

Title (en)  
WATER TURBINES WITH MIXERS AND EJECTORS

Title (de)  
WASSERTURBINEN MIT MISCHERN UND EJEKTOREN

Title (fr)  
TURBINES À EAU AVEC MÉLANGEURS ET ÉJECTEURS

Publication  
**EP 2304226 A4 20120627 (EN)**

Application  
**EP 09733347 A 20090416**

Priority

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Abstract (en)  
[origin: WO2009129420A1] Turbine systems for extracting energy from water traveling relative to the turbine system can include a rotor assembly for extracting the energy, a turbine shroud having a turbine shroud inner volume within which at least a portion of the rotor assembly is disposed, and an ejector shroud having an ejector shroud inner volume within which at least a portion of the turbine shroud is disposed. The turbine shroud and the ejector shroud can each have a terminus comprising a plurality of turbine shroud mixer elements or ejector shroud mixer elements, respectively. One or more of the mixer elements and ejector shrouds comprise a mixer/ejector pump which increases the energy extraction potential of the turbine system. One or more of the turbine shroud mixer elements, ejector shroud mixer elements, and ejector shroud and turbine shroud inlets can be asymmetric about a plane passing through the axis of rotation of the rotor assembly. Methods, systems, apparatus and articles of manufacture relating to these features and others are also disclosed.

IPC 8 full level  
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Citation (search report)

- [XAY] JP S6329063 A 19880206 - FUJI ELECTRIC CO LTD
- [YA] GB 1563337 A 19800326 - THOMPSON D, et al
- [YA] DE 10036307 A1 20020221 - ALSTOM POWER NV [NL]
- [YA] US 2007048086 A1 20070301 - THORSBAKKEN ARDEN L [US]
- [A] US 1476229 A 19231204 - EDUARD SUESS
- See references of WO 2009129420A1

Cited by  
EP3778392A4

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