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Development of CO2 Emission Reduction Technology in Blast Furnace Process using H2 rich Gas Injection and Alternative Iron Ore Charging

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The environment surrounding the iron and steel industry has greatly changed. The Paris Agreement, a new climate change regime, has been in effect since '21, and the Parties announced the National Determined Contribution (NDC) in accordance with the Paris Agreement. After the establishment of the NDC in 2015, Korea revised its target to "reduce the greenhouse gas emissions by 40% compared to 2018 by 2030,"which has been significantly raised compared to the previous one.
The steelmakers around the world are also declaring carbon neutrality and actively developing the innovative hydrogen reduction steelmaking and CCUS technologies to realize it. The present carbon based BF process with high efficiency and large scale has been occupied approximately 70% of steel production and required the unlimited endeavors for carbon reduction within its technical limits until hydrogen reduction steelmaking conversion as bridge technology.
POSCO has been carried out the national project (COOLSTAR) that is to directly reduce CO2 emission by injecting by-product gas(COG) into tuyeres and charging low reduced iron(LRI) into blast furnace that is partially reduced in fluidized bed reactor using reduction gas converted from by-product gas and improving the qualities of raw materials. This project has been progressed through the pilot-scale of technology development and currently, being developed for application in a commercial blast furnace. In this presentation we would like to introduce some of the results obtained from the pilot scale national project

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