Title (en)
Cyclone separator

Title (de)
Zyklonabscheider

Title (fr)
Cyclone

Publication
EP 0962255 A3 20010314 (DE)

Application
EP 99110035 A 19990522

Priority
DE 19825206 A 19980605

Abstract (en)
[origin: EP0962255A2] The screw bolts (21) in a cyclone separator are arranged in distance linings (20) distributed around the submerged pipe and have an opening (22) for the submerged pipe segment securing to feed in surrounding air as cooling medium. has a submerged pipe composed of several segments. Each segment (12, 13) is connected at its upper end by screw bolts (21) to the waste gas pipe (17) insulated by a refractory lining. The screw bolts (21) in a cyclone separator are arranged in distance linings (20) distributed around the submerged pipe and have an opening (22) for the submerged pipe segment attachment to feed in surrounding air as cooling medium.

IPC 1-7 (main, further and additional classification)
B04C 5/13

IPC 8 full level (invention and additional information)
B04C 5/13 (2006.01); F27B 7/20 (2006.01)

CPC (invention and additional information)
B04C 5/13 (2013.01); F27B 7/20 (2013.01); F27B 7/2016 (2013.01)

Citation (search report)
[AD] DE 3228902 A1 19840209 - KLOECKNER HUMBOLDT DEUTZ AG [DE]

Cited by
DE102014019472B4; DE102014019472A1

Designated contracting state (EPC)
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

EPO simple patent family
EP 0962255 A2 19991208; EP 0962255 A3 20010314; EP 0962255 B1 20030129; AT 231743 T 20030215; DE 19825206 A1 19991209; DK 0962255 T3 20030623; ES 2189313 T3 20030701; US 6214075 B1 20010410

INPADOC legal status

2018-07-31 [PG25 ES] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : ES
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20170523

2018-06-26 [REG ES FD2A] ANNOUNCEMENT OF LAPSE IN SPAIN
- Effective date : 20180626

2018-05-31 [PG25 FR] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : FR
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20170531

2018-04-30 [PG25 DE] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : DE
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20171201

2018-04-30 [PG25 DK] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : DK
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20170531

2018-03-02 [REG FR ST] NOTIFICATION OF LAPSE
- Effective date : 20180131

2018-01-31 [PG25 AT] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : AT

- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20170522

2018-01-15 [REG AT MM01] LAPSE BECAUSE OF NOT PAYING ANNUAL FEES
- Document : AT 231743 T
- Effective date : 20170522

2018-01-02 [REG DK EBP] EP PATENT LAPSED
- Effective date : 20170531

2017-12-01 [REG DE R119] APPLICATION DEEMED WITHDRAWN, OR IP RIGHT LAPSED, DUE TO NON-PAYMENT OF RENEWAL FEE
- Document : DE 59904133

2017-05-31 [PG25 GB] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : GB
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20160522

2017-01-25 [GBPC] GB: EUROPEAN PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE
- Effective date : 20160522

2016-10-31 [PGFP DE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : DE
- Payment date : 20160722
- Year of fee payment : 18

2016-08-31 [PGFP BE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : BE
- Payment date : 20160519
- Year of fee payment : 18

2016-08-31 [PGFP DK] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : DK
- Payment date : 20160519
- Year of fee payment : 18

2016-08-31 [PGFP FR] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : FR
- Payment date : 20160520
- Year of fee payment : 18

2016-08-31 [PGFP AT] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : AT
- Payment date : 20160520
- Year of fee payment : 18

2016-07-29 [PGFP ES] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : ES
- Payment date : 20160512
- Year of fee payment : 18

2016-05-20 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 18

2015-07-31 [PGFP GB] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : GB
- Payment date : 20150521
- Year of fee payment : 17

2015-05-21 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 17

2004-01-21 [26N] NO OPPOSITION FILED
- Effective date : 20031030

2003-08-22 [ET] FR: TRANSLATION FILED

2003-07-01 [REG ES FG2A] DEFINITIVE PROTECTION
- Document : ES 2189313 T3

2003-06-23 [REG DK T3] EP PATENT WITH DANISH CLAIMS

2003-05-28 [GBT] GB: TRANSLATION OF EP PATENT FILED (GB SECTION 77(6)(A)/1977)

- Effective date : 20030501

2003-03-06 [REF] CORRESPONDS TO:
- Document : DE 59904133 P 20030306

2003-01-29 [AK] DESIGNATED CONTRACTING STATES:
- Designated State(s) : AT BE DE DK ES FR GB

2003-01-29 [REG GB FG4D] EUROPEAN PATENT GRANTED
- Free text : NOT ENGLISH

2003-01-22 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : FILGES, RALF

2003-01-22 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : SCHILLING, HORST

2001-12-05 [AKX] PAYMENT OF DESIGNATION FEES
- Free text : AT BE DE DK ES FR GB

2001-10-31 [17P] REQUEST FOR EXAMINATION FILED
- Effective date : 20010905

2001-03-14 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A3
- Designated State(s) : AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

2001-03-14 [AX] REQUEST FOR EXTENSION OF THE EUROPEAN PATENT TO:
- Free text : AL;LT;LV;MK;RO;SI

1999-12-08 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A2
- Designated State(s) : AT BE DE DK ES FR GB

1999-12-08 [AX] REQUEST FOR EXTENSION OF THE EUROPEAN PATENT TO:
- Free text : AL;LT;LV;MK;RO;SI