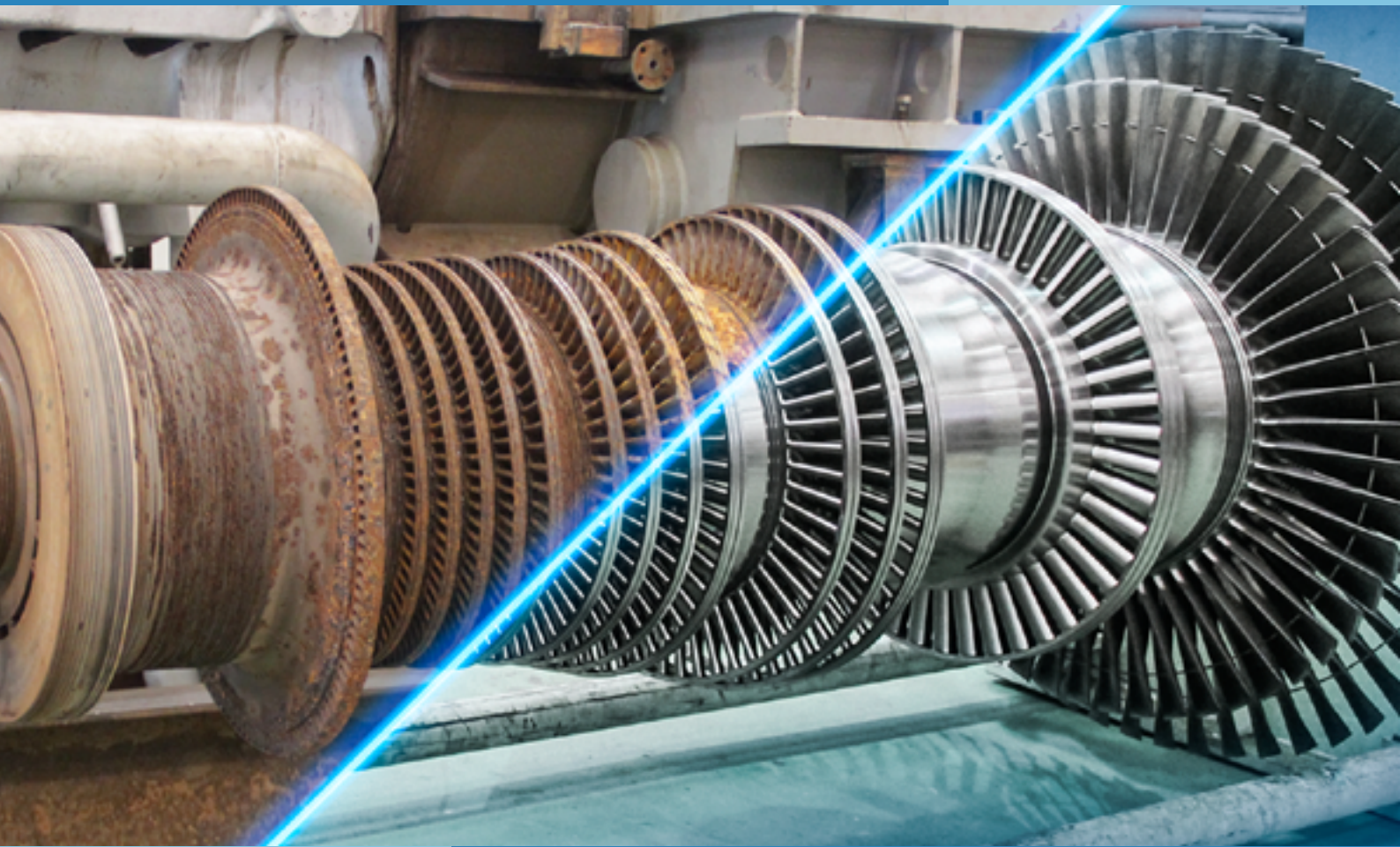


# SERVICES ON STEAM TURBINES AND PARTS

Factory and field services



Motors | Automation | Energy | Transmission & Distribution | Coatings



## Services on Steam Turbines

TGM is specialized in servicing turbines from other manufacturers, restoring them to their original operating conditions. The use of advanced techniques allows servicing the whole equipment or just part of it on a case-by-case basis.

