

Title (en)
A PROCESS AND APPARATUS FOR HEATING FLUIDS EMPLOYING A PULSE COMBUSTOR

Title (de)
VERFAHREN UND VORRICHTUNG ZUM HEIZEN VON FLÜSSIGEN MEDIEN MITTELS PULSIERENDER VERBRENNUNG

Title (fr)
PROCEDE ET APPAREIL DE CHAUFFAGE DE FLUIDES AU MOYEN D'UN BRULEUR PAR IMPULSIONS

Publication
EP 0698198 B1 19991208 (EN)

Application
EP 93915114 A 19930517

Priority
US 9304715 W 19930517

Abstract (en)
[origin: WO9427087A1] In a fluid heating apparatus using a slagging or non-slagging pulse combustion system, a boiler (20) is in communication with a pulse combustion means (10). Boiler (20) includes a main fire tube (40) (Morrison tube) and a number of boiler tube conduits (41) for circulation of the hot gases for heating. Fluid to be heated enters boiler (20) through a fluid inlet means (30), with steam exiting through fluid outlet means (35). Fluid inlet means (30) allows water to enter the fluid treating vessel and fluid outlet means (35) allows steam to exit. Additionally, as shown, water may exit vessel (20) feeding a water jacket (17) around a portion of pulse combustor means (10) through line (31), with steam exiting jacket (17) and being routed to boiler (20) via line (36). Pulse combustor means (10) includes a valve means (12) which may be an aerodynamic valve (fluidic diode), a mechanical valve or the like, a combustion chamber (14) and one or more tailpipes or resonance tubes (16). Additionally, pulse combustor means (10) may include an air plenum (18) and a thrust augments.

IPC 1-7
F23C 11/04; F24H 1/20

IPC 8 full level
F22B 7/00 (2006.01); **F23C 15/00** (2006.01); **F23J 15/00** (2006.01); **F23J 15/02** (2006.01); **F24H 1/20** (2006.01)

CPC (source: EP)
F22B 7/00 (2013.01); **F23C 15/00** (2013.01); **F23J 15/003** (2013.01); **F23J 15/027** (2013.01)

Designated contracting state (EPC)
AT BE DE DK ES FR GB GR IE IT

DOCDB simple family (publication)
WO 9427087 A1 19941124; AT E187541 T1 19991215; AU 4522193 A 19941212; DE 69327256 D1 20000113; DE 69327256 T2 20000330; DK 0698198 T3 20000417; EP 0698198 A1 19960228; EP 0698198 B1 19991208; ES 2139015 T3 20000201; GR 3032607 T3 20000531

DOCDB simple family (application)
US 9304715 W 19930517; AT 93915114 T 19930517; AU 4522193 A 19930517; DE 69327256 T 19930517; DK 93915114 T 19930517; EP 93915114 A 19930517; ES 93915114 T 19930517; GR 20000400306 T 20000209