THE RIGHT PART THE FIRST TIME

TURBO PARTS, LLC.
Q U A L I T Y
M A N U F A C T U R I N G
I N V E N T O R Y
G U A R D I A N / V O R T E X
I N S T A L L A T I O N
A B O U T T P L

E X C E L L E N C E I N E N G I N E E R I N G.

T H E R I G H T P A R T. T H E F I R S T T I M E.

V A L V E S , C O M P O N E N T S , A N D M O R E.

T H E A D V A N C E D S E A L I N G S Y S T E M.

S P E C I A L L Y T R A I N E D C R E W S.

E X P E R T S I N T H E I N D U S T R Y.

V i s i t w w w . m d a t u r b i n e s . c o m / t u r b o - p a r t s f o r m o r e i n f o r m a t i o n

01
Turbo Parts is committed to supplying the highest quality MULTI-OEM products available anywhere in the world. Every aspect of manufacturing, beginning with the material specification process, is guided by well-defined quality control procedures. We pride ourselves on providing high quality, zero-defect components by complying with the procedures and processes that have allowed us to become one of the most recognized names in the turbine-generator parts business.

Turbo Parts maintains a large inventory of raw material and finished goods, allowing us to provide rapid response to orders. Taking the details seriously has made Turbo Parts a recognized name in the power generation industry.
The Turbo Parts Manufacturing Facilities were designed and equipped for the sole purpose of turbine-generator component manufacturing. Computer numeric controlled (CNC) milling machines are utilized in the manufacturing process of our components. These machines increase accuracy, reduce human error, and contribute to the repeatability of manufacturing parts. Our drive is to provide the highest quality, best priced and quickest turnaround for turbine parts in the industry.

We consistently provide reliable, high-quality turbine and generator components with rapid turnaround and delivery, year after year. Turbo Parts utilizes in-house, state-of-the-art laser and digital reverse engineering equipment, enabling us to quickly and accurately map component dimensional details needed for production.

Visit www.mdaturbines.com/turbo-parts for more information
We stock an extensive range of replacement components for both reaction and impulse design turbine generator sets. Our depth of inventory has been a critical factor in our success and is one of the leading reasons clients contact Turbo Parts first when sourcing both rotating and stationary replacement parts.

STATIONARY SEALS
- Patented Advanced Design: Guardian® Packing Ring; Vortex Shedder® Spill Strip; Hybrid Seals
- Conventional: Packing Rings, Labyrinth Rings, Gland Rings, Dummy Rings; Packing Springs, Retaining Keys, Pins, Rivets, Screws; Spill Strips, Steam Deflectors, Spring Back Seals;
- "J" Strip, Caulking Strip; Springs, Retaining Keys, Screws
- Complete Custom Fitting Installation Services
- Oil Deflectors

VALVE PARTS
- Stems, Disc, Seats
- Crosshead Assembly, Crosshead Bushings, Linkage Components
- Pressure Seal Head Assembly
- Bushings, Flanges, Valve Caps
- Bolts, Nuts, Studs, Washers, Spacers, Pins, Gaskets
- Stem Packing
- Cam Shafts, Including Bushings & Bearings
- Gear Racks, Pinions
- Assembly & Repair Service for Valve Internals

STATIONARY STEAMPATH COMPONENTS
- Nozzle Plates
- Nozzle Box Hardware: Gibs, Keys, Spacers, Dowels, Bolts, Cover Plates, Lock Wires, Diaphragm Hardware: Centering Pins, Dowels, Joint Keys, Support Bars, Shims, Arch Springs, Screws
- Packing Casing Hardware

ROTATING STEAMPATH COMPONENTS
- Reverse Engineered Blades
- Covers, Shrouds, Tie Wire, Balance Plugs, Set Screws
- Coupling Bolts, Nuts, Washers, Lock plates, Cover Plates & Screws

SHELLS
- Horizontal Joint Hardware, Body Bound, Thru, and Tap Studs, Nuts, Washers
- Steam Flanges - Studs, Bolts, Nuts, Gaskets
- Seal Rings: Main Steam Inlet, Vent Valve, Blow Down Valve, Cooling Steam
- Snout Pipes
- Access Flanges & Hardware

AUXILIARIES
- Heal Exchangers, Coolers: Gaskets; O-Rings
- Hydraulic Power Unit Parts: Filters, Filter Cartridges, Kloosure, Filter Regulators, Strainers

BEARINGS
- Sleeve, Ball, Roller
- Pump Bearings
- Cam Shaft Bearings
- DU Bearings
- Pedestal Bearings
- Journal Bearings

CONTROLS
- Servo Valves
- Solenoid Valves
- Limit Switches, Pressure Switches
- Motors
- Speed Sensors
- Thermocouples
- RTD’s, Wires, Cable