### Structure

- Own technology
- Team focused on results and efficiency
- Modern and complete industrial site
- Full mastery of the applications
- Fast, flexible and competitive

### Main Services

- Overhaul
- Overhauling Revamping
- Retrofit
- Recovery
- Balancing
- 3D Engineering
- Installation and Startup
- Inspection and Monitoring
- Spare Parts and Parts
- Planned Maintenance
- Long-Term Contracts
- Training

### SERVED SECTORS

FOOD AND BEVERAGE

BIOMASS

PULP AND PAPER

CEMENT AND MINING

ELECTRIC ENERGY

FERTILIZERS

WOOD INDUSTRY

MARINE

CHEMICAL AND PETROCHEMICAL

STEEL

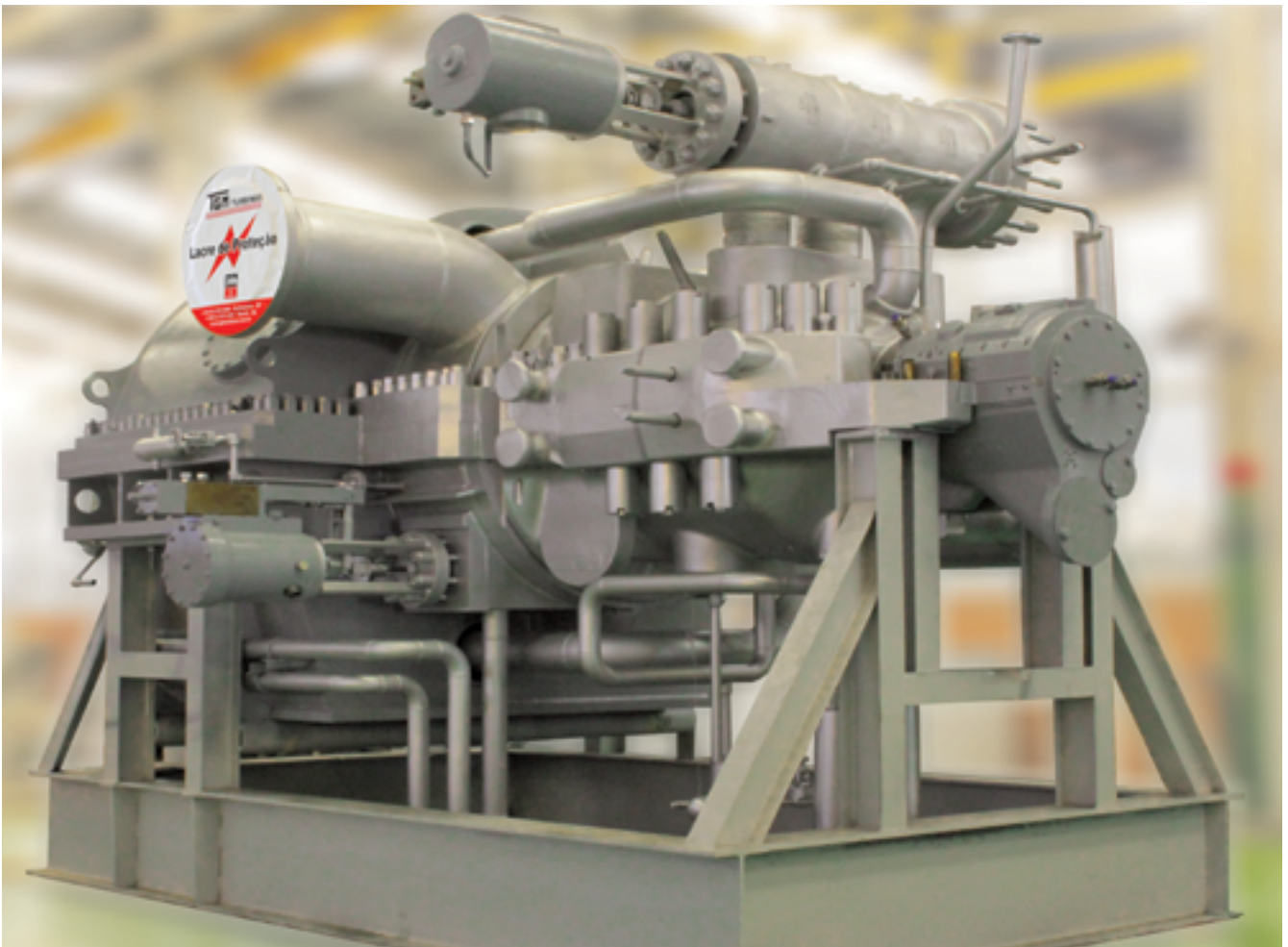
SUGAR AND ETHANOL

THERMOELECTRIC



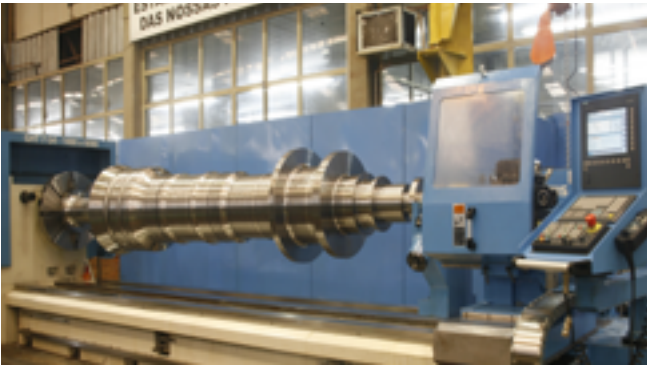
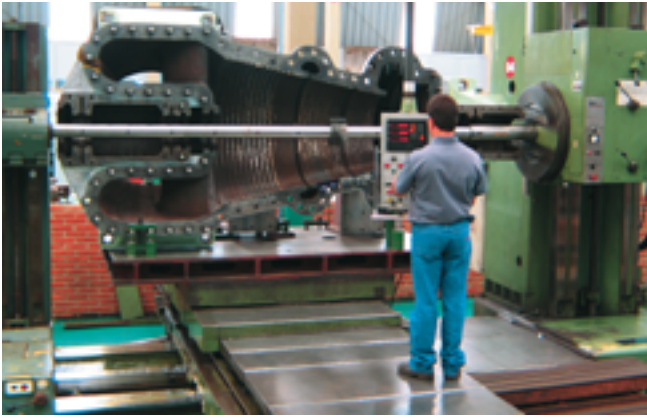
## TGM Technology

The company has engineers and technicians specialized in the development, construction and installation of products and services that ensure the best application to the requirement of every customer. To this end, we use