



Global Service for Turbomachinery

■ COMPREHENSIVE QUALITY SERVICE

With more than a century of turbomachinery experience and a tradition of excellence, Elliott offers a single, comprehensive source of service and support for all types of rotating equipment. We provide experienced, dedicated engineers, metallurgists, technicians, welders and mechanics that have the sound engineering expertise and industry knowledge to recommend solutions that keep your equipment performance high and your maintenance cost low.

Elliott provides:

- ♦ Service for all types of turbomachinery, regardless of the manufacturer
- ♦ Installation and start-up, maintenance, overhauls and repairs
- ♦ Full-service repair facilities throughout the world
- ♦ Rerates and upgrades for Elliott and non-Elliott equipment
- ♦ Genuine Elliott parts

Turbomachinery customers throughout the world turn to Elliott for all their service needs. Elliott is committed to providing total customer satisfaction through the on-time delivery of quality products and services. We employ Lean and Six Sigma methodologies to constantly improve our processes. We nurture an environment of continuous improvement throughout our global operations. Our consistent goal is to reliably meet or exceed customer requirements and expectations.



CERTIFICATIONS

Elliott is committed to the highest quality standards in all our operations. We maintain quality management systems in our global manufacturing operations in accordance with the ISO 9001 standard. We support our customers through a global network of service centers and field service operations. Elliott service centers are registered to ISO 9001 or have structured quality management systems.

Elliott is accredited by the American Society of Mechanical Engineers (ASME), holding both U and R boiler and pressure vessel certifications. Nondestructive Examination (NDE) and welder qualifications are important parts of our quality control system. Elliott qualifies its NDE personnel in accordance with American Society of Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1A or country-specific equivalent based on ISO 9712. Elliott qualifies its welders in accordance with ASME Boiler and Pressure Vessel Code Section IX. Project-specific compliance with other industry standards includes: ANSI, API, CRN, CSA and CE/PED.



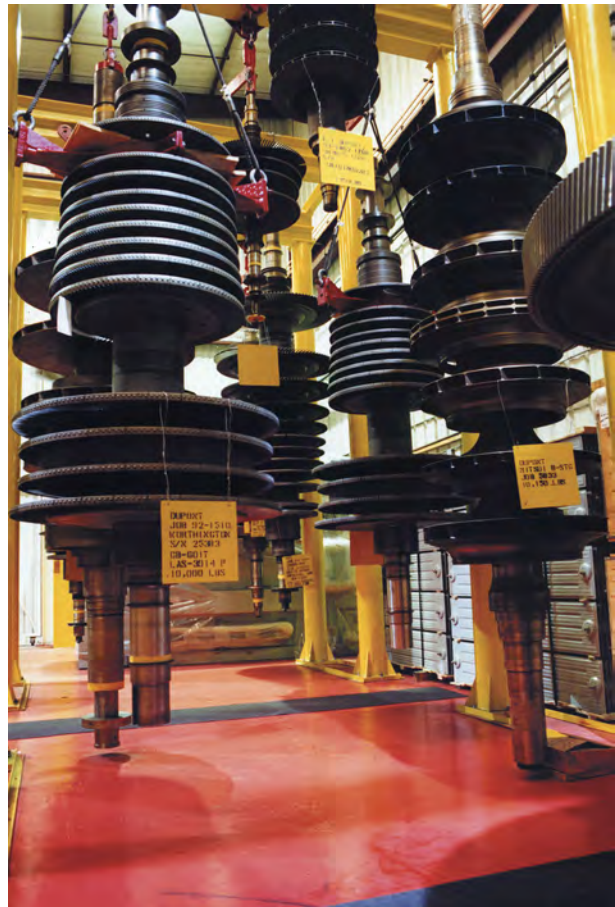
REPAIR SERVICES

Elliott's worldwide network of service centers provides comprehensive service for Elliott and non-Elliott rotating equipment. Our service teams consist of experienced, dedicated engineers, metallurgists, technicians, welders, machinists and mechanics. Elliott repairs or remanufactures virtually any compressor, turbine or expander component. Standard service procedures include:

- ♦ Repair and remanufacture of all rotating and stationary components, including blades, impellers, diaphragms, shafts, seals, bearings, etc.
- ♦ Nozzle repair and blade replacement
- ♦ Diaphragm repair
- ♦ CNC machining
- ♦ Weld repair of rotor and discs, including sub arc, TIG, MIG, flux core, stick
- ♦ Vacuum heat treating
- ♦ Parts fabrication
- ♦ Machine overhauls
- ♦ Equipment upgrades regardless of original manufacture
- ♦ Emergency service 24/7 globally
- ♦ Protective coatings
- ♦ Rotor balance & storage
 - Dynamic rotor balancing and vibration analysis
 - Humidity-controlled vertical rotor storage facilities in service centers around the world
 - Rapid access to spare rotors minimizes downtime

Each Elliott service center is equipped with the diagnostic equipment and tools required to restore or upgrade rotating machinery to a condition that meets or exceeds operational requirements. We continuously invest in tools and procedures. Analytic and design capabilities include:

- ♦ Failure analysis
- ♦ Finite-element analysis
- ♦ Lateral and torsional analysis
- ♦ Coordinate measuring machines
- ♦ 3D modeling
- ♦ Metallurgical laboratory
- ♦ Nondestructive testing
- ♦ Scanning electron microscope for component life evaluation
- ♦ Concentricity and vibration probe track testing



■ FIELD SERVICE

Elliott Field Service is recognized worldwide for its technical expertise and hands-on experience with turbomachinery of all types and manufacturers. Our dedicated field service personnel routinely provide such services as:

- ◆ Emergency call-out service
- ◆ Installation and commissioning
- ◆ On-site repair – machining, welding, balancing
- ◆ Comprehensive overhauls that include project management, resource planning and subcontractor control
- ◆ Resident engineers
- ◆ Spare parts inventory assessment
- ◆ Operator and maintenance training
- ◆ Long-term service agreements
- ◆ Condition-based maintenance
- ◆ Relocation of used equipment

Elliott field service crews are supported by a network of service centers in North and South America, Europe, the Middle East and Asia.



