Keeping turbines spinning

With high-end surface solutions, advanced materials and components for gas and steam turbines
Oerlikon – your partner to increase power plant productivity

With more than 80 years of market experience and 50 years of successful collaboration with power generation enterprises, we are the industry’s partner of choice for applications that include gas, steam, wind and hydro turbines as well as solar thermal systems. In addition, we provide solutions and on-site service for coal-fired and waste-to-energy boilers and, HRSG pipe protection along with corrosion protection for external pipework in combined-cycle power plants. We bring together the widest-ranging portfolio of surface solutions, advanced materials and materials processing in the industry.

We are focused on supporting you in every step of your power generation challenges as a development partner, service or full solution provider:

**Coating services and equipment**
- We offer the most comprehensive portfolio of coating technologies, services and equipment, including heat treatment, thin film, thermal spray, laser cladding and weld overlay coating solutions.
- We combine coating equipment, materials and in-depth application know-how to develop solutions tailored to your requirements.
- Install our coating equipment and apply our coating materials to your parts on-site, in your production facility, or rely on our qualified service centers to do the job for you.

**Advanced materials**
- We understand the properties of materials at every level and are a world-class material manufacturer of powders and wires for coating and specialty applications.
- Our ability to rapidly develop materials for specific needs speeds your product to market and gives you a competitive advantage.
- Choose from our extensive materials portfolio tailored to your application requirements.

**Turbine components**
- We manufacture a focused range of critical turbine components including seals and airfoils.
- The turbine components are processed in a cellular manufacturing environment designed to implement a zero-defect approach.
- Our manufacturing capabilities support your ability to deliver on time, manage design modifications, and resolve new part introduction challenges.

**Additive manufacturing**
- As a provider of customized industrial additive manufacturing solutions, we partner with you across the entire value chain: from materials development and manufacturing to application engineering and design, and end-to-end component production.
- We also offer post-processing services such as coatings to protect and enhance your components.

**Beyond gas and steam turbines**
- Oerlikon is a proven partner of the power generation industry, providing solutions for:
  - Biomass and waste-to-energy boilers
  - Hydro turbines
  - Wind turbines
  - Solar thermal systems
  - Fuel cells
  - Nuclear power plants
  - Combined cycle plants

To learn more about our complete offering, visit:
- www.oerlikon.com/balzers
  Thin film surface solutions
- www.oerlikon.com/metco
  Materials, surface technologies and turbine components
- www.oerlikon.com/am
  Additive manufacturing solutions
Oerlikon’s advanced materials, functional surface solutions and components ensure efficient and reliable performance of gas turbines

We offer a range of solutions to protect critical gas turbine components from extreme environments and help achieve key industry goals such as increased operational efficiency, emission reduction and lower equipment costs.

**Corrosion and erosion protection coatings**
Protect your compressor from corrosion and erosion to reduce damage, repair costs and downtime. PVD and thermal spray coatings offer outstanding protection from solid particle erosion.

**Abradable systems**
Reduce gas-path clearances and improve efficiency of compressors and turbines with abradable systems that are designed for optimal rub characteristics while providing corrosion and thermal resistance.

**Anti-fretting solutions**
Increase equipment lifetime by reducing wear from contact vibrations in areas such as blade roots and combustors with temperature-resistant anti-fretting alloys and chromium carbide thermal spray coatings.

**MCrAlYs and TBCs**
Achieve the highest efficiency with standard and advanced coatings for high-temperature corrosion resistance and thermal protection that meet the operating requirements of today’s gas turbines.

**Hole drilling and beyond**
Utilize our capabilities to apply gas turbine airfoil features such as film-cooling holes, internal cooling passages, seal slots, tip cavities, root notches, tip closures and coatings.

**Air seals**
Integrate build-to-print machined and fabricated honeycomb seals. Fast time to market through co-engineered development phase ensures a robust qualification and managed ramp-up that delivers repeatable part-to-part manufacturing.

**Single crystal repair**
Reduce repair costs and increase lifetime by recontouring blades with laser cladding technology.

**Ceramic blade tipping**
Minimize compressor and turbine blade tip wear should an incursion occur with the application of ceramic blade tips using laser cladding.

**Brazing materials for repair**
Economically repair and restore blades and vanes with activated diffusion braze alloys. Eliminate silicide formation by using only boron as the melt suppressant and diffusion activator.

**Turbine blades**
Additive manufactured turbine blades improve thermal management.

**Vane clusters**
Vane clusters are cost-efficiently produced using additive manufacturing.
Oerlikon solutions help boost the performance and reliability of your steam turbines

The growing demand for cleaner and more economical energy increases pressure to reduce emissions and improve the efficiency of power generating equipment. We provide solutions that significantly boost steam turbine efficiency and contribute to increased availability and service life.

**Oxidation and solid particle erosion (SPE) protection**
Impart outstanding erosion protection with PVD coatings in the high pressure (HP) and intermediate pressure (IP) sections. Combine with oxidation protection for stainless steel alloys.

**Last stage bucket (LSB) protection against liquid droplet erosion (LDE)**
PVD and thermal spray coatings provide excellent, long-term LDE resistance on new blades up to 1.5 m in length.

**Abradable systems increase turbine efficiency**
Abradable seal coatings are used to minimize the operational clearance between the rotating part and the seal segment. Improve turbine efficiency by applying abradables in the HP and IP sections to reduce clearances as well as to seal the shafts and the balancing pistons. PVD solutions protect steam turbine blade tips from wear should an incursion occur against hard, erosion-resistant abradable coatings. In addition, the wear mechanics of the abradable coating are also improved. The resulting benefits include increased steam turbine efficiency and power output as well as improved operational safety.

**Restore and protect LSB contours throughout service intervals and ensure high reliability and long life. Our laser cladding solutions produce high hardness and fine-grained microstructures that are crack-free.**

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Count on a powerful network of over 150 sites in 37 countries

Contact us today and tap into our productivity-boosting expertise in surface solutions, advanced materials, turbine components and additive manufacturing solutions, tailored specifically to the demands of power generation industry applications!

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