Customer Services

Optimizing the Value of Your Equipment
Get the Most From Your Turbine-Driven Equipment

Service, Upgrades and Training From Solar Turbines Help You Achieve World-Class Performance

We designed your Solar® turbomachinery to give you a competitive edge through maximum uptime, performance and productivity. Our worldwide Customer Services organization is here to help you keep that edge throughout your equipment’s life cycle.

As your service supplier, Solar is committed to helping you get the greatest output from your equipment at the lowest operating and maintenance cost. We provide single-source design, manufacturing, installation, commissioning and support for turbomachinery systems.

As the OEM, we understand your equipment down to the smallest detail. That makes us your best choice to service, maintain, repair, overhaul and upgrade your Solar gas turbine compressor sets, generator sets, mechanical drive packages, centrifugal gas compressors and control systems.

Our comprehensive solutions include:
- Expert field service to help you through technical issues
- Solar Certified Service Parts, built to exacting OEM specifications
- Training programs to make your staff more effective
- Machinery Management Services to help you maximize the return on your investment
- Overhaul service to restore equipment performance
- Conversions to our industry-leading dry, low-emissions SoLoNOx™ combustion system
- Upgrades and upgrades to increase reliability and production
- Complete package refurbishment to restore your equipment to like-new condition
- A Quality, Health, Safety and Environmental (QHSE) management system to provide a safe working environment
Whatever your industry, wherever you operate, our Customer Services organization brings an uncompromising commitment to your success and profitability. From a single-service transaction to an all-inclusive support program, Solar is the ideal partner to help you get the most from your turbomachinery investment.

Protecting Health and Safety, Managing Risk

As we help you maximize productivity and profit, Solar Turbines gives top priority to protecting your people and the environment. In delivering services, we employ our Quality, Health, Safety and Environmental System (QHSE), an auditable safety management system that effectively measures and manages risk. Our QHSE philosophy is:

• No harm to people
• No damage to assets
• No harm to the environment

The QHSE system, built upon our safety culture, and with risk assessment as the cornerstone, helps us comply with your safety system requirements every day on the job. It contains the policies, procedures and instructions by which our field service representatives perform all necessary tasks. With these processes and procedures in place and strictly followed, we can assure you that every employee at Solar who works on your equipment is trained and equipped with the right tools to do the job safely.

Furthermore, as safety regulations change around the world, Solar has technical qualification programs that comply with the needs of customers, regulators and third-party verification companies.
Achieve Peak Reliability Output While Minimizing Cost

Your business depends on uptime and output. Our services help ensure that your turbine-driven machinery runs reliably and at its optimum performance.

Field Service
When you need help – right now – our field service team will be right there. No one can solve your problem faster than the experts who design, engineer, manufacture and service Solar’s equipment. Our more than 800 field service representatives, based in 43 field offices worldwide, are fully up to date with the latest service information, tools and methods. They’ll help you through any issue: electrical, mechanical, control or process, at any stage of your operation.

We respond to your needs with:
• 24-hour service
• Installation and commissioning services
• Condition assessment and monitoring
• Field testing and troubleshooting
• Package system evaluation, repair, upgrade and retrofit
• Field repairs and equipment replacement
• Supervisory services

Solar® Certified Service Parts
For any part, whenever you need it, wherever you are, one contact does it. Order any time of day, and your shipment is on its way from one of our worldwide parts facilities – right place, right part, right time.

As your certified parts supplier, we can do it all, from shipping individual orders to managing your entire parts inventory and logistics.

In support of more than 13,000 gas turbine packages in 96 countries, we stock more than 20,000 parts – including remanufactured exchange parts offering like-new quality at significant savings. Normal stock orders ship in 48 hours; emergency orders on the first truck or plane available. Solar Certified Service Parts are designed, manufactured and tested to meet our stringent quality standards. We designed your equipment – let us supply the parts that will keep it running right.

