

# SPEED CONTROL & CONTROL SYSTEMS

Industrial Engines and Turbines



*The optimal performance of your industrial applications*



As the representative of the Woodward brand, AWF offers its expertise in control systems and speed control through a range of specific products and services.



AWF provides solutions and services for your turbomachines:

- new equipment and spare parts, guaranteed by the manufacturer,
- modernization services for industrial engines and turbines,
- maintenance services on site or in a Woodward authorized workshop,
- audits, on-site interventions and training in speed control and Woodward products.

AWF has received several Woodward certifications, including the RTR (Recognized Turbine Retrofiter) certification, which guarantees the quality of service and AWF's experience in industrial turbine modernization around the world.

In this context, AWF is subject to the regular audit of Woodward. On the occasion of its 20th anniversary, AWF received a special partnership certification recognizing its expertise and its outstanding performance.

## Equipment and spare parts

Our team is at your disposal for all your requests for supplies of equipment and spare parts.

### Our strengths

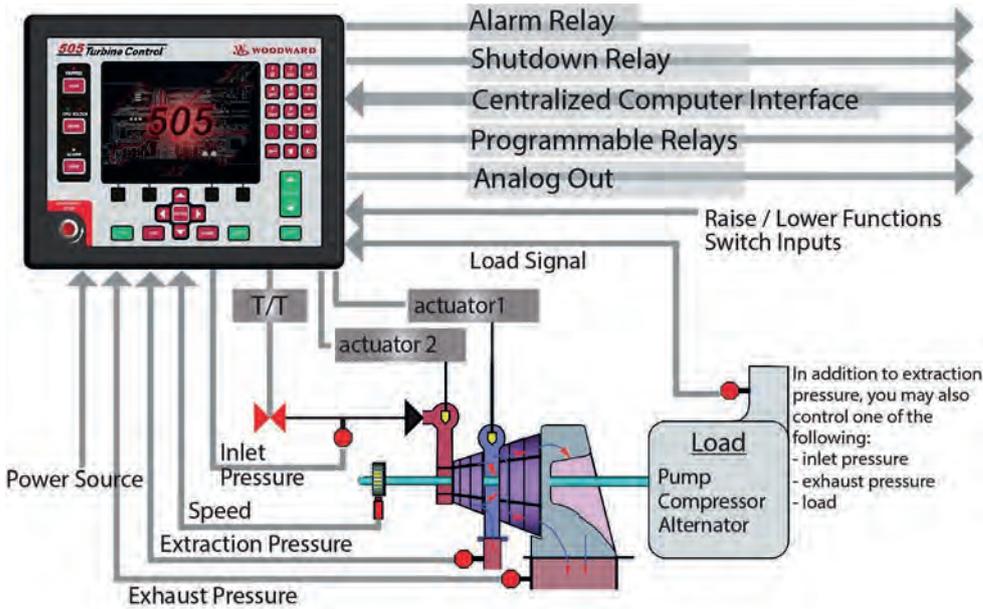
- ✓ Woodward Network
- ✓ 24h Assistance
- ✓ Expert advice





## Engine & turbine modernization

Through its design department, AWF meets all your existing systems optimization needs and provides you with a global result-driven offer.



Example of a modernized application with the 505 control system

“Congratulations on a successful installation of the new controls.”

A beautiful demonstration of professionalism and competence.”

(NAVAL GROUP - SPEED CONTROL MODERNIZATION ON DIESEL ENGINES OF FRIGATES)



### Why modernize

- Protection from obsolescence risk
- Improved performance
- Reduction in number and duration of technical shutdowns
- Upgrade to safety standards
- Automation
- Integration of a centralized control



## Maintenance of your systems

Our team of specialized technicians is trained by Woodward to carry out maintenance operations in the strict compliance with the manufacturer's procedures and recommendations.

- Your equipment benefits from technological advances arising from Woodward's experience.
- The AWF workshop is equipped with Woodward test benches for all repair, overhaul and adjustment services.
- All interventions, whether on site or in our workshop, are guaranteed.
- AWF has portable measuring equipment to test different sensors on a turbine.



## On-site maintenance

- Interventions in compliance with your security procedures, and with the security (N2, ATEX, ...) and nuclear (CSQ, SCN2, ...) authorizations.
- Troubleshooting interventions worldwide.
- Maintenance contracts with technical stand-by.



