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Synthesis gas prodn. in a gasification reactor - the gas with entrained slag droplets leaving through a vertical or inclined smooth bore cooled tube

heat exchanger to cool it further; and
(f) the cooled synthesis gas is removed from the lower part of the heat exchanger.

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Process and appts. are claimed for the prodn. of synthesis gas.

The process is characterised by the following steps:

- (a) a finely divided carbonaceous fuel is partially combusted with an oxygen-containing gas at elevated temperature and pressure in a gasification reactor, yielding liquid slag and synthesis gas;
- (b) liq. slag is removed from the bottom of the gasification reactor;
- (c) hot crude synthesis gas contg. entrained slag droplets is removed from the top of the gasification reactor and passed upwards through a tube;
- (d) along at least a part of the tube a coolant is passed so that the crude synthesis gas is cooled and the slag droplets solidify;
- (e) the crude synthesis gas is passed downwards through a

ADVANTAGE

The sticky slag droplets do not adhere to the wall and do not accumulate inside the tube when the tube has a smooth and relatively cool inner surface. Vertical and inclined tube embodiments are both disclosed, both having the smooth cooled inner surface.

EMBODIMENTS

The hot crude synthesis gas leaves the top of the gasification reactor flowing vertically upwards at an average linear velocity of 1-15m/s or 4-40m/s. The residence time of the slag droplets-containing synthesis gas in the tube is 0.1-2.0 s. The crude synthesis gas flows vertically downwards through the heat exchanger at an average linear velocity of 3-15m/s.

The slag particles are separated from the crude synthesis gas before the synthesis gas enters the heat exchanger. (16pp1684RBHDwgNo0/2)

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