

Title (en)

A HYDROCARBON REFORMER FOR ELECTROCHEMICAL CELLS

Title (de)

KOHLENWASSERSTOFFREFORMIERUNGSAPPARAT FÜR ELEKTROCHEMISCHE ZELLEN

Title (fr)

REFORMEUR D'HYDROCARBURES POUR PILES ELECTROCHIMIQUES

Publication

EP 0938756 A1 19990901 (EN)

Application

EP 96933239 A 19961003

Priority

US 9615904 W 19961003

Abstract (en)

[origin: WO9815023A1] An apparatus for and method of continuously supplying a conditioned fuel, such as CO and H₂, to an electrochemical generator such as a high temperature solid oxide electrolyte, fuel cell generator (SOFC) (12, 14), for electrochemical reactions and continually regenerating a hydrocarbon reformation catalyst by providing at least two iron metal/iron oxide beds. At least one bed, a reformation bed (48), is mainly in the iron oxide (FeO) condition and incoming hydrocarbon feed fuel gas, such as natural gas, will be reformed or conditioned at a temperature of about 600 DEG C to 800 DEG C on the iron oxide to CO and H₂ which represents the fuel to be fed to the fuel cells of the electrochemical generator, thereby reducing iron oxide to iron metal (Fe). While the FeO reformer bed is being reduced to Fe, the at least one other bed, an oxidation bed (50), which previously served as a reformer bed mainly in the iron metal condition (Fe) is oxidized at a temperature of about 600 DEG C to 800 DEG C to mainly FeO form with generator spent fuel gases, thereby oxidizing iron to iron oxide and also producing some additional conditioned fuel gas. The beds can be operated concurrently or sequentially, and when each bed becomes substantially exhausted, it is switched over in function to the other mode of operation.

IPC 1-7

H01M 8/06; H01M 8/24

IPC 8 full level

C01B 3/10 (2006.01); **C01B 3/24** (2006.01); **H01M 8/06** (2006.01); **H01M 8/24** (2006.01)

CPC (source: EP US)

C01B 3/105 (2013.01 - EP); **C01B 3/24** (2013.01 - EP); **H01M 8/0606** (2013.01 - EP); **H01M 8/0612** (2013.01 - EP); **H01M 8/0618** (2013.01 - US); **H01M 8/0625** (2013.01 - EP); **H01M 8/243** (2013.01 - EP); **Y02E 60/36** (2013.01 - EP); **Y02E 60/50** (2013.01 - EP); **Y02P 20/129** (2015.11 - EP); **Y02P 20/584** (2015.11 - EP)

Citation (search report)

See references of WO 9815023A1

Designated contracting state (EPC)

DE ES FR GB IT

DOCDB simple family (publication)

WO 9815023 A1 19980409; EP 0938756 A1 19990901

DOCDB simple family (application)

US 9615904 W 19961003; EP 96933239 A 19961003