## Maintenance in our workshop

- AISF workshop (approved workshop and equipped with Woodward test benches) in Le Havre for the repair of governors, actuators, etc..
- Original manufacturer spare parts only.



## Intervention for the marine sector and on oil platforms

- Recovery of your equipment for repair in case of spare parts on board. Then, shipping your equipment to the home port of your convenience.
- In case of damage, intervention in a very short time with recovery of your equipment to be repaired in our workshop and re-installation at the dock depending on your port of call.





## Training in speed control systems

AWF offers training on its premises or on your site to help your staff master the use of your equipment.

### Operating simulators

AWF has developed specific educational tools and has a complete simulator that can simulate all operating situations for steam turbines.



the test case is used to test speed control platforms of engines or turbines

This dynamic tool allows:

- the simulation of all the dynamics,
- the process optimization.



AWF's case-mounted 505 simulator allows on-site training

This dynamic tool allows the simulation of:

- speed up,
- circuit breakers,
- networks,
- coupling and paralleling,
- power management,
- connection with the human machine interface.

### A training to master speed control

Our training department is at your disposal to offer you training sessions on the whole range of Woodward products (505, CPC, mechanical governors, actuators, etc.).

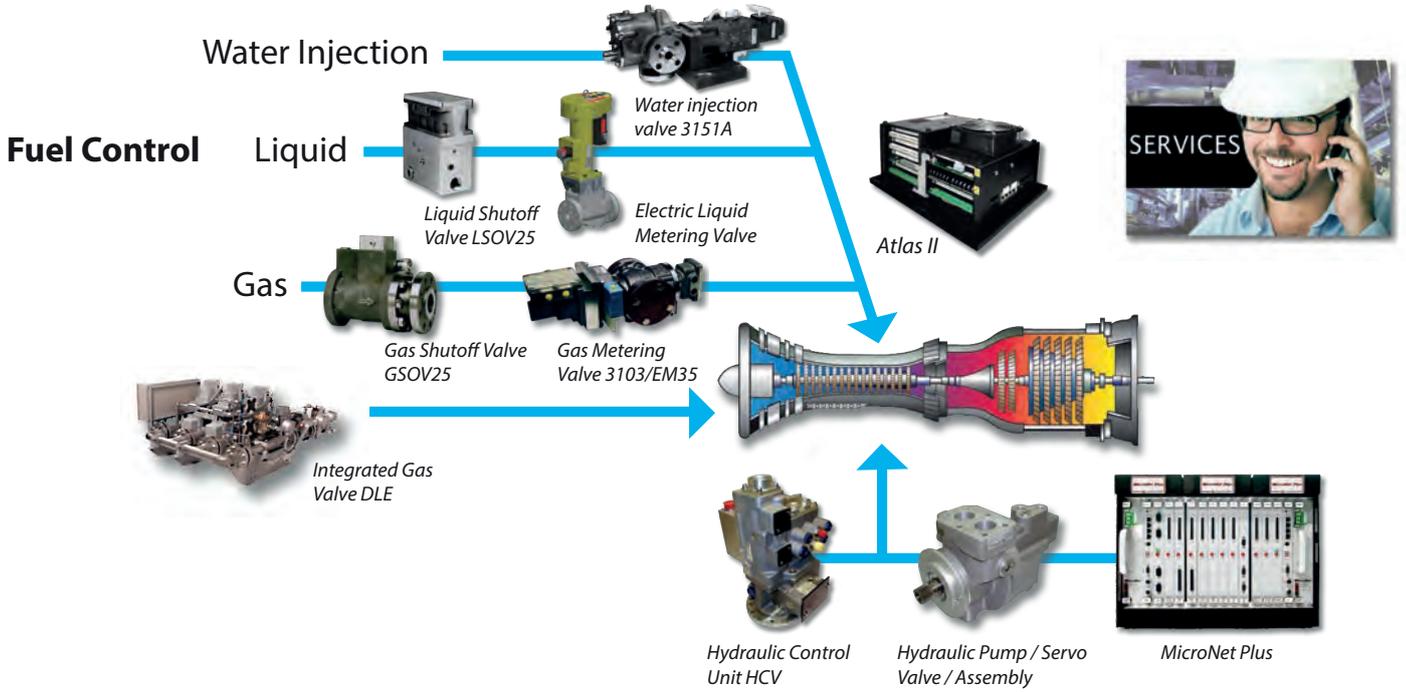
The objectives:

- Better understand the smooth running of speed control (basic principles, settings, setpoints, programming, ...) and the role of the auxiliaries.
- Know how to detect a breakdown and learn troubleshooting skills.
- Make technicians more autonomous in their equipment maintenance tasks.
- Increase your equipment efficiency by achieving optimal control and reducing maintenance operations.