EXHAUST HOODS & INNER CASINGS
- Support Shims, Keys, Gibs, Seal Rings, Gaskets, RTD’s
- Atmospheric Relief Diaphragms (Aluminum or Copper)
- Studs, Bolts, Nuts, Washers, Gaskets
- Exhaust Hood Spray Nozzles

FRONT STANDARD PARTS
- Hydraulic Cylinders
- Piston Rings
- Worm, Worm Wheels
- Oil Pump Seals

GENERATOR COMPONENTS
- Hydrogen Seal Rings
- Fan Blades and Vanes
- Brushes and Brush Holders
- Shaft Grounding Devices
- Oil Deflectors

Visit www.mdaturbines.com/turbo-parts for more information.
BENEFITS

GUARDIAN® PACKING

» Works in any OEM Turbine
» Works in any labyrinth seal ring location or application
» Prevents and/or limits damage to seal teeth in any rub situation
» Reduces seal degradation
» Maintains OEM design clearances longer

VORTEX SHEDDER® SEALS

» Reduces the pressure drop across the seal by creating a pressure barrier from the vortices
» Lower ΔP means less seal leakage
» Less leakage results in higher efficiency
» Increased unit output above design by as much as 4.5%

MUTUAL BENEFITS

» No modifications required to either the stationary fit or the rotor
» Replacement in kind for conventional seals
» Longer seal life with higher efficiencies
» Maintains unit heat rate between overhauls
» Increased unit efficiency translates to lower EPA emissions per megawatt/hr.
» Increased unit efficiency also means lower operating costs
» When combined as an integrated sealing system they are proven to increase overall turbine efficiency above design by 1.5% - 4.5%

ADVANCED SEALING SYSTEM

Considered one of the most advanced turbine seals on the market, the Guardian® seal ring is made from stainless steel and a non-galling metal with a low friction coefficient, reducing or eliminating heat-effected area concerns and/or rotor cutting. In a transient event, Guardian® posts contact the rotor first, preventing damage to the remaining sharp teeth. Even in a hard rub condition, effects on the rotor and conventional teeth are reduced to light rub conditions.

GUARDIAN® PACKING RINGS
PREVENT SEAL DAMAGE WHILE MAINTAINING EFFICIENCY

GUARDIAN® PACKING®
EXTENDS TURBINE SEAL LIFE AND HELPS MAINTAIN A LOWER HEAT RATE LONGER THAN CONVENTIONAL PACKING

Guardian® Packing rings can be installed in the HP, IP, LP turbine sections along with all gland seal areas in any steam turbine. Unlike some packing designs, Guardian® Packing rings maintain a positive radial seal during shutdown, turning gear, start-up, and unit operation. Positive radial sealing is a fundamental component to maintaining unit efficiency.

Guardian® posts, used to maintain the integrity of the packing teeth, are constructed of a patented, non-galling, low coefficient of friction material.

Whether the steam path design is impulse, reaction or a combination of both, the Vortex Shedder® can have a significant improvement on the stage efficiency.

Our stainless Vortex Shedder® Tip Seals work by creating vortices at the admission side of the seal. These vortices reduce the pressure drop, resulting in lower flow and less leakage across the tip seal. This translates to improved stage heat rate and better overall performance for the steam turbine.

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The installation of packing and seals by knowledgeable and experienced technicians is critical to establishing the proper clearances and maintaining the performance of a new seal following start up, especially when tolerances are tight. Our custom containerized tool trailers are fully equipped to support the project needs of our technicians, professionals whose job is focused solely on addressing the installation of your new Turbo Parts seals.

ON-SITE SERVICE
WORKMANSHIP & EXPERIENCE MATTER

Turbo Parts offers custom installation of any packing ring or tip seal that we sell. Utilizing our custom mobile containerized machine shops, we perform any necessary on-site correction of the packing geometry to compensate for “out-of-round” conditions and/or minor axial position offsets that may be present in the stationary fits. Our specially trained crews provide the best quality installation available assuring the proper fit and function of the seal. Working with turbine outage alignment data our specialists position each packing to obtain the optimal radial clearance. Proper internal alignment and radial clearance is critical to packing longevity and to preventing rubbing of your new Turbo Parts seals.

CONTAINERIZED EXPERTISE

Visit www.mdaturbines.com/turbo-parts for more information
Turbo Parts, LLC is a premier worldwide supplier of replacement turbine and generator components.

Specializing in the manufacture and supply of steam turbine parts such as packing rings and spill strips, TPL also offers a variety of other high quality non-rotating parts from fasteners and hardware to valves.

Headquartered in upstate New York, with multiple manufacturing facilities within the United States, TPL is ready to respond to your requirements, before, during, and after your outage. Expect the highest quality, consistency, and personalized attention from Turbo Parts, LLC.

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