

# Gas Turbines

Gas turbines are designed for long life but, after many years of service, wear may reduce their performance; or newer technology may be available that can improve their efficiency, output, reliability or availability. Overhauling the machine and upgrading the technology is usually a cost-effective means of adding additional years of productive service.

## What we do

GE has an expert engineering team, state-of-the-art design and analysis tools, modern manufacturing, shop and test facilities, and the years of experience needed to restore or improve the performance of your gas turbine.

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GE  
Oil & Gas

# Gas Turbines

A full range of engineering, repair and uprate services



## Solutions for every gas turbine

GE's Conmec gas turbine service provides a full range of after-market solutions. We have an experienced team of engineering specialists, highly qualified field-service personnel, and a fully equipped overhaul facility. This combination of expertise and infrastructure gives us the flexibility to perform comprehensive services on components and full units from any original equipment manufacturer.

We help customers improve the efficiency and prolong the productive life of their gas turbines, allowing them to realize significant savings over the cost of replacement equipment. Through a combination of engineering experience and skilled craftsmanship, we develop cost-effective solutions tailored to the specific conditions of each piece of machinery. Strong and innovative engineering in gas turbine design, combined with advanced aerodynamic and structural analysis techniques allow us to determine the optimal remediation or upgrade strategies.

### Repairs and overhauls

GE's state-of-the-art overhaul capabilities give customers the maximum performance possible from existing equipment. Whether supervising a simple rotor replacement project or managing complete turnkey restorations, all of our solutions are backed by proven design capabilities, strict quality control measures and experienced field-service personnel. Our overhaul services span the full range of machine types including aeroderivative gas turbines, and small and large heavy duty industrial gas turbines.

Customers around the world rely on our industry-leading restoration capabilities to extend the operating life of their aging power turbines. Starting with a complete analysis of all critical components, we return entire power turbines to as-new condition for significantly less than the cost of new equipment. With our thorough inspection techniques and metallurgical evaluations, our 'zero time' overhauls are unsurpassed for engineering excellence.

### Replacement parts and manufacturing support

One of the major reasons our repair and overhaul work meets such exceptional standards is the high quality of our replacement parts which all meet or exceed OEM specifications. All Conmec parts are manufactured at a competitive price with delivery tailored to each customer's specific requirements.

Replacement parts include:

- Turbine nozzles and buckets
- Compressor vanes and blading
- Fasteners, bearings and seals
- Disks and shafts
- Complete casings

## Higher performance at a lower cost

GE delivers improved reliability, decreased maintenance costs, and increased horsepower through upgraded designs for a broad range of equipment – including rotor blades, stator vanes and casing components. The following engineered upgrades can be provided:

### Mechanical upgrades

We replace existing gas turbine components with state-of-the-art upgraded parts to improve reliability and maintainability.

### Performance rerates

We rerate existing gas turbines for increased power or efficiency. By applying modern metallurgical advances and specialized design techniques, we offer customers the opportunity to improve the performance of their older units with increased mass flow, firing temperature or both.

### Auxiliary systems

Our upgraded gas turbine auxiliaries improve reliability. Retrofits include:

- Lubrication and hydraulic oil system upgrades
- Structural support analysis and redesigns
- Starter system retrofits
- Water wash system retrofits (on-line and off-line)
- Air filtration system upgrades

### Governors

Control system upgrades are available for a wide range of gas turbine models. By performing a thorough evaluation of the gas turbine's governor control systems, we identify various areas where operations can be improved. We offer conversion of both electronic and PLC-based governor controls to provide optimum system integration.

### Gas generator upgrades

Our aeroderivative power turbine and auxiliaries experience makes it possible for us to replace obsolete gas generators with state-of-the-art units for improved performance.