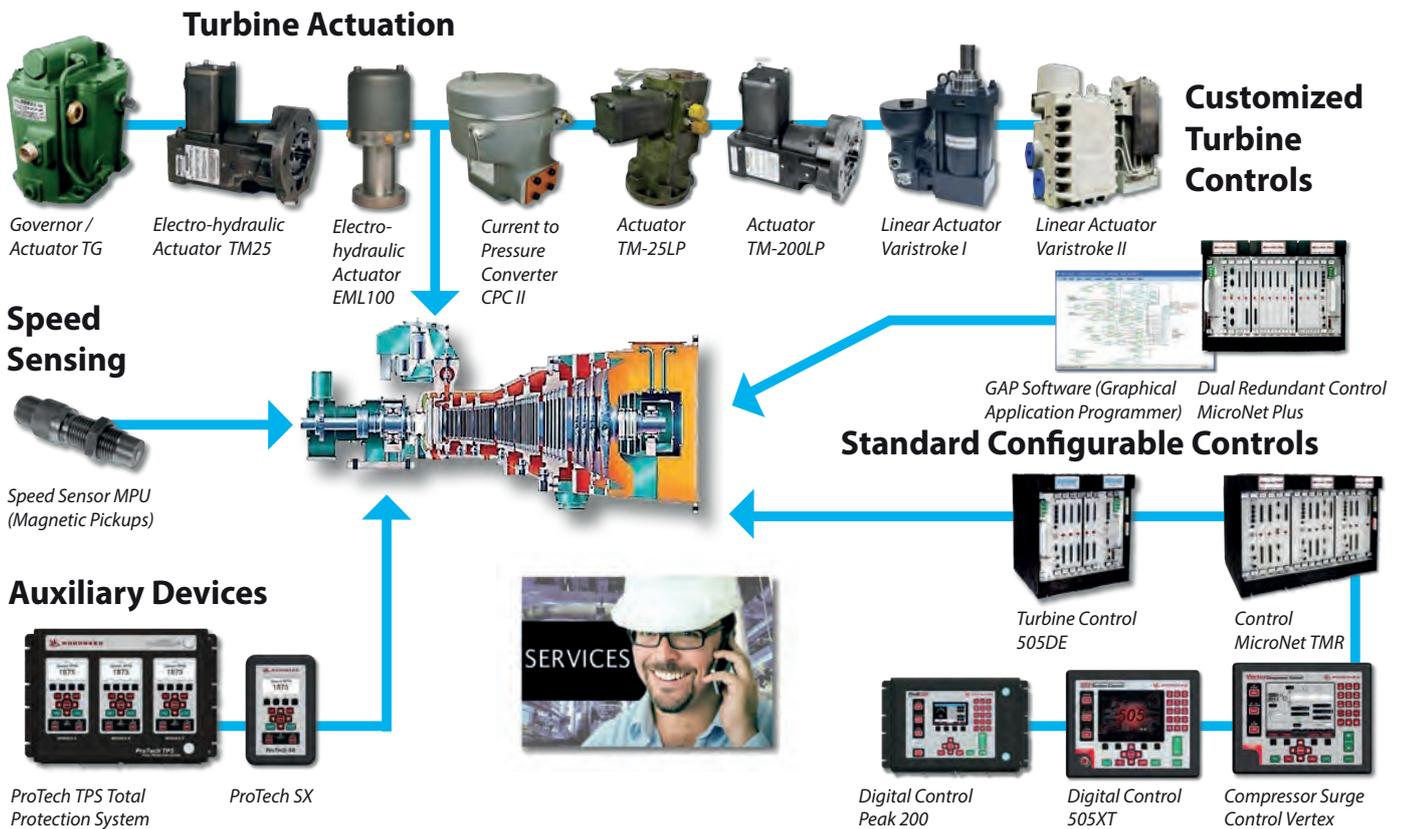




## Technologies for gas turbines

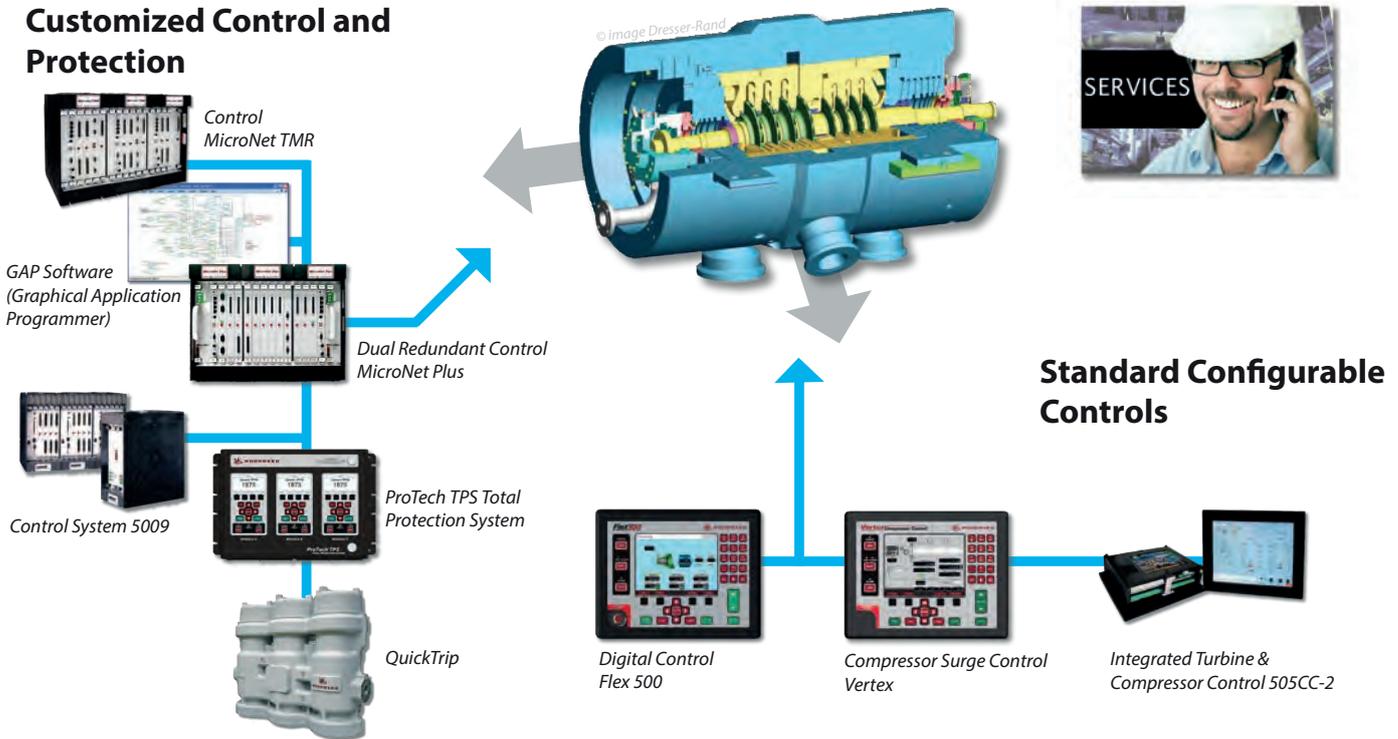


## Technologies for steam turbines



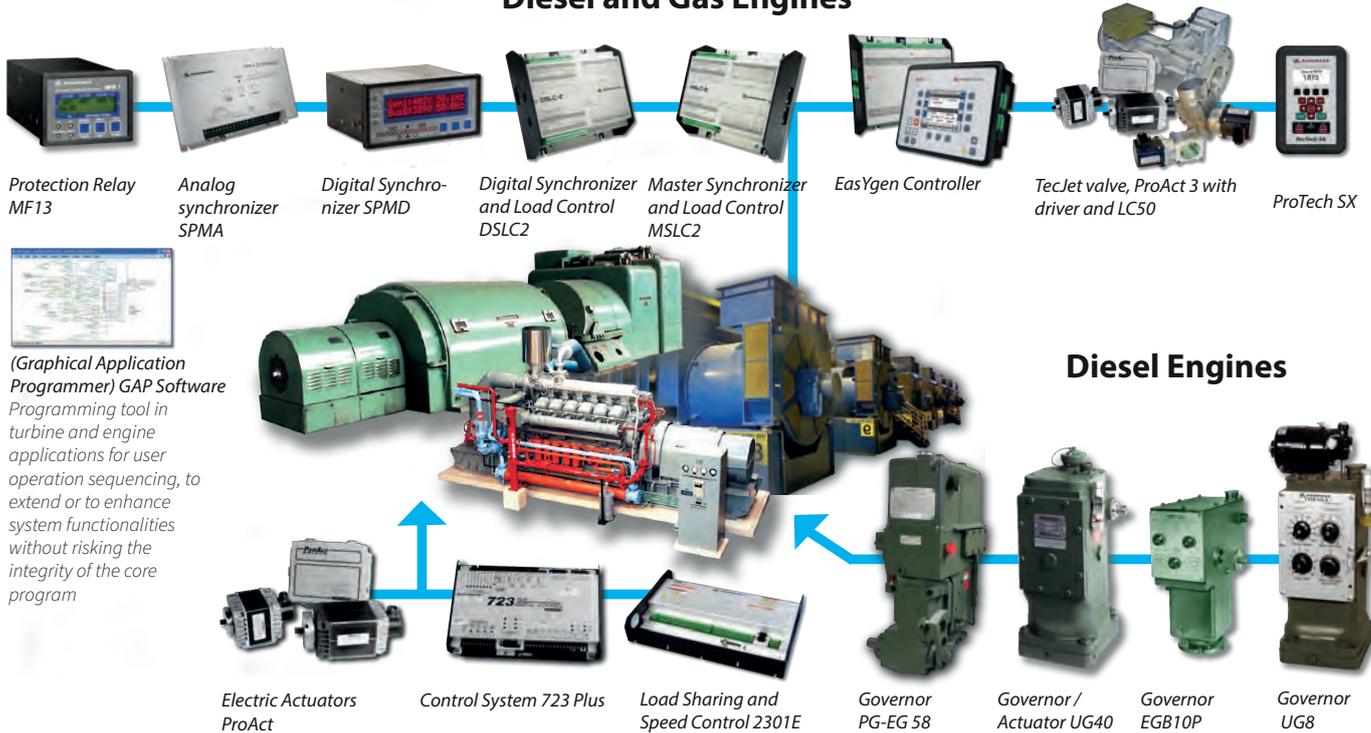


## Technologies for compressors and pumps



## Technologies for diesel and gas engines

### Diesel and Gas Engines



### Diesel Engines



AWF offers a range of Amot solutions for engines, turbines and compressors: thermostatic control valves, air start / shutoff valves, sensors (temperature, pressure, vibration, etc.) and control systems.

## Technologies for Engine control

### Liquid Temperature Control self-contained / actuated



Valve B



Valve G

### Bearing Condition Monitoring

XTS-W System  
for diesel engines  
in the marine  
sector



### Electro-pneumatic Valves Controllers



SG80



8072D



8071D



8064C

### Sensors & Switches temperature / pression / vibration / speed



4121



8060



4140



IP1



4250



4109

### Air Start & Fuel Shutoff Valves

Valve  
4418F



### Oil Condition Monitoring

Metal particle  
detector  
MPD2





Amot solutions are available in a wide variety of sizes, options, materials. Contact us for a precise estimate and the exact reference matching your needs.

