

PLASMA GASIFICATION REACTORS WITH MODIFIED CARBON BEDS AND REDUCED COKE REQUIREMENTS

Abstract

A carbonaceous bed in a reactor includes carbon bearing material that is not coke and rather includes natural wood blocks or bricks formed of non-coke carbonaceous material in a binder along with, as options, other constituents such as catalysts and fluxing agents. The bed reduces the amount of coke required in processes such as for syngas production. Such non-coke units are applicable to an original carbonaceous bed in a reactor and also to replenishment of reacted carbon in the original bed. The bed may include ungasified carbon particulate matter separated from gaseous reaction products of a gasification reactor, either in non-coke bricks or otherwise applied, as may other carbonaceous material often regarded as waste such as spent potliner material from aluminum making and soot residue from a gasification reactor. Certain reactor structural modifications can also result in reduced consumption of carbon in a bed.

(Figure 1)