ANDRITZ pumps used as turbines
ACT/FPT series

www.andritz.com/pumps
ANDRITZ centrifugal pump as turbine

For over 100 years, ANDRITZ has been a byword for competence and innovation in designing centrifugal pumps.

As a leading supplier of hydraulic machines (pumps and turbines), we are proficient in the technology needed for power stations, water supply facilities and for pulp and paper mills. This enables us to lay the foundation for successful further development of pumps and turbines.

The facts
- Flow rates
  - up to 0.8 m³/s (ACT series)
  - up to 6 m³/s (FPT series)
- Head up to 80 m
- Output
  - up to 250 kW (ACT series)
  - up to 2 MW (FPT series)

Centrifugal pumps and pump turbines from ANDRITZ are operating successfully all around the world. They offer robustness and wear resistance, thus fulfilling high customer expectations in terms of efficiency, life cycle, ease of maintenance and economic efficiency.

Modular assembly system
By using standard components, the units have excellent operating availability and can use tried and tested components.

Energy recovery in the paper industry
Pressurized and air-saturated waste water is pressure-relieved in the feed pipe to a micro-flotation plant. The energy recovered assists directly in driving a pump.

Media
- Drinking water
- Residual and waste water
- Pulp suspensions in the pulp and paper industry

Applications
- As recovery turbines
  - e.g. in pulp and paper mills
- In small hydropower plants
- To supply energy, e.g. to mountain refuges and forest lodges

Technology to convince you
Decades of experience in building hydraulic machines and comprehensive process know-how form the basis of the ANDRITZ centrifugal pumps, ACT and FPT series, used as turbines.
Proven open-impeller design
The design of the ANDRITZ centrifugal pump, ACT series, which is used as a turbine, is characterized by open channels and a wear-resistant design that makes the pump insensitive to contaminants when used as a turbine.

Shaft seal
- Stuffing box packing or single mechanical seal

Sturdy bearing support
- A single casting consisting of the bearing casing and lantern
- Oil or grease lubrication

Spiral casing
- Sturdy, wear-resistant design
- Can be rotated through 90° for fitting to the delivery pipe

Anti-friction bearings
Long service life due to generous dimensioning!

Sturdy shaft
Low shaft deflection and low mechanical vibration!

Two wear linings
Protecting the pump casing and the casing cover
Electricity from your own plant
This self-sufficiency is offered by ANDRITZ mini-turbine plants, either for personal or for industrial use. The plant has a compact design, suitable for isolated operation and for supplying to an existing power network.

Scope of services
- Assistance in determining the volume of water available, dimensioning of the power plant
- Consulting on design of the intake structure, the waterway and the power house
- Assistance in planning, construction or rebuilding of the electrical equipment
- Specification of the most economical pipeline
- Installation of ANDRITZ components in existing power or industrial plants
Performance range
ANDRITZ mini-turbines, ACT/FPT series

Material combinations

<table>
<thead>
<tr>
<th>ACT/FPT series</th>
<th>EN-GJL 250</th>
<th>1.4460</th>
<th>1.4021</th>
<th>1.4462</th>
<th>1.4517</th>
<th>1.4517 h</th>
<th>1.4404</th>
<th>1.4439</th>
<th>1.4468</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impeller</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing/casing cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearing housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front and rear linings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stuffing box body</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>European standard</th>
<th>US standard</th>
<th>UNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN-JL1040</td>
<td>EN-GJL 250</td>
<td>Class 40B</td>
</tr>
<tr>
<td>1.4460</td>
<td>X3CrNiMoN27-5-2</td>
<td>Grade 1A</td>
</tr>
<tr>
<td>1.4021</td>
<td>X20Cr13</td>
<td>Grade 1C</td>
</tr>
<tr>
<td>1.4462</td>
<td>X2CrNiMoN22-5-3</td>
<td>S32205</td>
</tr>
<tr>
<td>1.4517</td>
<td>GX2CrNiMoCuN25-6-3-3</td>
<td>Grade 1C</td>
</tr>
<tr>
<td>1.4517 hardened</td>
<td>GX2CrNiMoCuN25-6-3-3</td>
<td>Grade 1C</td>
</tr>
</tbody>
</table>