## Technologies for Turbine control

### Thermostatic Control Valves



Valve B



Valve E



Valve H



Valve G



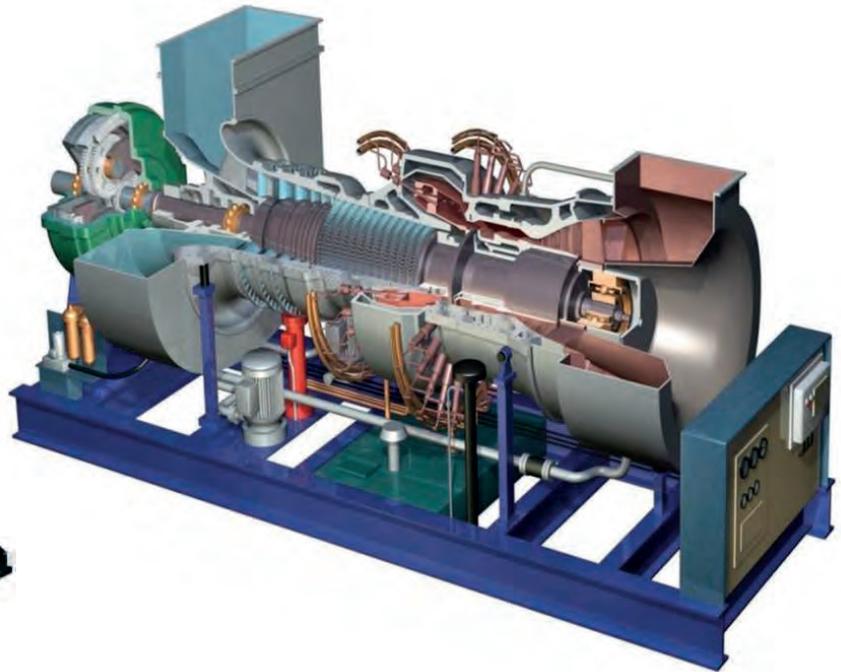
Valve J



Valve R



Valve D



### Sensors & Switches

temperature / pression / vibration / speed



4121



8060



4140



IP1



4109

### Fuel Gas Control & Shut-off Valves

Valve 8402



### Pneumatic Panel Components

4057 / 4457



### Electro-pneumatic Valves Controllers



SG80



8072D



8071D



8064C

## Instrumentation & Control (I&C)

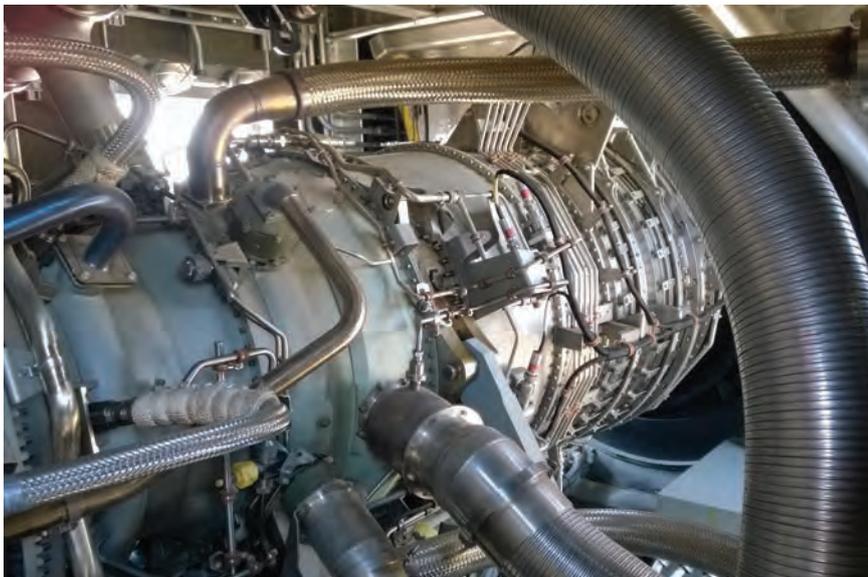
AWF's expertise in I&C provides through technical audits not only product solutions but also in-depth knowledge of digital control systems to better adapt to the specific needs of each installation.

I&C systems are the complete instrumentation and control loop of your turbogenerator set, monitoring all parameters, making adjustments and making more information available to maintenance staff to identify problems associated with a specific component.

