

# **Your Service Partner**Service Solutions for Renewable Power Generation





## **Customized Service Solutions**

Your rotating equipment needs to have the highest levels of reliability. With our customized service solutions, we support you in keeping your operation and maintenance costs at a minimum.

## Efficiency

- Optimize your operational efficiency with our customized solutions
- Enhance your competitive advantage with our expertise through energy efficiency, improved production output, and extended maintenance cycles



## Reliability

- Rapid turnaround to minimize disruption and keep your projects on schedule
- Delivery of outstanding service solutions which can be implemented at any time to increase the reliability and availability of your equipment

### Your partner

- Find the best solutions together with our dedicated service teams
- Tailor solutions to your needs using our many years of experience in the maintenance of rotating equipment

## **Cutting-edge Services for Your Processes**

Our expertise and commitment always deliver reliability, responsiveness, rapid turnaround and innovative solutions. We help you optimize your energy consumption and match equipment performance with process needs.

#### Hydro power generation



You want to keep maintenance costs and downtime of your generator to a minimum. Our proprietary hydro generator design tool allows generator performance to be upgraded by improving winding geometry and insulation materials to give increased output and improved efficiency. All coils can be manufactured in advance.

#### Geothermal power generation



Rapid turnaround and minimized disruption of your operations is our goal. Innovative repair processes for your steam turbines and pumps ensure reliability and improved efficiency. Customers benefit from a full range of services including repair and replacement of diaphragms, blades and impellers as well as rotors and casings.

#### Solar thermal power generation



We help you to maintain your rotating equipment at the highest levels of availability and reliability. Performance analysis and inspection by our experts help identify possible improvements. Our fully equipped workshops and engineering teams help minimize turnaround time.

#### Wind power generation



Technology in the field of wind turbines has evolved rapidly over the last years. Sulzer is your partner in maintaining and servicing your equipment fast to limit downtime. Shop-based repairs such as a generator rewind are performed with improved performance in mind. To minimize cost, and where space is available, we can complete bearing exchanges within the tower.

#### Combined heat and power generation



The professional maintenance of your complete system ensures economic operations. Rely on our extensive experience in the repair and replacement of gas turbine components. Our field service teams are at your side whenever needed to help increase availability and enhance your competitive advantage.

#### Waste-to-energy and biomass power generation



To reduce operation and maintenance costs we develop tailored solutions to meet your service needs. We are dedicated to minimizing downtime and maximizing profitability. Reliable services for your steam turbine, generator, pumps and other rotating equipment help you to increase efficiency.

#### **Services**

#### Complete equipment overhauls

#### Retrofits

#### Rotor repairs

## Combustion turbine component repairs Parts manufacturing

- · Shaft manufacturing
- Impeller manufacturing
- · Blade manufacturing
- Wear parts (bearings, seals)

#### Weld repairs

- Submerged Arc Welding of rotors
- Combustion turbine blade weld repairs

#### Coatings

- Wear resistance/ Anti-Fouling
- Corrosion resistance
- Temperature control

#### **Engineering services**

- Machinery vibration diagnostics
- Performance upgrades
- Root Cause Failure analysis
- Structural analysis
- · Metallurgical analysis
- Modal analysis
- Rotor dynamic analysis

#### At-speed balancing

#### Non Destructive Testing

#### Generator and motor repair services

- · Stator/rotor testing
- Stator/rotor coil manufacture
- · Generator and motor rewinds

#### Field services

## **Equipment Panorama**

When pumps, turbines, compressors, generators, and motors are essential to your operations, you need a service partner you can trust. With our technically advanced and innovative solutions, we give our customers the assurance they need to focus on their operations. Sulzer's advanced rotating equipment experience includes:

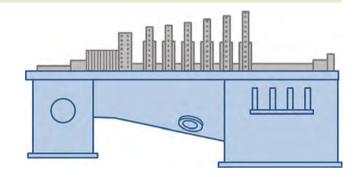
#### Steam turbines

#### 50+ manufacturers / 450+ models

Working temperature: 950°F (510°C)