advanced graphical applications and follow the standards in force. The use of advanced techniques allows us to provide services such as: 3D engineering, overhauling revamping, retrofit and overhaul of the whole equipment or just part of it, depending on the case.



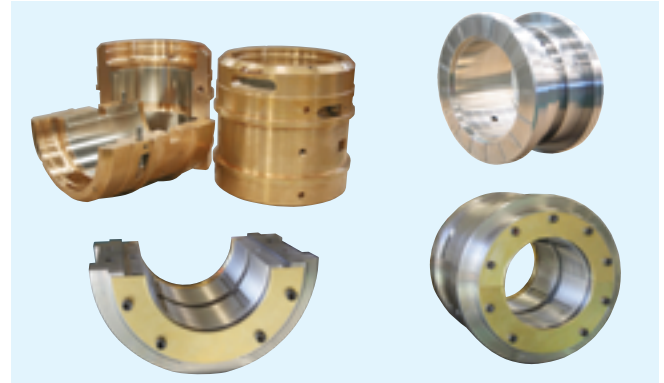
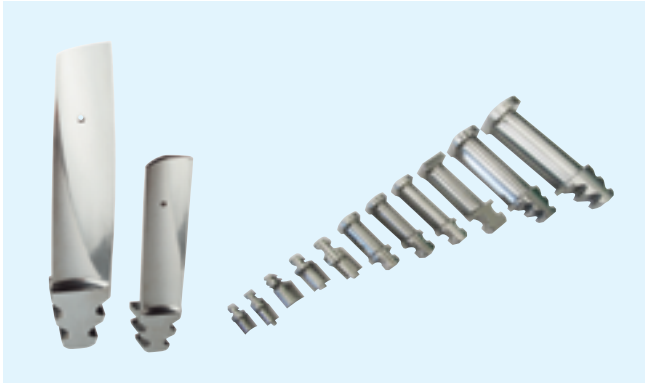
## Plant Structure

TGM constantly invests in projects, manufacturing, assembly, installation and technical assistance, standing out on the market with a complete structure to perform overhauling, recovery, overhauling revamping and retrofitting services on equipment.



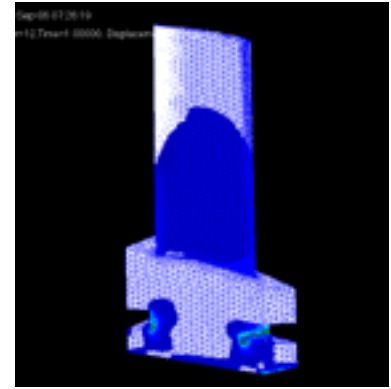
## Manufacture of Blades and Sleeve Bearings

The turbines and parts are manufactured in modern machines, which guarantees shorter lead times, greater precision and perfect finishing. TGM's structure offers several advantages, especially the manufacture of blades and bearings, considered the largest and the best in Latin America.



