

LOK SABHA
UNSTARRED QUESTION NO.227
FOR ANSWER ON 14/09/2020

RESEARCH AND DEVELOPMENT IN STEEL INDUSTRY

227. SHRI VIJAY KUMAR:

Will the Minister of STEEL be pleased to state:

- (a) whether the public sector companies in Iron and Steel sector are undertaking research and development work;
- (b) if so, the major achievements made by the said units in utilisation, productivity, quality improvement, cost reduction and utilisation of waste etc.;
- (c) whether any new schemes have been approved to promote research and development in iron and steel sector during the last three years and if so, the details thereof; and
- (d) the details of the research and development projects undertaken /proposed to be undertaken under the said scheme ?

ANSWER

THE MINISTER OF STEEL

(SHRI DHARMENDRA PRADHAN)

(a)&(b): Yes, Sir. Some of the major achievements of the public sector companies in Iron and Steel sector regarding productivity and quality improvement, cost reduction and utilisation of waste are as following:-

Steel Authority of India Limited(SAIL):-

- i. Iron Ore Slime Beneficiation at Dalli Mines, Bhilai.
- ii. Quality improvement at SAIL Mines-Silica reduction planned at Dalli Mines.
- iii. Productivity improvement initiatives in Sinter Plants.
- iv. Increasing Coal Dust Injection for lowering BF Coke Rate in Blast Furnaces.
- v. Improvement in Converter Lining Life.
- vi. Improvement in Steel Ladle Lining Life.
- vii. Reduction of Specific Roll Consumption & Roll Bite Lubrication in Finishing Stands.
- viii. Development of various products and cost optimization like:-
 - High strength/corrosion resistant rails.
 - Fe-500 grade high strength TMT rebars using lean chemistry (lower carbon equivalent) to bring down the cost of production through reduction in alloying elements.
 - High strength plates without using costly Niobium (Nb) micro alloying and having simple plain Carbon-Manganese (C-Mn) chemistry.
 - Low Nickel Stainless steel at Salem Steel Plant, primarily achieved through use of substantially lower amount of costly nickel and replacing it with higher amount of cheaper manganese to achieve similar properties.
 - Low cost ferritic stainless steel with suitable alloy chemistry having mechanical properties and corrosion resistance equivalent to Ti and Nb dual stabilized AISI 441 stainless steel, for elevator application.

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- Laboratory based research to develop low cost Ni, Mo-free ferritic stainless steel with improved corrosion and formability properties which are comparable with austenitic stainless grade AISI 304.
 - Lean Duplex Stainless Steel through utilizing transformation induced plasticity effect to achieve comparable properties of traditional AISI 316L is another step towards reduction in cost of production.
- ix. Automation schemes to enhance yield and quality improvement in existing shops.
- x. Reduction in energy consumption.
- xi. Almost 100% utilization of Solid wastes like mill scale, flue dust, BF slag and waste refractory bricks.

Rashtriya Ispat Nigam Limited(RINL):

- Re-design of emergency containers for slag/steel dumping resulting in decrease in the specific refractory consumption, cost savings and increase in the availability of cranes for production.
- Optimization of Aluminium consumption in steel refining process in SMS-2 for production of cost effective “Clean Steel”.
- Study of De-Phosphorisation during Steelmaking at SMS-1 to improve quality & productivity.
- Optimization of operating parameters for Ca-Si treatment of liquid steel at SMS-2 for improving castability of steel and produce clean steel.
- Development of thermo-mechanically treated bars having improved seismic and corrosion resistance.
- Feasibility study on utilization of fly ash pellets as Ladle & Tundish covering compound to reduce environmental pollution.
- Feasibility study on usage of ladle furnace slag as a replacement to synthetic slag for solid waste utilization and reduction in environment pollution.
- Suitability of BF slag as a replacement for river sand in civil construction.
- Development of Fe500S grade steel for seismic structural application, 10B21 & 15B25 Boron grade steel for automobile segment and CO2 grade steel for Welding Electrode segment.

(c)&(d): Ministry of Steel already has a scheme viz. “Promotion of Research & Development in Iron & Steel Sector” for providing financial assistance to various institutions including CSIR laboratories and academic institutions for carrying out research in the iron & steel sector. Research projects under this scheme cover the following research areas:-

- Beneficiation of natural resources like iron ore & coal for improved productivity
- Utilisation of wastes.
- Improvement in energy efficiency.
- Reduction in GHG emission to address climate change issues.
- Improvement in quality of steel products.
- Development of value added steel for import substitution.
- Addressing the technological issues faced by the iron & steel industry.