

Title (en)
Centrifugal pump

Title (de)
Kreispumpe

Title (fr)
Pompe centrifuge

Publication
EP 2420678 B1 20150225 (EN)

Application
EP 10008738 A 20100821

Priority
EP 10008738 A 20100821

Abstract (en)
[origin: EP2420678A1] A centrifugal pump having at least one impeller (32), a pump housing and an electrical motor. The pump has a Q-H pump curve (4) having a head H_0 (28) at zero flow and a head H_{ref} (30) corresponding to the highest hydraulic power and that H_{ref} (30) is greater than H_0 (28). The pump has low energy consumption rate, especially at low flow corresponding to the conditions in which the pump is operated most of the time. Thus, the pump according to the invention is less energy consuming than the prior art centrifugal pumps.

IPC 8 full level
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F04D 13/06 (2013.01 - US); **F04D 15/0033** (2013.01 - EP US); **F04D 25/06** (2013.01 - US); **F04D 29/2261** (2013.01 - EP US); **F04D 29/245** (2013.01 - EP US)

Citation (opposition)
Opponent : Sulzer Management AG

- GB 2005768 A 19790425 - PLESSEY CO LTD
- CN 1210705 A 19990317 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- CN 200952491 Y 20070926 - XIXIA VEHICLE WATER PUMP CO LT [CN]
- SU 1581865 A1 19900730 - VNII GORNOJ MEKH [SU]
- EP 0551550 A1 19930721 - SIEMENS AG [DE]
- US 2007132330 A1 20070614 - FEI RENYAN W [CN], et al
- WO 9314450 A1 19930722 - KSB AG [DE]
- WO 2010046031 A1 20100429 - KSB AG [DE], et al
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- WO 2010046031 A1 20100429 - KSB AG [DE], et al
- "Hocheffiziente Heizungsumwälzpumpe Rio-Eco. Baureihenheft", KSB AKTIENGESELLSCHAFT, 25 May 2010 (2010-05-25), pages 1 - 22, XP055265879
- KSB AKTIENGESELLSCHAFT, "Hocheffiziente Heizungsumwälzpumpe Rio-Eco" Baureihenheft, 25 May 2010 (2010-05-25), pages 1 - 22, XP055265879
- C. PFLEIDERER: "Die Kreispumpen", 1932, VERLAG VON JULIUS SPRINGER, pages: 175 - 191, XP055253545
- G. KERGOURLAY ET AL.: "Influence of Splitter Blades on the Flow Field of a Centrifugal Pump: Test-Analysis Comparison", INTERNATIONAL JOURNAL OF ROTATING MACHINERY, vol. 2007, pages 1 - 13, XP055242078

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- SU 1581865 A1 19900730 - VNII GORNOJ MEKH [SU]
- EP 0551550 A1 19930721 - SIEMENS AG [DE]
- US 2007132330 A1 20070614 - FEI RENYAN W [CN], et al
- WO 9314460 A2 19930722 - KIKUKAWA TOMIKO [JP]
- WO 2010046031 A1 20100429 - KSB AG [DE], et al
- "Hocheffiziente Heizungsumwälzpumpe Rio-Eco", BAUREIHENHEFT, KSB AKTIENGESELLSCHAFT FRANKENTHAL, 25 May 2010 (2010-05-25), XP055242073
- C. PFLEIDERER ET AL., "DIE KREISELPUMPEN", 1932, pages 175 - 191, XP055253545
- G. KERGOURLAY ET AL.: "Influence of Splitter Blades on the Flow Field of a Centrifugal Pump", INTERNATIONAL JOURNAL OF ROTATING MACHINERY, vol. 2007, no. 85024, 2007, pages 1 - 13, XP055242078

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DOCDB simple family (publication)
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