

Title (en)  
METHOD FOR THE SAFE OPERATION OF TURBO COMPRESSORS

Publication  
**EP 0332888 A3 19900725 (DE)**

Application  
**EP 89103021 A 19890221**

Priority  
DE 3809070 A 19880318

Abstract (en)  
[origin: EP0332888A2] In the case of known control methods for turbocompressors, in order to prevent surging before the working point of the compressor reaches the surge limit, it is ensured by controlled opening of at least one venting or reversal valve on reaching a venting line parallel to the surge limit that the flow through the compressor does not fall below a minimum through-flow which varies as a function of the delivery pressure. The disadvantage to these known methods is that surging cannot always be reliably prevented, particularly in the case of rapid shifts in the working point in the direction of the surge limit. The new method is intended to avoid this disadvantage. <??>The new method proposes that in addition the rate at which the working point shifts in the direction of the surge limit be determined in the performance characteristics and that if a rate-related rapid opening line running at various distances from the surge limit is exceeded, rapid opening of the venting or reversal valve be superimposed on the normal venting control. This means that opening of the venting valve occurs at the latest possible moment but always in sufficient time. The compressor can thereby still be operated safely at levels closer to its limit which results in more economic partial load operation and greater surge safety. <??>The new method is suitable for controlling turbocompressors for widely varying applications, for example in blast furnace blast generators, in petrochemical processes or the manufacture of fertilizers. <IMAGE>

IPC 1-7  
**F04D 27/02**

IPC 8 full level  
**F04D 27/02** (2006.01)

CPC (source: EP US)  
**F04D 27/0207** (2013.01 - EP US)

Citation (search report)  
• [A] DE 1107887 B 19610531 - POWER JETS RES & DEV LTD  
• [A] FR 2403469 A1 19790413 - SUNDSTRAND CORP [US]  
• [A] EP 0230009 A2 19870729 - GUTEHOFFNUNGSHUETTE MAN [DE]  
• [A] DE 1428066 A1 19681128 - CONTINENTAL ELEKTRO IND AG  
• [A] DE 2943156 A1 19810507 - BORG WARNER [US]

Cited by  
WO0058797A1; US6778865B1

Designated contracting state (EPC)  
AT CH DE GB IT LI NL

DOCDB simple family (publication)  
**EP 0332888 A2 19890920; EP 0332888 A3 19900725; EP 0332888 B1 19920129;** AT E72304 T1 19920215; DE 3809070 A1 19891026; DE 3809070 C2 19920109; DE 58900778 D1 19920312; JP H01273900 A 19891101; US 4938658 A 19900703

DOCDB simple family (application)  
**EP 89103021 A 19890221;** AT 89103021 T 19890221; DE 3809070 A 19880318; DE 58900778 T 19890221; JP 6109989 A 19890315; US 32150989 A 19890309