■ ENGINEERED SOLUTIONS



Changes in operating requirements do not necessarily require new equipment. Elliott modernizes rotating equipment to improve operating efficiency, reduce operating costs and support increased plant capacity. The Engineered Solutions team offers customers the following services for Elliott and non-Elliott equipment:

- ◆ Site audits focusing on reliability, efficiency and return on investment (ROI)
- ◆ Engineered rerates and equipment modifications
- ◆ Reverse engineering of equipment from any manufacturer



■ TECHNICAL SERVICE

Elliott Technical Service offers engineering expertise to solve complex turbomachinery problems in the field while providing practical, timely, and cost-effective solutions. Technical service capabilities include:

- ◆ Assisting customers with technical issues on installed equipment
- ◆ Assisting field service with technical issues on new installations
- ◆ Root-cause analysis of equipment failures
- ◆ Development of repair procedures
- ◆ Finite element analysis
- ◆ Vibration data acquisition and analysis
- ◆ Remote-condition monitoring
- ◆ Condition-based maintenance
- ◆ Preparation of Elliott Technical Service Letters



■ WORLDWIDE & ON-SITE TRAINING



Elliott turbomachinery training gives machine operators, mechanics, engineers and instrumentation personnel the knowledge and confidence they need to ensure safe and reliable equipment operation. Professional training produces a safer work environment, improves operating efficiency, and extends the life of rotating equipment.



Available Elliott training programs:

Topics range from base equipment operations to advanced, engineer-level sessions including:

- ◆ Steam turbines
- ◆ Centrifugal and axial compressors
- ◆ Power recovery expanders
- ◆ Lubrication, sealing and control systems
- ◆ Customer-tailored on-site courses

Elliott instructors are drawn from both engineering and service operations and have extensive knowledge and applied experience with the equipment they present. Courses are held throughout the year at our dedicated training facilities in Jeannette, Pennsylvania, USA and Lachen, Switzerland. We also routinely conduct training on-site at customer facilities worldwide on customers' own equipment.

■ ORIGINAL ELLIOTT PARTS



Elliott customers enjoy the confidence and cost savings associated with high-quality, original Elliott parts. Elliott's service parts organization maximizes the availability of your turbomachinery by providing:

- ◆ Parts management programs and customer inventories
- ◆ Quick-action machining center to produce urgent parts
- ◆ Online links to parts inventories in the United States and Japan
- ◆ Parts kits for routine maintenance, packaged for your specific machines
- ◆ Parts kits for upgrades and modifications
- ◆ Same-day shipment on most stock items
- ◆ Technical manuals and comprehensive engineering files on every unit we manufacture
- ◆ Parts and service for non-Elliott equipment

Superior parts management and supply practices ensure on-time delivery of the right part, to the right place at the right time for all Elliott-built turbomachinery. We use best practice logistics to control parts inventories interchangeable and obsolete parts. Customer care specialists are available 24/7.

■ PACKAGING SOLUTIONS



Elliott Packaging Solutions is a global leader in the design, manufacture and packaging of lubrication, sealing, and fueling systems for a wide range of industries, including power generation and nuclear, oil & gas, steel, chemicals, and air separation.

At our dedicated packaging facility in southwestern Pennsylvania, experienced designers, fabricators, welders and service personnel produce and install systems engineered to meet customers' precise needs. We routinely fabricate piping systems such as:

- ◆ Integrated lube and seal oil systems
- ◆ Dry gas seal and buffer gas packages
- ◆ Gas turbine fuel forwarding packages
- ◆ Manifold assemblies
- ◆ Steam turbine generator sets

Auxiliary Fleet Service

Elliott offers a comprehensive program of preventative and scheduled maintenance and parts management for entire fleets of turbomachinery auxiliary systems. Our Fleet Service program addresses systems from any manufacturer worldwide.



Elliott Group is a global leader in the design, manufacture, and service of technically advanced centrifugal compressors, steam turbines, power recovery expanders, cryogenic pumps and expanders, and axial compressors used in the petrochemical, refining, oil & gas, liquefied gas, and process industries, as well as in power applications.

Elliott Group is a wholly owned subsidiary of Ebara Corporation, a major industrial conglomerate headquartered in Tokyo, Japan.



901 North Fourth Street
Jeannette, PA 15644-1473
Telephone: 724-527-2811
Fax: 724-600-8442

Email: info@elliott-turbo.com
www.elliott-turbo.com

T H E W O R L D T U R N S T O E L L I O T T



COMPRESSORS ■ TURBINES ■ CRYODYNAMICS ■ GLOBAL SERVICE