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The Production Mix of Chinese Steel Industry and the Technical Efforts Toward Carbon Neutral

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Abstract
The Chinese steel industry has been growing rapidly since the new millennium and reached its peak in the year 2020, with an annual crude steel output of 1.053 billion tons. Since then the growth became stagnant due to a slowdown of GDP growth rate and a sluggish real estate market in the past two years. In the meanwhile, the transformation of the manufacturing industry stimulated the upgrading of the steel grades. A very specific example is the automobile industry, with the speed up of BEV (battery electric vehicle) technology and its penetration ratio in the market, the demand for an even lighter body weight resulted in remarkable increase in the proportion of HSS and PHS.

The carbon-peak and carbon-neutral policy is an even greater challenge to Chinese steel industry, since its steel output accounts for over 50% of world total. In addition, the BF-BOF process dominates the whole industry with a proportion of 90%, whereas that of the EAF process is only 10%. The Chinese Steel Association published the vision and road-map for carbon neutral in 2022. This report gives a detailed description of the road-map and the notable efforts of the steel industry in the past few years. The latest development of HyCROF, industrial scale shaft furnace hydrogen DRI, H2-rich smelting reduction, the optimization of processing technologies and energy efficiency are introduced.

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