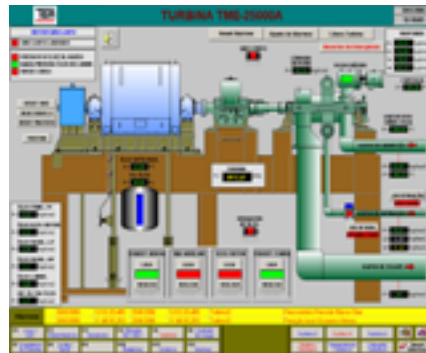
## 3D Engineering in the Field and in the Company

For analysis of potential equipment problems, we use full dimensional analysis resources. Composed of tools and processes, the analysis not only detects the causes but also proposes improvements in the machine design. TGM's team uses state-of-the-art techniques that provide greater accuracy for the overhauling revamping, retrofit and recovery services.



## Equipment Control and Safety Engineering

Implemented by specialists who seek to reduce maintenance costs and improve equipment efficiency, the company uses the best technologies and tools to prioritize the safety of the plant, machine and system equipment. With flexibility to meet the needs of every customer, the projects are customized and implemented with the supply of all the necessary documents for full integration, simplifying the overall commissioning works and reducing the implantation lead time.



## Quality

TGM's main commitment is to deliver products, parts and services to the customers' highest satisfaction levels. Therefore, the quality system supervises and continuously searches for process improvements, complying with administrative procedures, technical instructions, production standards, training and analysis with effective corrections.

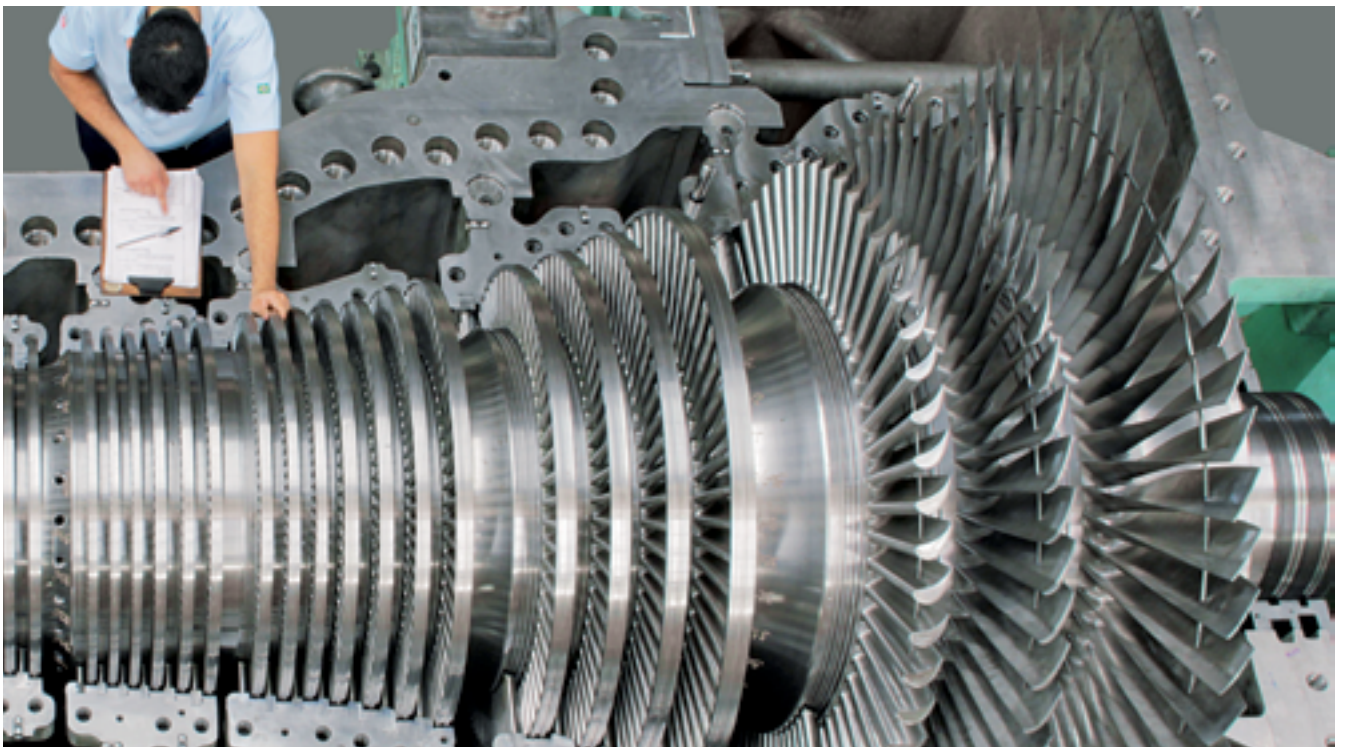
### Certifications

TGM has the ISO 9001 and ISO 14001 certifications, which proves our quality and respect for the environment.