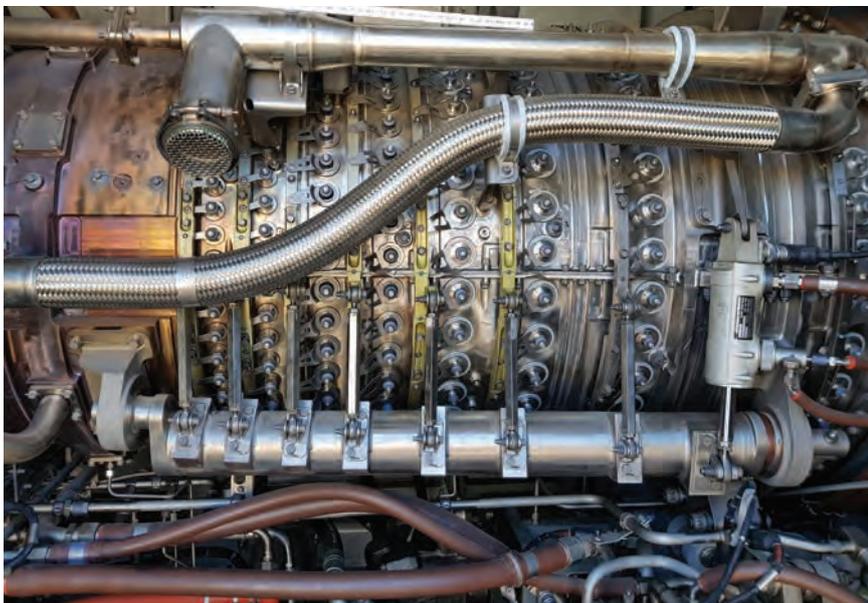
Compared to analog I&C systems, these digital systems automate and optimize monitoring activities. They help increase availability, safety, reliability, efficiency while reducing costs.



Example of an aeroderivative gas turbine control system



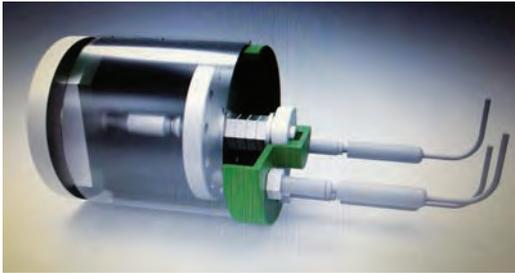
We carry out on-site services for the technical audit of aeroderivative gas turbines.





## Expertise and major projects

In 2018, AWF achieved for a customer the first Woodward Steam Turbine test bench in Europe, including the complete 505 control system, ProTech TPS protection system, VariStroke, QuickTrip and CPC-II.



The design of a tachometer system for a steam turbine



The design of a mechanical support for the integration of a new actuator on a steam turbine



## A complete offer for **speed control** and **control systems**

- ✓ *On-site maintenance or in our workshop*
- ✓ *Registered training*
- ✓ *Supply of new equipment and manufacturer warranty parts*
- ✓ *Modernization of industrial engines and turbines*
- ✓ *Contract for inspection and / or maintenance of Instrumentation and Control (I&C) systems for gas turbines*
- ✓ *Woodward and Amot brands*

### Our response to Technical Directions

**Y**our project commits us: our Engineering Team brings you Woodward solutions' innovation and reliability.

Continuous adaptation to the specific requirements of your installations.

International mobility: with Woodward's Recognized Turbine Retrofitter (RTR) certification, our teams can provide services wherever you need them.

The Woodward network guarantee covers your equipment worldwide.

### Our response to Site Managers

**O**ur expert service available H24 offers you a maintenance solution adapted to your operating constraints.

A strong partnership with all engine and turbine manufacturers ensures the safety and the performance of your facilities.

The project management, if necessary, allows you to benefit from a «turnkey» service.

### Our response to Purchasers

**W**e distribute all speed control equipment and control systems: Governors, Actuators, Converters, Valves, Pumps, Control Platforms (drivers) ...

We provide repackaging, repairs and warranties.

Our Customer Service answers you in French and in English ; they provide you with technical and commercial documentation.

Our transit partner manages the customs duties withholding procedures for equipment repairs from abroad.

## They trust us

SIEMENS | ALSTOM | DRESSER RAND | FIVES CAIL | WARTSILA | MITSUBISHI | CEGELEC | EDF | GDF-SUEZ | VEOLIA | TOTAL | GROUPE CHIMIQUE TUNISIEN | TEREOS | SAINT LOUIS SUCRE | CLAIREFONTAINE | TEMBEC | SONATRACH | FERTIAL | BRITISH GAZ TUNISIE | SENELEC | STX | NAVAL GROUP | CMA CGM ...



**I&C Solutions Provider**



32, rue Marcel Paul - 76600 Le Havre - France  
Tel. : +33 (0)2 32 92 70 65



24h assistance for the maintenance contracts  
+33 (0)6 74 78 57 92



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[www.awf-france.com](http://www.awf-france.com)