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Reducing gas prodn. in liq. metal reactor - with recycling of off-gas from oxidn. of reducing gas

H(4-E4, 9-C) 48

Prodn. of reducing gases from solid, liq. and/or gaseous carbonaceous feeds is carried out by injecting the feed into a metal melt through a nozzle located beneath the surface of the melt, with the improvement that off-gases formed by oxidn. of the reducing gas in a redn. process (esp. redn. of iron ore in a shaft furnace) are also injected into the melt through the nozzle to produce more reducing gas.

ADVANTAGES

Recycle of the off-gases not only regenerates reducing gas (with savings in energy, O_2 consumption and gas purifcn.) but also cools the nozzle and facilitates injection of the feed into the melt.

EMBODIMENT

The liq. metal reactor (1), e.g. contg. molten Fe (2) and a slag layer (3), is equipped at the bottom with a multiple concentric nozzle (4) with inlets for the feed (5), lime for slag forming (6) and an O_2-contg. gasification medium.

The product gas (comprising CO and H_2) is passed via a heat exchanger (12) to a shaft furnace (13). The furnace off-gas (comprising CO_2 and H_2O) is passed through a dust-removing cyclone (16) and at least part is compressed (25) and recycled to one or more of the nozzle inlets and/or to a mixing zone (33) for entraining the feed.(4pp367).