Using its own technology, TGM meets all customers' requirements in products and services focused on the three fundamental pillars of an industry:

Safety, Efficiency and Operational Availability.



## Inspection and Repair Services

Normally, in scheduled shutdowns or at time intervals, important turbine inspection and repair services are performed, such as oil analysis or change, seal replacement, regulations and leak repairs. Those works can be carried out in the field or at TGM's plant.



## Inspection Services

TGM uses technologies available for internal visual inspection services after the turbine and other equipment shutdown. Complete and critical dimension checks are carried out, the runout is checked in probing areas and total indicator readings are performed to check the linearity of the shaft and rotor.



## Technical Reports and Documentation

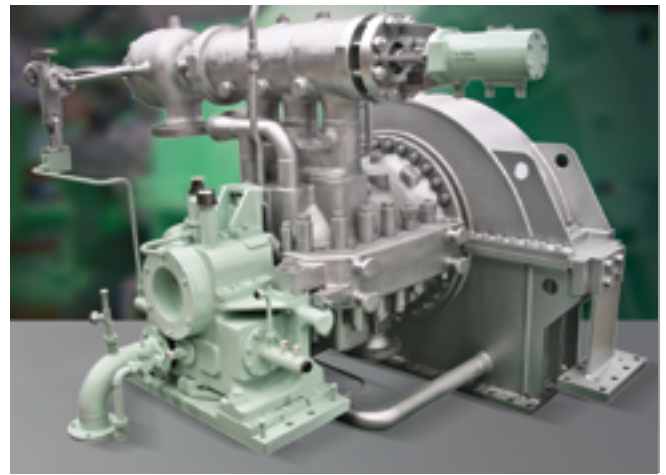
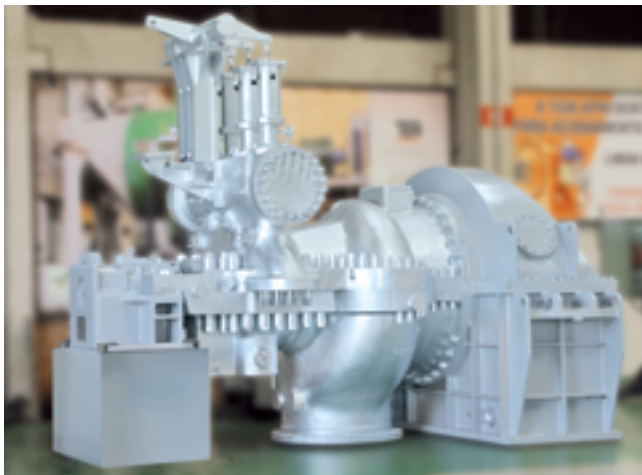
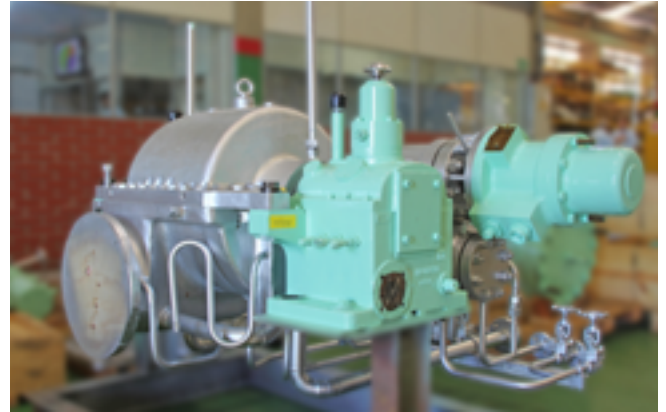
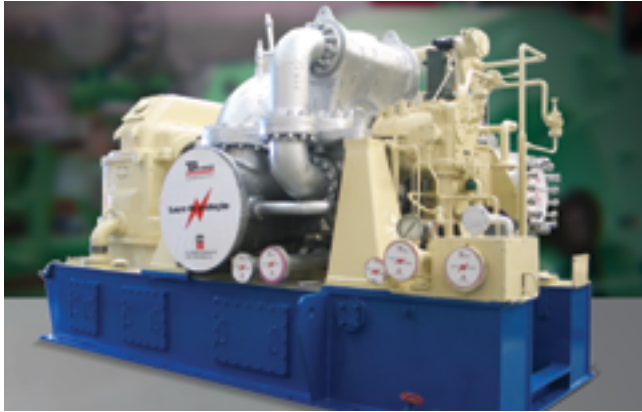
TGM's service team issues documents such as: inspection and testing plan, dimensional inspection, non-destructive testing, runout testing, balancing, fault analysis, component photographic analysis, water tightness and hydraulic testing reports. It also provides raw material and treatment certificates.





