



Turbomachinery business unit
New units and Service



"Sono le persone che fanno le grandi imprese"



"GREAT PEOPLE MAKE GREAT COMPANIES"

1885

Silvio De Pretto S.p.a.
Silvio De Pretto establishes a Foundry initially repairing looms but soon after begins producing Hydraulic Turbines and Paper Machines.

1920

De Pretto - Escher Wyss S.p.a.
The company merges with Escher Wyss of Zurich and further consolidates its production in the hydraulic turbine, paper machinery and thermal turbomachinery fields.

1969

Sulzer De Pretto - Escher Wyss S.r.l.
Escher Wyss merges with the Swiss Sulzer Group of Winterthur, bringing considerable technological development and research.

2001

Man Turbo De Pretto S.r.l.
GHH BORSIG acquires Sulzer Turbo creating a new group: MAN Turbo.

2010

De Pretto Industrie, in July 2010 the holding SELINK, based in Velo d'Astico (VI, Italy) controlling FOC Ciscato, has agreed the takeover of De Pretto Industrie.





De Pretto Industrie

Manufactures steam turbines for outputs from 1 up to 50 MW. De Pretto Industrie manufactures reliable turbomachinery since the beginning of the 20th century (the first steam turbine entirely designed by De Pretto Industrie was built in the '30s) and since then has been improving its design thanks to a continuous R&D effort.

HIGH CUSTOMIZATION

The whole turboset design phase follows customer's requirements. By choosing the appropriate design for each component, the overall turboset efficiency is optimised and maximised.

Turbomachinery Steam Turbines

BLADING

The blading of De Pretto Industrie's steam turbines are the result of continuous research and more than 100 years of experience.

CONTROL SYSTEM

Each control system is engineered and customized according to the specific application and following customer needs and specifications.

TURNKEY PROJECTS

Single point of contact from design phase till on site assembly, commissioning and maintenance. turbomachinery.