They can quickly draw on technical direction and engineering support from more than 20 regional field engineers – expert diagnosticians with extensive education and turbomachinery experience. The field engineers, in turn, have direct access to more than 600 design and support engineers at our research, development, design, manufacturing and overhaul facilities. Thus, when you call Solar’s field service, you have our entire engineering organization on your side.
Training to Help Your People Perform at Their Best

The better your people care for your equipment, the more you get out of it. Our Worldwide Technical Training programs will help your staff improve equipment performance and reliability, drive down maintenance costs and maximize production. Our experienced instructors provide specialized programs at our training facilities or at your site. Training options include:

**Standard Courses**
These classes provide detailed instruction on Solar’s equipment and its operation and maintenance requirements. Students leave with practical knowledge they can apply each day on the job. Examples of training courses available include:

- Operation and Maintenance
- *Turbotronic™ 3* applied principles (PLC-5/RSLogix 5)
- *Turbotronic™ 4* applied principles (RSLogix 5000)
- Gas compression principles and applications
- Power generation principles and applications
- Performance and condition evaluation

**Hands-On Training**
These courses provide practical experience on Solar’s equipment by using hardware and simulators at our Mabank, Texas, and Veracruz, Mexico facilities on Control Systems, Analytical Troubleshooting, Package Alignment, Major Component Removal Replacement and Borescope Procedures.

**Computer-Based Training**
These courses are self-contained CD-based courses that are designed to provide a complete learning experience and offer an excellent opportunity to learn at your own pace, any place, any time. The courses include student interaction screens, animations, review and practice exercises, and an end-of-course test.

**Multi-Customer**
One person or small groups of customers can attend these packaged courses at our training facilities. They interact and share experiences with other participants from related industries. These programs include manufacturing facility visits.

**Customized Solutions**
Offered at your locations, these programs are designed to meet specific needs that we help you identify. We can modify an existing program or develop complete course content specific to your project equipment and application requirements. We can conduct these courses in several languages.
Now you can profit from our 40 years of turbomachinery experience, built on thousands of sites worldwide in a wide range of applications. With Machinery Management Services from Solar Turbines, you have access to a complete approach to equipment support. It includes:

- Comprehensive maintenance programs
- Technical support
- Equipment condition assessment
- Personnel training
- Parts and supplies logistics
- Information management

It’s all delivered by world-class turbomachinery experts and backed by the latest in monitoring, diagnostics and reporting technology.
Define Your Needs
We define your machinery management program using a Workshop Approach – a collaborative process of defining operational needs, staffing capabilities and budget. The backbone of the process is our Asset Criticality Tool, which helps us assign priority to your equipment based on its importance to your daily production.

Technology On Your Team
Solar’s InSight System™ helps you make sound operating decisions. It features remote monitoring and diagnostics technology that gives you troubleshooting information, e-mail notifications, reports, predictive recommendations and more. The system accurately evaluates equipment condition, detecting trouble before it happens. Our InSight System also gives you certified condition assessments and access to a web portal where you can consult maintenance manuals, service bulletins and technical documentation.

Learn From the Best
Experience with our vast global fleet helps us constantly improve maintenance practices and show you new ways to extend machine life and optimize performance. Based on your location and application, we can recommend best practices on equipment overhauls and upgrades, condition assessment, part ordering, maintenance schedules, staffing and much more.

Discover Better Approaches
Solar’s Maintenance Management Excellence Group can show you the most systematic, comprehensive and effective maintenance programs available based on your unique site conditions. Our Precision Maintenance approaches include root-cause analysis, failure mode and effects analysis, condition-based maintenance, global fleet data analysis and application of key performance indicators.

Get a Custom Service Solution
Consultative Services from Solar Turbines can help you improve reliability and availability. We review your existing practices and give you realistic recommendations covering every area of operations and maintenance: budgeting, tools and spares, warranty administration, staff skill evaluation and training, computerized maintenance management and others.