## Overhauling Revamping Services

The extensive knowledge in engineering and manufacturing solutions always seeks to perform services to improve the equipment efficiency. We perform disassembly, engineering, manufacture, reinstallation and performance monitoring services in the field. Those services ensure higher power with less investment.



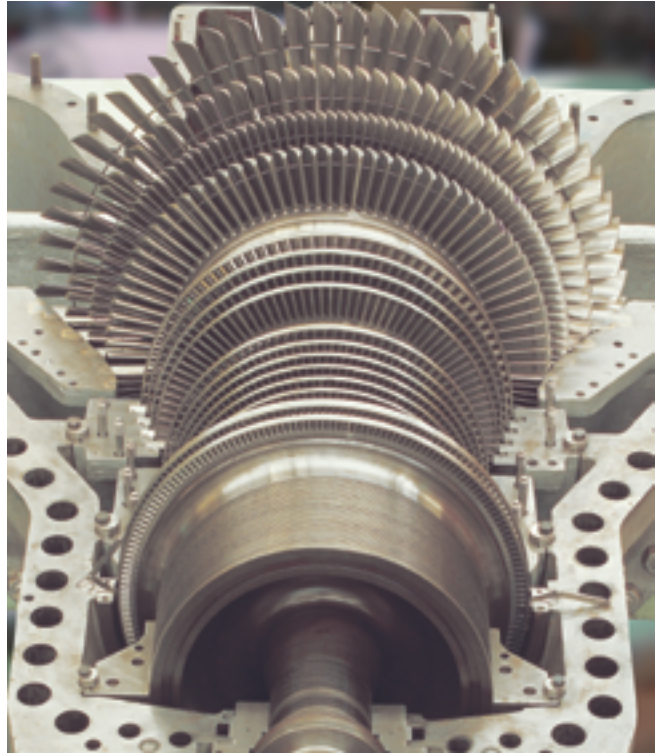
## Balancing Services

Any rotary machine may lose its original characteristics and is subject to premature maintenance. Therefore, TGM has the low and high-speed balancing, which is essential for the equipment efficiency and safety.



## Recovery Services

Engineering solutions are used to recover and revamp steam turbines, and parallel and planetary gearboxes. When necessary, reengineering services, parts and specific materials are supplied.



