochi, Ministry of Defence
- Solid Propellant Space Booster Plant (SPROB), Augmentation Facilities for ISRO, Sriharikota
- Payload Fabrication and Testing Facility for ISRO at Bhopal, Ahmedabad
- Environmental Engineering with state of the art environmental lab recognized by MOEF & CC and CPCB (Fig. 7.5)

7.2.2 Oil and Gas

MECON has executed several projects for Long Distance Transmission of Oil and Gas through long-distance cross-country pipelines, CNG and CGD Networks (Fig. 7.6) and Storage and Handling of Liquid Petroleum Products in POL Terminals including Loading Gantries both RAIL/Truck.

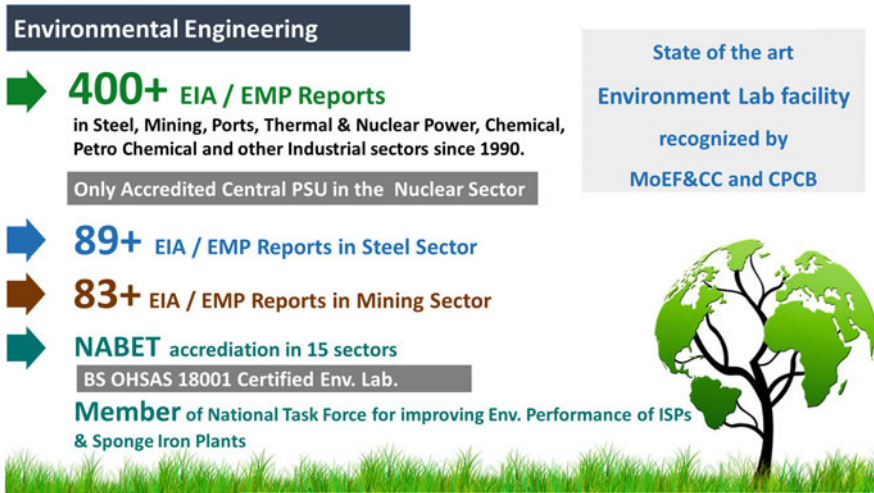


Fig. 7.5 MECON's contributions to environmental engineering



Fig. 7.6 City gas distribution projects

7.2.3 Power

MECON has rendered services in Renewable Energy, Thermal and Hydel Power and Transmission and Distribution Projects (Fig. 7.7).

7.2.4 Infrastructure

MECON has rendered services for creation of iconic and institutional infrastructure including defence and space (Fig. 7.8).



Fig. 7.7 (top to bottom, left to right) 2 × 500 MW TPP for NTPL, solar power generation for BPSCL and NMDC, FGD projects for TANGEDCO, RLA of HYDEL power for DVC, OHPC, TANGEDCO and APGENCO, DDUGJY and IPDS projects for Govt. of Jharkhand and Odisha



Fig. 7.8 Iconic and institutional infrastructure

7.2.5 Overseas Operations

MECON has expanded its successful business operation to encompass overseas market as well. MECON was actively involved in setting up two integrated Steel Plants and provided consultancy, project management and technical services in Nigeria for Delta Steel Company, Warri and Ajaokuta Steel Company, Ajaokuta. Africa’s first Integrated Steel Plant way back in the late 1970s.

7.2.6 Alignment with National Priorities

(See Fig. 7.9).

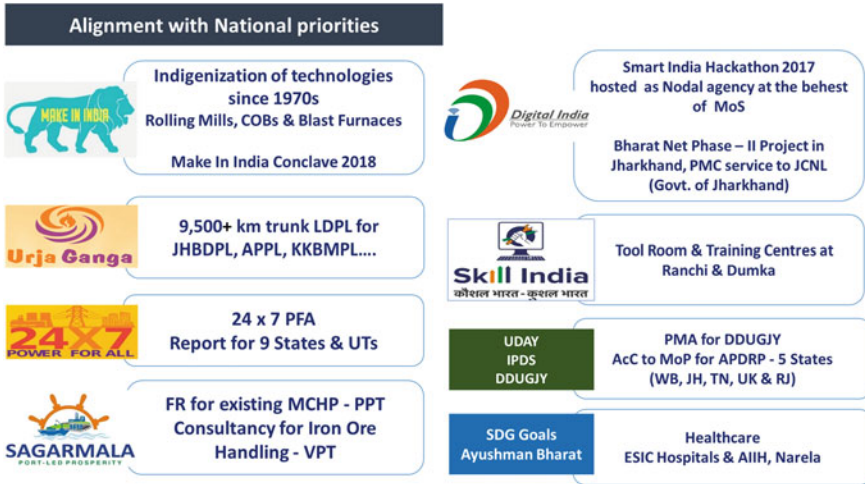


Fig. 7.9 Alignment with national priorities

7.3 Atmanirbhar Bharat

- In-house Technology Development in the areas of Coke Oven Battery, Iron Making, Steel Making and Value Added Steel
- Technology Absorption in Steel Making and Emission Norms
- Indigenization and Creation of Design and Innovation Cell

MECON has been actively involved in giving policy suggestions to Govt. of India for future planning. It has been instrumental particularly in Policy Formulation such as National Steel Policy, Domestically Manufactured Iron and Steel Products (DMI&SP), National Mineral Policy, PLI scheme for specialty steel etc.

