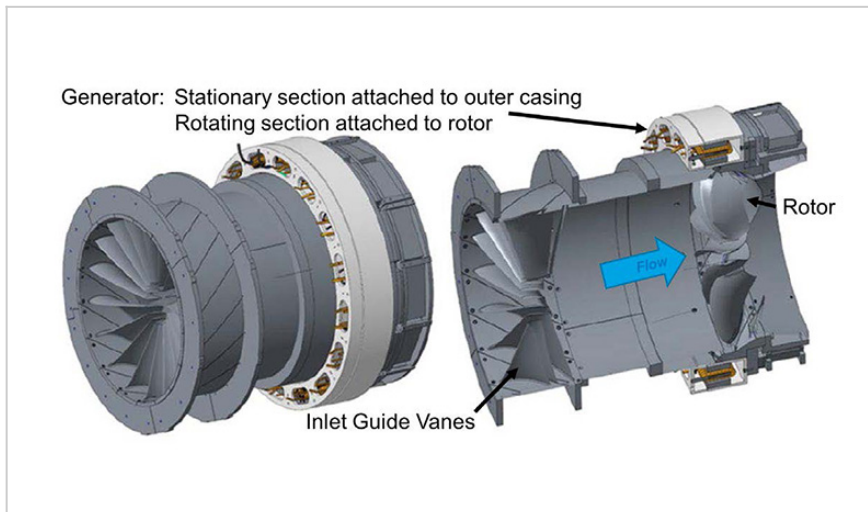


Modular Multi-bladerow Rim-drive for Hydraulic Applications

ID# 2019-0981



Example rim-drive turbomachinery

Technology Summary

This technology features multiple axial flow bladerows that are modular, scalable, configurable, and can operate flexibly in a wide range of conditions for hydraulic applications. The bladerows are hubless and rotors are directly driven from the rim with a variable speed electromechanical device (motor/generator). It is aimed primarily for smaller scale hydropower and related applications such as pumped storage hydropower. The concept is optimized to operate with good performance characteristics in a wide range of conditions, environments, and applications, including low-head/low-power (on the order of kW to low-MW) installations.

Application & Market Utility

Solar and wind provide inexpensive renewable energy resources and represent a significant and rapidly growing percentage of the total U.S. energy production. The intermittent nature of these renewable resources requires effective methods of energy storage. Currently, pumped storage hydropower ("PSH") is the most common method of large energy storage but is limited by available sites. Thus, there is a need for a PSH turbomachine that is simple, reliable, easy to install across a wide range of sites, scalable, modular, and economically attractive.

Next Steps

The research team seeks collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Licensing | Research

Keywords

- Low head hydraulic
- Turbomachinery
- Rim drive
- Multi-bladerow
- Hydropower

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