A Machinery Service Agreement gives you a solution tailored to your operations. We can develop a complete maintenance management package for a single machine, for a project site or for your entire turbomachinery fleet. We also offer full-service operation and maintenance agreements, in which we take full charge of your plant for a single, predictable fee.
Machinery Renewal and Upgrade (MRU) from Solar Turbines will ensure that your equipment meets your expectations in today’s challenging business environment. We help your older packages live longer, produce more, and achieve the latest standards of performance, efficiency, safety and compliance. Our MRU services can help you:

- Increase production to meet growing demands
- Improve efficiency and output to meet changes in process conditions
- Enhance reliability through system simplification
- Maximize operations productivity
- Address machine or component obsolescence
- Leverage new technology to improve safety
- Meet new regulatory requirements

We examine your business and operation goals and assess your machinery, then discuss a range of renewal and upgrade programs and show how each helps you reach your goals. Ultimately, we work with you to find the solution that best fits your needs.

Machinery Renewal: Longer Life

Machine renewal programs improve your operation by retrofitting new-generation components and systems. Our renewal programs help you:

- **Ensure long-term reliability.** By replacing outdated controls with the latest PLC-based technologies, you get the extra benefit of superior data access to support maintenance and troubleshooting. You also enable remote monitoring through our InSight System.

- **Optimize maintenance.** By using electric-actuated instead of high-pressure pneumatic or hydraulic systems, you simplify your machine and reduce maintenance and leaks. Direct AC start systems, pre-engineered fuel systems with electronic fuel valves and dry gas seal systems enable more efficient use of your staff and make your machines more reliable.

- **Enhance machine safety.** An integrated fire and gas detection system can dramatically improve personnel safety. New technologies like a DC post-lube backup system and an upgraded air inlet system help protect your turbine against damage while enhancing efficiency.
Machine Upgrade: Get More From Your Equipment

Age is no barrier to turbomachinery performance. Machine upgrade programs can restore your Solar equipment to its original performance, or even better.

Engine Power Uprate
A turbine uprate during overhaul can boost power by up to 20 percent and reduce fuel consumption by more than 5 percent, giving you greater turbine efficiency and lower fuel cost per unit output. It all adds up to higher production and more dollars to your bottom line. For every uprate, we analyze the equipment to ensure against hidden risks to increasing output in your existing drive train. We may recommend modifications to package systems and driven equipment. Your uprate is an engineered solution, backed by an OEM equipment guarantee.

Gas Compressor Restaging
Restaging can substantially improve return on investment in gas compression packages. Over time, usage requirements and change in process conditions – gas flow, pressure, temperature and composition – will affect compressor productivity or range of operation.

Dry Low-Emissions (DLE) System Conversion
A SoLoNOx dry low-emissions combustion system conversion reduces NO, and CO emissions, giving you more permitting options and contributing to local air quality. You can complete the conversion at scheduled overhaul, and Solar can provide the fuel system and control enhancements to deliver improved performance.
Machinery Renewal and Upgrade

Package System Upgrades
You can choose standard, off-the-shelf modifications designed for quick and cost-effective retrofit. We also provide modifications custom-engineered for your package and site-specific conditions. Our pre-engineered package upgrades can increase your turbomachinery performance and reliability, make your staff more effective, simplify maintenance and service, and increase machine integrity and personnel safety.

Package Refurbishment
Solar’s package refurbishment, an alternative to buying new equipment, lets you extend your equipment life cycle and reduce facility upgrade costs. You get like-new equipment performance at an attractive price, with the same warranty as a new package. That’s true whether you revitalize your own package, or buy or lease a pre-owned package. Best of all, lead time for delivery can be as short as 14 to 16 weeks.

Unique Execution Strategies, Customized For You
We choose the best approach to machine upgrade, based on your business consideration: machine criticality, cost of downtime, machine condition and logistical challenges. We can execute your project in our factory or at your site — whichever is most advantageous to you. Either way, our goal is to complete your project with the lowest impact on your operations. Our pre-engineered approach gives you peace of mind. Your equipment arrives pre-assembled and pre-tested, and is ready to install in the shortest time possible.

