DECARBONISING STEEL WITH HYDROGEN

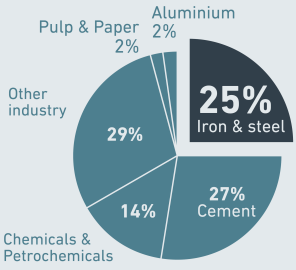
The iron and steel industry is responsible for up to 10 percent of global greenhouse-gas emissions. Switching from carbon to hydrogen as a feedstock will replace CO_2 emissions with harmless steam emissions. The task is technologically feasible, but momentous in scale.

CO_2 EMISSIONS FROM THE STEEL INDUSTRY

MITSUBISHI HEAVY INDUSTRIES GROUP

PRIMETALS TECHNOLOGIES

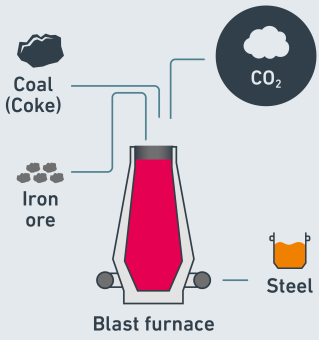
TOTAL INDUSTRY CO_2 EMISSIONS



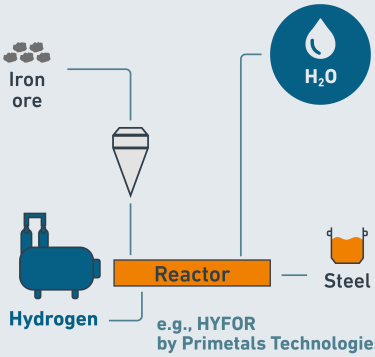
GLOBAL ANNUAL STEEL PRODUCTION
1,869 Mt

CO_2 EMISSIONS
3.7 Gt

TRADITIONAL ROUTE

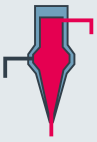


HYDROGEN-BASED

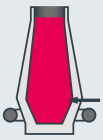


e.g., HYFOR by Primetals Technologies

MORE H_2 APPLICATIONS



DIRECT REDUCTION
replacing natural gas in shaft furnaces

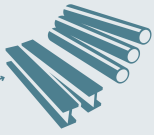


H_2 INJECTION
replacing coal in blast furnaces

H_2 BURNERS
replacing natural gas

HYDROGEN PLASMA SMELTING REDUCTION
replacing coal

HYDROGEN STEELMAKING



70%
of total steel production is suitable for hydrogen route

1,308 Mt
of production capacity to convert

requires approx.

1t steel

55 kg H_2

NET-ZERO EMISSIONS

WHAT WILL IT TAKE?

72,000,000 t
of hydrogen per year

500 GW
of electrolyser capacity

4,000 TWh
of green electricity per year