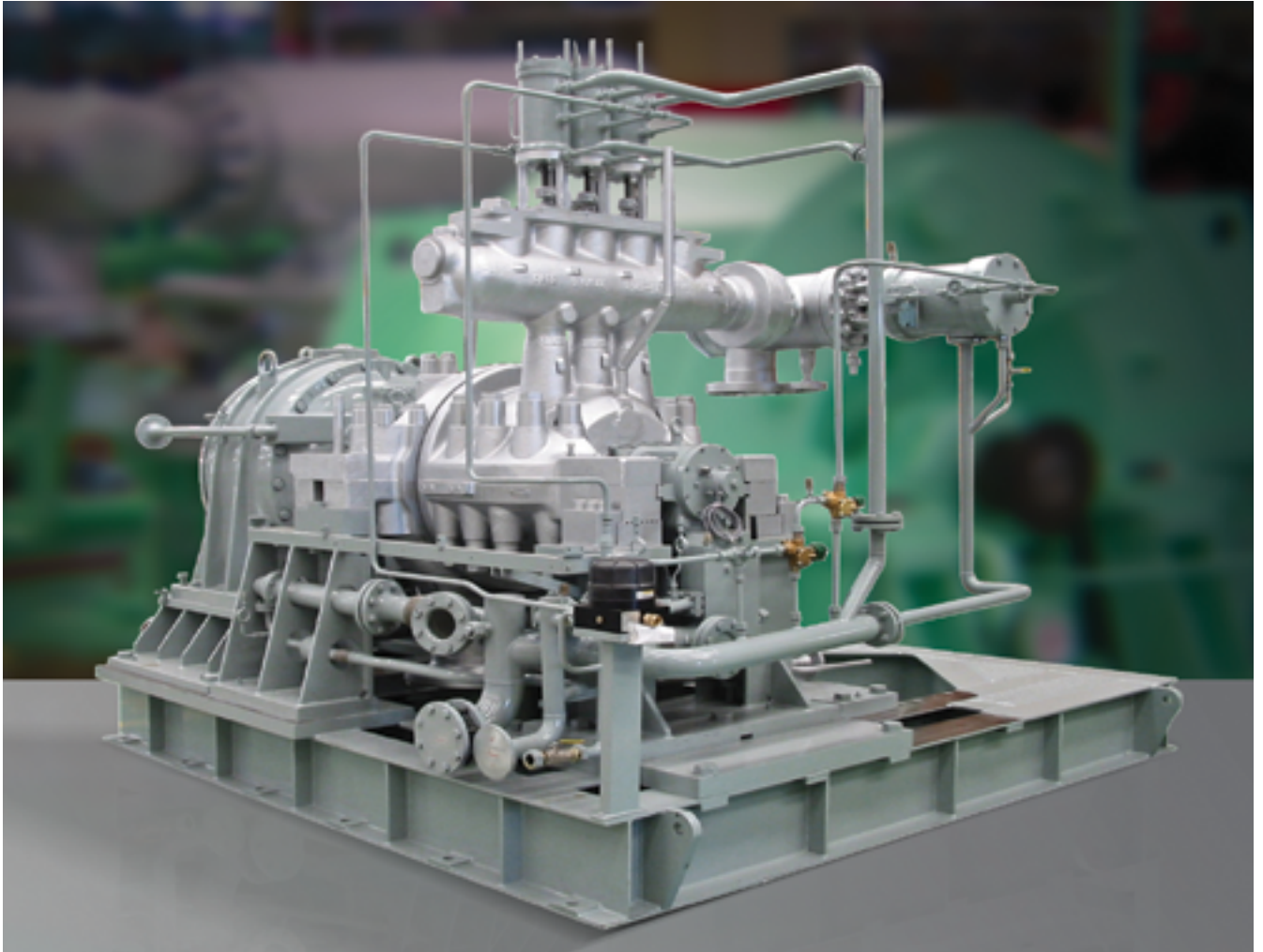
Recovery of the sealing surface: Steam, gas and liquid leaks on the sealing surface can cause accidents or loss of performance, in addition to damaging the environment. If it is impossible to remove the equipment to ship it to the factory, we use a field sealing surface recovery technique with material addition. We eliminate leaks, leaving the equipment under normal and risk-free conditions during operation.

Projects to service pumps, turbochargers and turbo blowers require a prior evaluation.



## Retrofit Services

They are services to optimize and retrofit steam turbines, and parallel and planetary gearboxes. The regulation, sealing, safety and control systems are retrofitted to provide greater safety and higher efficiency for the equipment, system or process. TGM has a special structure to execute the services in the factory or in the field.



## Services on Rotary Assemblies

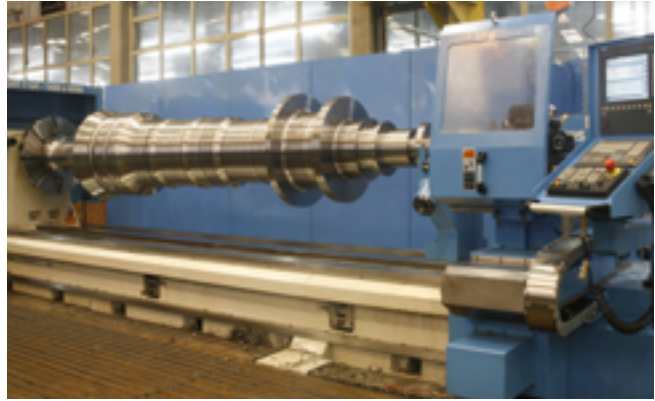
### Recovery

We use solutions to recover, optimize, retrofit, revamp, transform and service rotors of single and multistage steam turbines.



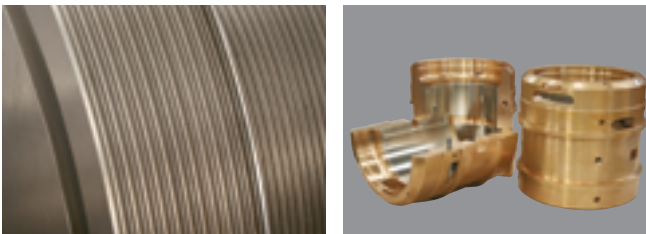
### Manufacture of Shafts

TGM has a machining cell with high technology machinery. Turbine shafts from other models and manufacturers are machined with quality, safety and operational availability.