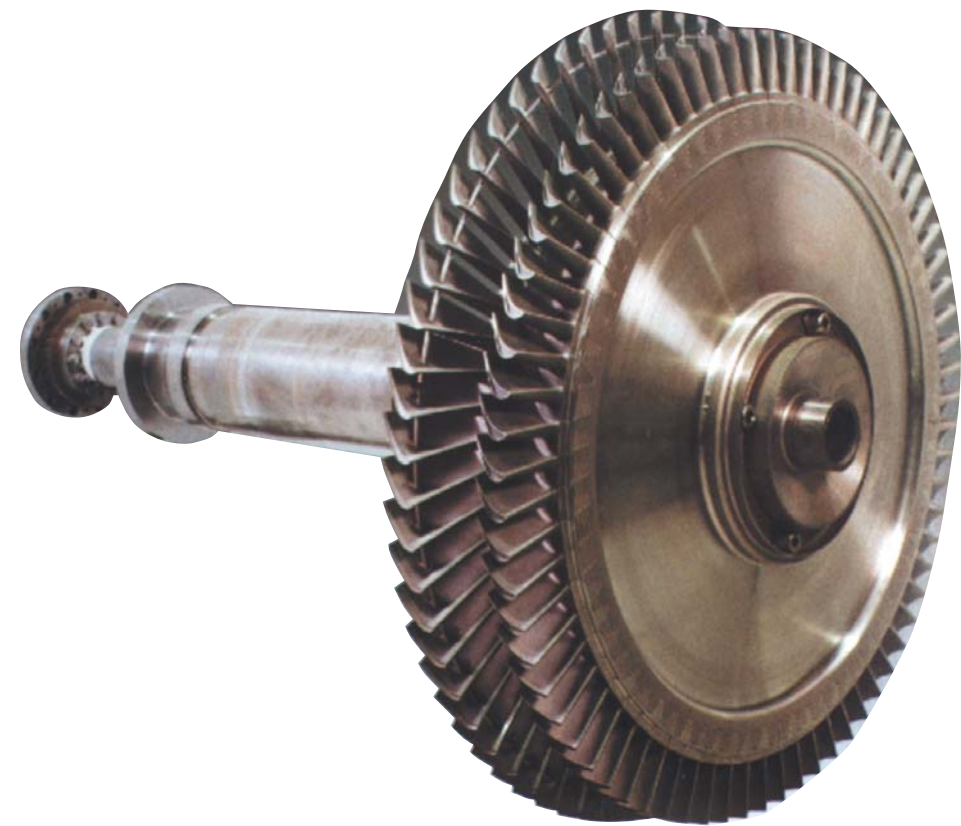
We offer an upgrade of Pratt and Whitney GG-3/Cooper RT-48 packages using the Rolls Royce Avon. The benefits of this retrofit include better availability of parts and service, as well as improved reliability.

## Expertise for all OEM components

We provide custom engineered solutions tailored to meet the specific needs and conditions of each customer's equipment. Our engineering team has broad knowledge of and experience with the gas turbine product lines of many OEMs, and is able to provide expert, professional service.

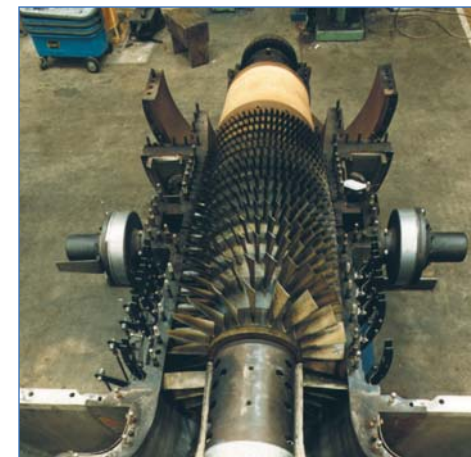
Solutions offered by our expert machinery consultants include:

- Remaining life assessment
- Failure investigation
- Metallurgical evaluation
- Component stress and structural analysis
- Corrosion evaluation
- Resolution of performance or efficiency shortfalls
- Fastener problems
- Dry coupling retrofits



GT-61 rotor manufactured by GE

## Exceed expectations

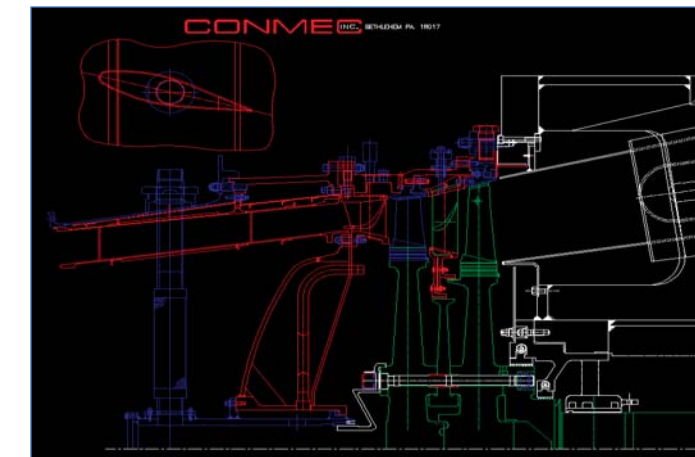


Failure analysis of Tornado gas turbine



GE's Conmec marine environment gas turbine control system

## Maximize performance



Schematic for custom-designed power turbine for gas generator upgrade



GE's Conmec installation with an AVON gas generator retrofit and an upgraded RT-48 power turbine