

Title (en)  
BACKFEED STAGE OF A RADIAL TURBO FLUID ENERGY MACHINE

Title (de)  
RÜCKFÜHRSTUFE EINER RADIALTURBOFLUIDENERGIEMASCHINE

Title (fr)  
ÉTAGE DE RETOUR D'UNE TURBOMACHINE À ÉNERGIE FLUIDIQUE RADIALE

Publication  
**EP 3390832 B1 20190731 (DE)**

Application  
**EP 17707876 A 20170301**

Priority  
• DE 102016203305 A 20160301  
• EP 2017054686 W 20170301

Abstract (en)  
[origin: WO2017148971A1] The invention relates to a backfeed stage (BFS) of a radial turbo fluid energy machine (RTFEM), in particular a radial turbo compressor (RTC), for deflecting a flow direction (FD) of a process fluid (PF) flowing out of a rotor (R) rotating about an axis (X) from radially outward to radially inward, comprising a backfeed channel (BFC), which has three sections (S1, S2, S3) adjacent in the flow direction, wherein a first section (S1) is designed to conduct the process fluid (PF) radially outward, wherein a second section (S2) is designed to deflect the process fluid (PF) from radially outward to radially inward, wherein a third section (S3) is designed to conduct the process fluid (PF) radially inward, wherein the second section (S2) and the third section (S3) or only the third section (S3) has first guide vanes (L1), which define flow channels (FC) of the backfeed channel (BFC) in relation to each other in the circumferential direction. In order to improve efficiency, the second section (S2) and the third section (S3) or only the third section (S3), according to the invention, has second guide vanes (L2), leading edges (L2LE) of which are offset downstream to leading edges (L1LE) of the first guide vanes (L1) and which define flow channels (FC) of the backfeed channel (BFC) in relation to each other in the circumferential direction, wherein the second guide vanes (L2) are designed and arranged in such a way that, in a radially extending plane in the region of the axial extent of the third section (S3), a connection line (CLTE) through two trailing edges (L1TE) of adjacent first guide vanes (L1) is divided non-centrally by a radial stream (RS) through the leading edge (L1LE) of a second guide vane (L2) arranged between the two first guide vanes (L1) in the circumferential direction.

IPC 8 full level  
**F04D 17/12** (2006.01); **F04D 29/44** (2006.01)

CPC (source: EP US)  
**F04D 17/122** (2013.01 - EP US); **F04D 29/053** (2013.01 - US); **F04D 29/4213** (2013.01 - US); **F04D 29/444** (2013.01 - EP US); **F04D 29/284** (2013.01 - US); **F04D 29/666** (2013.01 - US)

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**DE 102016203305 A1 20170907**; EP 3390832 A1 20181024; EP 3390832 B1 20190731; US 10422346 B2 20190924; US 2019055960 A1 20190221; WO 2017148971 A1 20170908

DOCDB simple family (application)  
**DE 102016203305 A 20160301**; EP 17707876 A 20170301; EP 2017054686 W 20170301; US 201716079625 A 20170301