### Part Replacement

Due to the high wear, which causes poor performance of the equipment, TGM replaces parts of rotary assemblies or rotors. The replacement of those parts restores or even raises their efficiency and productivity levels.

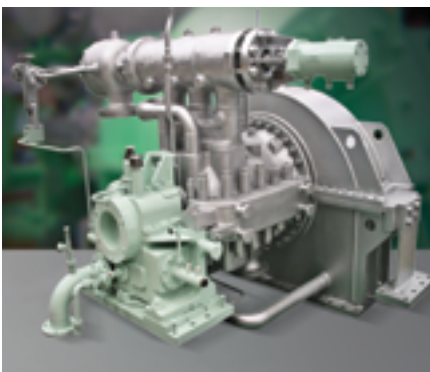
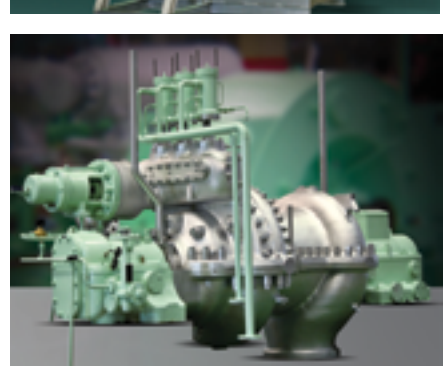
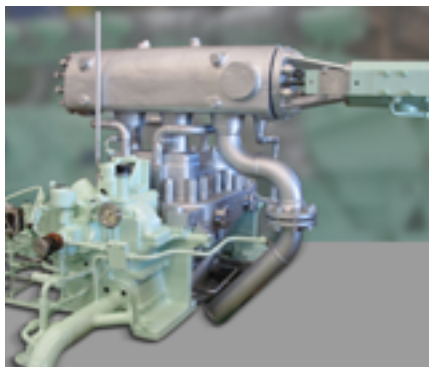


### Manufacture and assembly of blades

A qualified team recovers and manufactures turbine blades from other manufacturers, models and sizes in a total quality process, where all steps are carried out within the criteria required by global standards.



## Services on Steam Turbines from other manufacturers



## Spare parts and parts

By means of modern processes and strict control and quality standards, TGM manufactures spare parts for steam turbines and gearboxes with timely delivery. We keep in stock a wide range of mechanical and electronic components.



## Field Services

TGM's installation, startup, monitoring and technical support services are performed observing thorough processes and instructions at every stage of the project.



## Long-Term Contracts

It is an important maintenance concept, especially for industries that seek to guarantee efficiency, availability and safety in the processes. TGM long-term contract is implemented in several companies, covering more than 500 machines.



## Planned Maintenance

It guarantees an increase in the equipment availability, establishing an efficient scheduled shutdown for preventive, recovery, retrofit and part replacement services. On the market, the field team is considered to be the biggest and the best in fulfilling the needs of each customer.



## Services in Power Generators and Medium and Large Motors

With well-established products and services, TGM has added its experience to the WEG Group and expanded its portfolio beyond steam turbines and gearboxes, offering predictive, preventive and corrective maintenance also for turbogenerators and power generators, and medium and large motors.

When it is identified that the replacement of the existing equipment by a new one is not feasible, service will play a key role in the process by reducing the environmental impacts, once it is possible to repair the equipment.



### Full Solution:

- Expert's report
- General overhaul
- Removal, assembly and installation
- Mechanical and electrical recovery
- Mechanical and electrical retrofit
- Overhauling revamping
- Balancing of shafts and rotors
- Supervision of services in the field
- Online monitoring
- Spare parts
- Training

### Technical Service



The emergency service with TGM 24/7 technical support has become an icon in the segment, having the best reputation regarding 100% availability in the industry.

TGM, headquartered in Sertãozinho City/SP, is a company of the WEG Group, belonging to the WEG Energy business unit. Weg Energy develops and implements solutions for electric power generation in Wind Power, Biomass and Hydroelectric Power projects, providing large-sized electric motors, alternators, generators and wind turbines. It also provides overhaul and recovery services of electrical rotating machines.



The WEG Group's scope of solutions is not limited to the products and solutions presented in this catalog. To learn more, contact us.

Meet about WEG's  
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Subject to change without notice.

The information contained are reference values.