

**R&D AND TECHNOLOGY PROGRAMMES OF NATIONAL IMPORTANCE****SHORT-MEDIUM TERM PROGRAMMES:**

- a) Beneficiation/up-gradation of low grade iron ores adopting known technologies and development of relevant technologies to beneficiate difficult-to-beneficiate iron ore including banded hematite quartzite (BHQ)/Banded Hematite Jasper (BHJ) as well as high LOI, high Blaine number ores and slimes.
- b) Development of relevant technologies for Beneficiation of high ash, difficult-to-wash Indian coking/non coking coal (from 25+% to <10% ash) including low volatile medium coking coal without loss on yield, and production of better quality coke using weak/non coking coal/LVMCC.
- c) Development of innovative products like CRGO electrical Steels, Amorphous Silicon Alloys (Met-glass) etc, technologies for which are not readily available from abroad.
- d) Development/Adaptation of direct smelting technologies for iron making using iron ore fines and non-coking coals on line similar to Finex, Hismelt, ITmk3 or any other innovative concepts. Simultaneously, Pursuing fundamental research work for development of innovative alternative iron making technologies from low grade ore/slimes without pursuing beneficiation/agglomeration and without use of coking coal/coke like smelting reduction processes.
- e) Development of appropriate beneficiation techniques for Indian magnesite (Almora & Salem sources) and bauxite (using wet leaching and firing-densification).
- f) Development of niche steel products e.g ultra high strength steel with good formability and ultra fine grained steel plates/ coils/ rods (YS: 800-1000 MPa), specifically designed for Automotive Sector, Construction & Infrastructure and Energy Sector.
- g) Development of suitable technologies for production of quality steel with low phosphorous & low sulphur in Induction Furnace or evolving a suitable innovative technology to produce steel economically in smaller scales of operation in place of induction furnace.

**LONG TERM PROGRAMMES:**

- a) Development of technology/practices for 100% recycling/utilization of LD/EAF slag .
- b) Development of technology for ultra low carbon dioxide (CO<sub>2</sub>) steel making through large collaborative programmes.
- c) CO<sub>2</sub> sequestration in the steel plant environment starting from data base development to R&D initiatives on CO<sub>2</sub> sequestration through plantation and other frontier technologies through focused Government initiative along with the major companies.
- d) Joint collaborative research programmes involving Government, Steel producers, Consultants, Technology Providers & Equipment Manufacturers, Academic Institutions, Design Organisations and others to pursue development of break-through technologies.