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Development of low carbon raw material substitution technology based on BF process

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The current national project we are working on is being carried out in two main parts until 2030.
The first part involves technology for injecting hydrogen-rich gas into the blast furnace, and the second part focuses on developing technology for charging scrap/HBI into the blast furnace, which will be developed up to the demonstration stage.
The first part will focus on securing the fundamental technology for the demonstration of hydrogen-rich gas injection into the blast furnace by 2027, as well as analyzing and resolving operational issues related to hydrogen-rich gas injection. From 2028 to 2030, the focus will shift to the demonstration and optimization of hydrogen-rich gas injection into the blast furnace.
Detailed tasks include the development of hydrogen-rich gas supply facility technology,tuyere technology for hydrogen-rich gas injection, measurement of hydrogen utilization rate, combustion zone simulation technology for hydrogen-rich gas injection, development of a hot metal [Si] model for hydrogen-rich gas injection, raw material charging and blowing technology, evaluation of iron ore characteristics for hydrogen-rich gas injection, and analysis of CO2 reduction effects from an LCA perspective.
Participating organizations include POSCO, POSTECH, Sungkyunkwan University, Research Institute of Industrial Science & Technology (RIST), Korea University(Prof. Lee, Joon Ho), Seoul Engineering, Pields Engineering, and KOMERA(Korea Metal Material Research Association).
The second part will focus on developing the fundamental technology for the demonstration of alternative iron sources in the blast furnace by 2027, as well as analyzing and resolving phenomena related to charging alternative iron sources into the blast furnace.
From 2028 to 2030, the focus will be on the demonstration and optimization of alternative iron sources in a 2,500m^3 medium-sized blast furnace, and on securing application technology for alternative iron sources in a 5,000m^3 large blast furnace.
Detailed tasks include analysis of expected effects and operational design for each alternative iron source, development of simulations for scrap/HBI blast furnace reaction behavior, and establishment of processes for scrap selection and shape management for blast furnace.
Participating organizations include POSCO, Hyundai Steel, Samyook SNG, and Seoul National University.

Speaker Country

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