7.4 Service Portfolio

(See Fig. 7.10).







Conceptualization	Engineering	Procurement	Project	Diagnostic	Value Added
					
<p>Market Research</p> <p>Feasibility Reports Detailed Project Reports EIA & EMP</p>	<p>Basic Engineering Detail Engineering Basic Know-how</p>		<p>Project Monitoring Construction Management Project Management Quality Assurance Inspection</p>	<p>Health Studies Due Diligence Asset Valuation</p> <p>Techno-Economic Viability</p> <p>Lenders Independent Engineer</p> <p>RLA/RLR/RMU Studies</p> <p>Safety Audit</p>	<p>Transaction Advisory, Turnaround & Restructuring Strategies, Merger & Acquisition</p> <p>Technology upgradation</p> <p>Productivity enhancement, Relocation of Plants</p>
<p>DEC & PMC / EPCM / Deposit Works EPC (Engineering, Procurement & Construction) O & M (Operation & Maintenance)</p>					

Fig. 7.10 MECON’s service portfolio

7.5 Summing Up and Future Vision/Outlook

Over the past six decades since inception, MECON has developed capability to enrich its service portfolio encompassing design, engineering and consultancy, Project Management Consultancy (PMC), project execution on Engineering, Procurement and Construction Management (EPCM)/Deposit Works mode as well as turnkey project execution on Engineering, Procurement and Construction (EPC) mode and to offer services in its three business verticals, viz., Metals (Iron and Steel and non-ferrous metals) and Mining, Energy (Power and Oil and Gas) and Infrastructure. It can also undertake entire project execution based on basic engineering support from the technology suppliers including assistance in capability development to bridge the technology gap. It can also provide complete engineering for balance of plant/overall plant integration based on inputs from technology package suppliers leading to discrete turnkey mode of execution.

MECON has a strong presence in the Iron and Steel sector with basic engineering support from global technology providers especially in the areas of steel making and rolling mill. It has entered into MoU with leading global technology providers to offer end-to-end cost-effective solution for the entire value chain of integrated steel plants with adoption of state-of-the-art technologies and maximum indigenization.

MECON expanded its operation into diversified sectors to de-risk its business from the cyclic swings in the metals sector. In power sector, the Company is capable of rendering engineering and consultancy services in thermal power plants including Flue Gas Desulphurisation (FGD) projects, Remaining Life Assessment (RLA) studies of hydel power plants, other renewable energy including solar and

Government Technology and Development projects, viz., 24 × 7 Power for All, Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS), etc. MECON also has large footprint in the Oil and Gas sector in low to mid-end segments of long-distance cross-country pipelines, CNG and City Gas Distribution (CGD) network. The Company has also rendered services for creation of iconic and institutional infrastructure including green buildings and strategic sectors of aero-space, defence and atomic mineral. MECON also has strong credentials in environmental studies with National Accreditation Board for Education and Training (NABET) accreditation in 15 sectors and the state-of-the-art environmental lab facility which is recognized by Ministry of Environment and Forests (MoEF) and Central Pollution Control Board (CPCB).

MECON plays a vital role in giving inputs to Government in policy formulation especially in the Iron and Steel and Mining sectors. Its business operations are aligned with the National Priorities and Government Flagship Programmes/Policies, viz., National Steel Policy, National Mineral Policy, Make in India, Atmanirbhar Bharat/Vocal for Local, Urja Ganga, 24 × 7 Power for All, APDRP, IPDS, DDUGJY, National Solar Energy Mission, Digital India, Swachh Bharat, AMRUT, Ayushman Bharat, Skill India, etc.

MECON's future vision is to emerge as an internationally recognized brand in design, engineering, consultancy, project management and Engineering Procurement and Construction (EPC) execution. It has mission to be a global centre of excellence to provide innovative and cost-effective engineering and technological solutions in Metals and Mining as well as diversified sectors (Energy, Infrastructure, Space, Defence, etc.); to leverage its deep domain knowledge in the Metals and Mining sectors to provide solutions from concept to commissioning; to leverage in-house capabilities to provide engineering, technological and project management services to priority sectors of economy; to develop indigenous technological base/promote self-reliance and expand geo-strategic presence and export of services targeting Middle East, North Africa and Asia-Pacific regions. The Company's future outlook also focuses on harnessing/adopting the state-of-the-art newer energy-efficient green technologies suiting to indigenous natural resources with minimum GHG footprint and maximum indigenisation/cost-effectiveness. The company also has vision to nurture O&M businesses.

MECON is committed to promote Atmanirbhar Bharat campaign of Government of India through maximization of indigenous content while adopting state-of-the-art foreign technology in participation with the manufacturing and consuming industries.