Power: 1 – 100 MW (1,300 – 134,000 hp)

**Speed:** 3,600 to 7,200 RPM **Weight:** 200,000 lb (90 t)



#### **Combustion turbines**

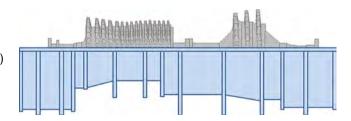
#### 28 manufacturers / 100 models

Working temperature: 2,500°F (1,371°C)

Power: 10 - 250 MW (13,000 - 335,000 hp)

 Speed:
 3,600 RPM

 Weight:
 200,000 lb (90 t)



#### **Axial flow compressors**

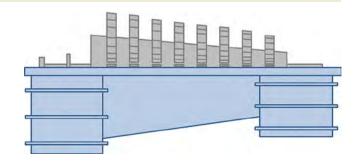
#### 20 manufacturers / 50+ models

 Power:
 up to 20,000 hp

 Speed:
 3,000 - 9,000 RPM

 Dis. Pressure:
 up to 290 psi (20 bar)

 Weight:
 100,000 lb (45 t)



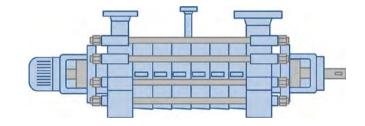
#### Pumps (overhung - vertical - axial - multistage)

#### 30+ manufacturers / 200+ models

Working temperature: up to 400°F (200°C)

**Dis. Pressure:** 1,000 to 4,500 psi (70 - 310 bar)

Power: up to 10,000 hp Speed: 3,600 to 6,000 RPM Weight: 50,000 lb (23 t)



#### **Motors**

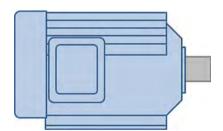
#### 20+ manufacturers

Power: Fractional - 60 MW (1 hp - 80,000 hp)

Voltage: 440 / 690 / 3300 / 4160 /

6600 / 11000 / 13800

**Speed:** 300 - 3,600 RPM **Weight:** 100,000 lb (45 t)



#### Generators

#### 20+ manufacturers

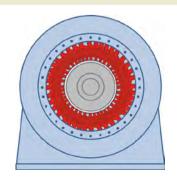
Power: 0.5 - 400 MW

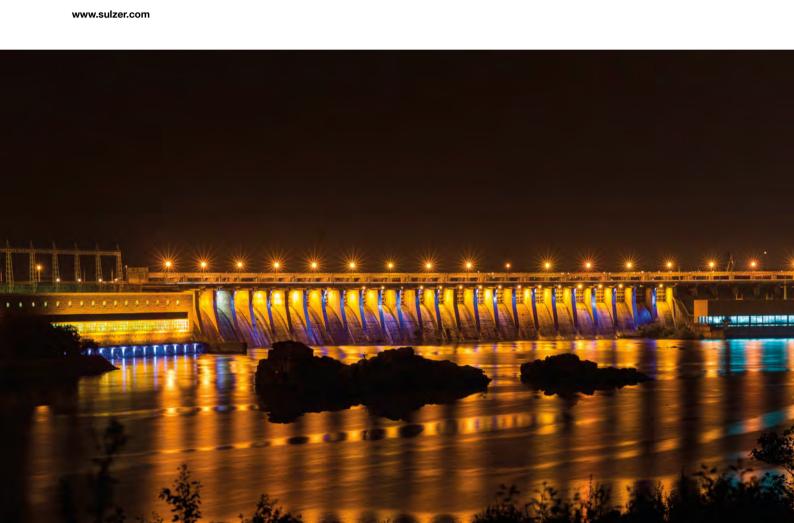
Voltage: 440 / 690 / 3300 / 4160 /

6600 / 11000 / 13800

 Speed:
 300 - 3,600 RPM

 Weight:
 100,000 lb (45 t)





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