You can be sure your turbine-driven equipment and associated systems are overhauled and updated to the highest standards for the same life expectancy as a new package.
Gas Turbine Overhaul

In the past 40 years, Solar’s gas turbine users have trusted us more than 25,000 times to repair, overhaul and uprate their equipment. Solar offers complete overhaul and service support for some 500 product configurations. Turbine overhaul is a key core competency. An overhaul from Solar means complete rebuilding of your turbine to meet current production standards for mechanical configuration and aerothermal performance, as well as the latest materials and process improvements. Our ISO-certified facilities provide quality overhaul and repair with workmanship you can expect only from the OEM. We warranty all work, using Solar Certified Service Parts. Services include:

- **Major overhaul.** Complete disassembly, inspection, remanufacture, durability upgrades, reassembly and testing to current OEM performance standards.

- **Engine testing.** Full-load testing of equipment to verify its mechanical integrity, performance and emissions to meet current test specifications.

- **Custom scope overhaul.** A reduced-cost overhaul with flexible options tailored to your specific needs, when full performance restoration is not required.

- **Repair.** Specific repairs that return your engine to service until the next overhaul. Increasingly, we design machines for in-field service and perform repairs on site, helping you minimize downtime and expense. Solar’s personnel can handle shutdown, repair, restart and performance testing to make sure your turbomachinery operates properly.

Exchange Fleet

Our exchange program is the global benchmark for keeping your operations running when your turbine requires overhaul or upgrade. In addition to engines, our exchange fleet inventory includes gas producers, accessory and reduction gearboxes, and power turbines. We support more than 700 exchange engines each year. We can deliver exchange engines for your site to coincide with scheduled removal of your engine, thus maximizing uptime and reducing field costs.
Get Ready to Reach Your Full Potential
Contact Us Today

By bundling services together, we can deliver a unique and cost-effective life-cycle solution to help your equipment deliver the maximum return. We are committed to helping customers leverage the full depth and breadth of our experience. We offer:

- Product and operating knowledge gained from support of more than 13,000 units
- In-depth technical assistance through our global customer support system, operating in 96 countries
- Factory-qualified repair and overhaul
- Worldwide field service support with around-the-clock response

Solar Turbines is ready to serve you from locations all over the world:

- 13 repair and overhaul centers
- 19 parts facilities
- 43 service locations

Let Solar Turbines show you the true power and value of your turbine-driven equipment. Call Solar’s field office nearest you or find out more about our service solutions at www.solarturbines.com.

Wherever You Are, We’re Close By

For more information, visit www.solarturbines.com or please contact:

Solar Turbines Incorporated
Customer Support Center
9330 Sky Park Ct.
San Diego, CA 92123, U.S.A.

Or Solar’s field office nearest you.

U.S. Offices:
Irvine (Los Angeles), CA
Anchorage, AK
DeSoto (Dallas), TX
Houston, TX
Lafayette, LA
Mabank (Dallas), TX
Midvale (Salt Lake City), UT
Naperville (Chicago), IL
New Orleans, LA
Odessa, TX
Pittsburgh, PA
San Diego, CA

International Offices:
Aberdeen, Scotland
Beijing, China
Buenos Aires, Argentina
Cabinda, Angola
Cairo, Egypt
Calgary, Canada
Caracas, Venezuela
Ciudad del Carmen, Mexico
Dubai, United Arab Emirates
Dublin, Ireland
Edmonton, Canada
Gosselies, Belgium
Jakarta, Indonesia
Kuala Lumpur, Malaysia
Lagos, Nigeria
Libreville, Gabon
London, England
Luanda, Angola
Melbourne, Australia
Mexico City, Mexico
Moscow, Russia

New Delhi, India
Perth, Australia
Port Harcourt, Nigeria
Republic of Singapore
Reynosa, Mexico
Rio de Janeiro, Brazil
Tokyo, Japan
Veracruz, Mexico
Villahermosa, Mexico

Caterpillar is a registered trademark of Caterpillar Inc.
Solar, SoLoNO, InSight System and Turbotronic are trademarks of Solar Turbines Incorporated.
Specifications subject to change without notice. Printed in U.S.A.
© 2009 Solar Turbines Incorporated. All rights reserved.
BCS02392.0M