Title (en)

Ribbed pipe for thermal catalytic cracking of hydrocarbons

Title (de)

Rippenrohr zum thermischen Spalten von Kohlenwasserstoffen

Title (fr)

Tuyau profilé pour le craquage thermique d'hydrocarbure

Publication

EP 2298850 A1 20110323 (DE)

Application

EP 10012045 A 20030508

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Priority

- EP 03725176 A 20030508
- DE 10233961 A 20020725

Abstract (en)

In a process to crack crude oil in the presence steam, super-heated gases pass through pipes with helical inner ribs which twist the rising gases, progressively forming a core zone with a primarily axial flow. The helical ribs impart a twist action at their outer margins. The gas speed is faster at the tub roots than at the rib tips. The ribs are set at an angle of 22.5-32.5[deg] w.r.t the pipe axis. The temperature varies within the pipe wall by less than 12[deg]C. The notional isothermal lines in the core are circular. The flow of twisting gases advances in the pipe at a speed of 1.8-2 m/s, representing 7-8% of the free cross sectional area. The ribs and their separation are symmetrical.

Abstract (de)

Bei einem Verfahren zum thermischen Spalten von Kohlenwasserstoffen in Anwesenheit von Dampf, wird das Einsatzgemisch durch außenbeheizte Rohre mit wendelförmigen Innenrippen geführt und zur Vergleichmäßigung der Temperatur in der Rohrwandung und über den Rohrquerschnitt sowie zur Verminderung der Ablagerung von Pyrolysekoks an der Rohrinnenwand eine Drallströmung im Gasgemisch erzeugt und mit zunehmendem radialem Abstand von den Rippen allmählich in eine Kernzone mit überwiegend axialer Strömung eingeleitet wird.

IPC 8 full level

B01J 19/00 (2006.01); **C10G 9/20** (2006.01); **C07C 4/02** (2006.01); **C10G 9/36** (2006.01); **C22C 19/05** (2006.01); **C22C 30/00** (2006.01); **C22C 38/40** (2006.01); **C22C 38/48** (2006.01); **F28F 1/40** (2006.01)

CPC (source: EP KR)

C10G 9/20 (2013.01 - EP KR); **C10G 9/24** (2013.01 - KR); **C22C 19/05** (2013.01 - EP); **C22C 38/40** (2013.01 - EP); **C22C 38/48** (2013.01 - EP); **F28F 1/40** (2013.01 - EP); C10G 2300/807 (2013.01 - EP)

Citation (applicant)

- GB 969796 A 19640916 - EXXON RESEARCH ENGINEERING CO
- DE 19523280 A1 19970102 - GFM GMBH [AT]

Citation (search report)

- [A] EP 1136541 A1 20010926 - EXXONMOBIL CHEM PATENTS INC [US]
- [A] DE 4427859 A1 19951026 - SIEMENS AG [DE]

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