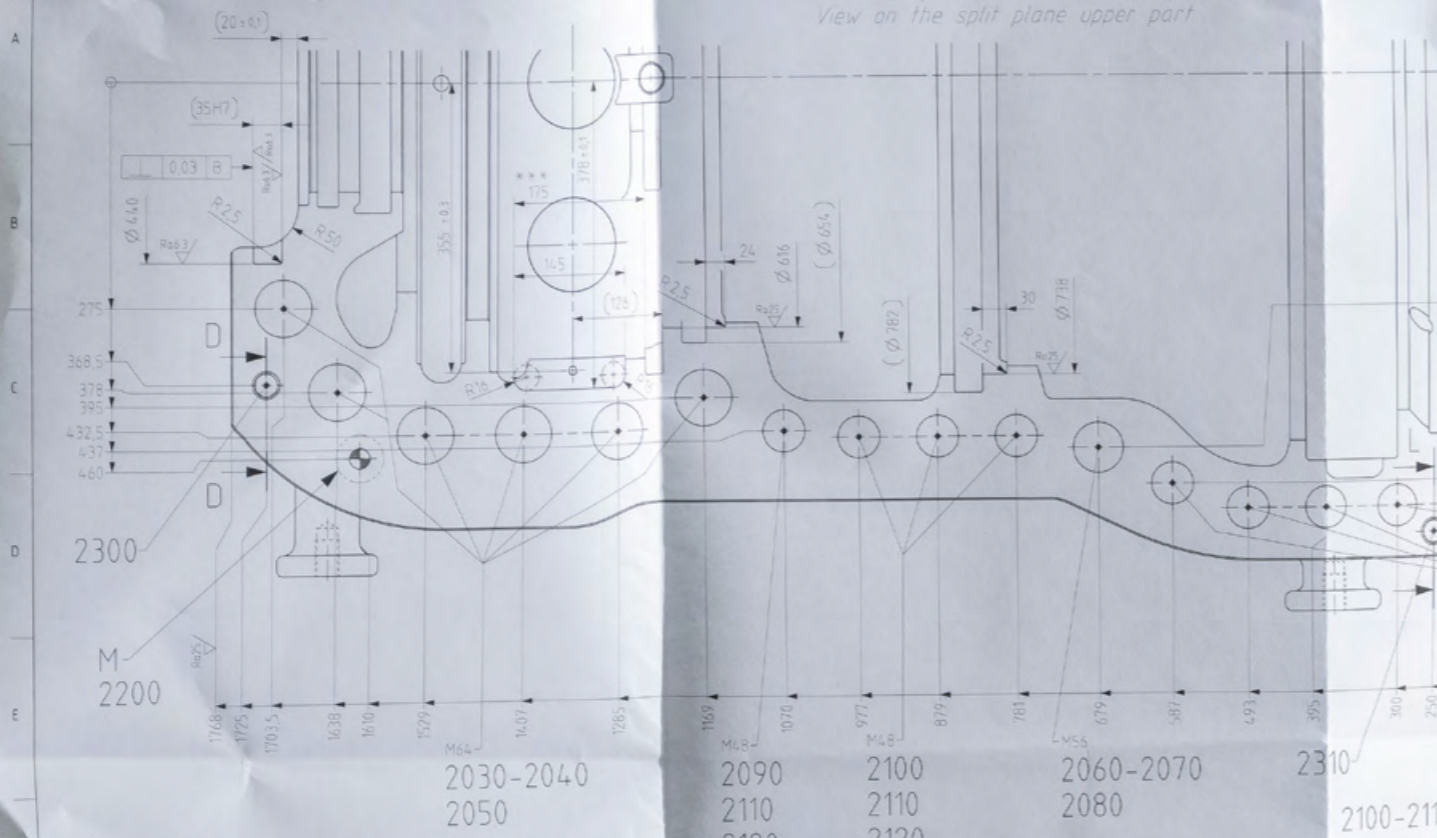


Power range: up to 50MW
 Temperature range: up to 540 °C
 Pressure range: 2,5-130 bar
 Multiple extraction/admission
 Modular design
 Power gen/mechanical drive
 Impulse/reaction turbine
 Suitable for saturated steam
 Packaged units (gear,LOS, auxiliaries etc.).

Power P up	Up to 50 MW
Live steam data PL - TL	Pressure / Temperature limits: 130 bar - 540 °C
Exhaust pressure PB	Condensing turbines: up to 1 bar Back-pressure turbines: up to 50 bar
Extraction pressure Pe	2 Up to 50 bar
Rotating speed N	Driving generators: 3000 or 3600 rpm if direct, up to 17000 rpm through reduction gear. Driving units like compressors: 3000 up to 17000 rpm (depending on size) general design data.

New units
Condensing / Backpressure Steam Turbines

Vista sul piano d'unione parte superiore
View on the split plane upper part

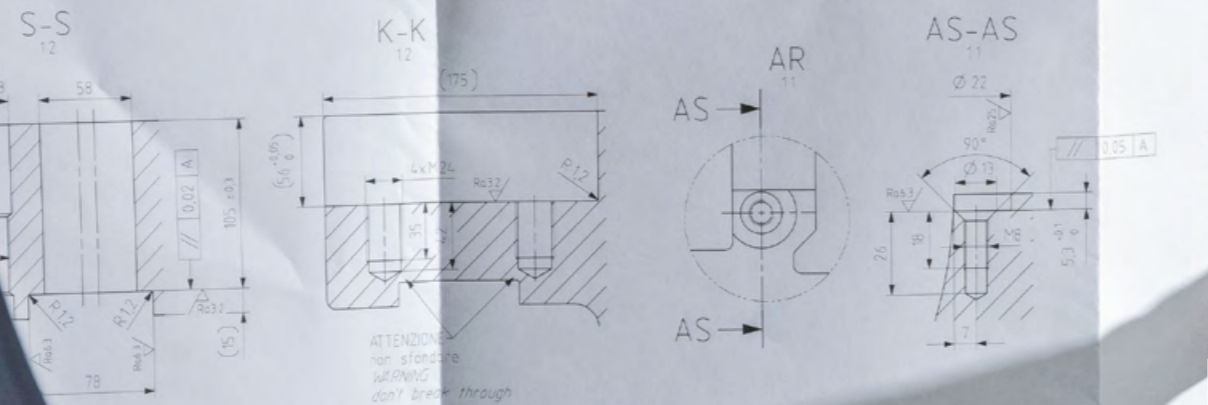


APPLICATIONS

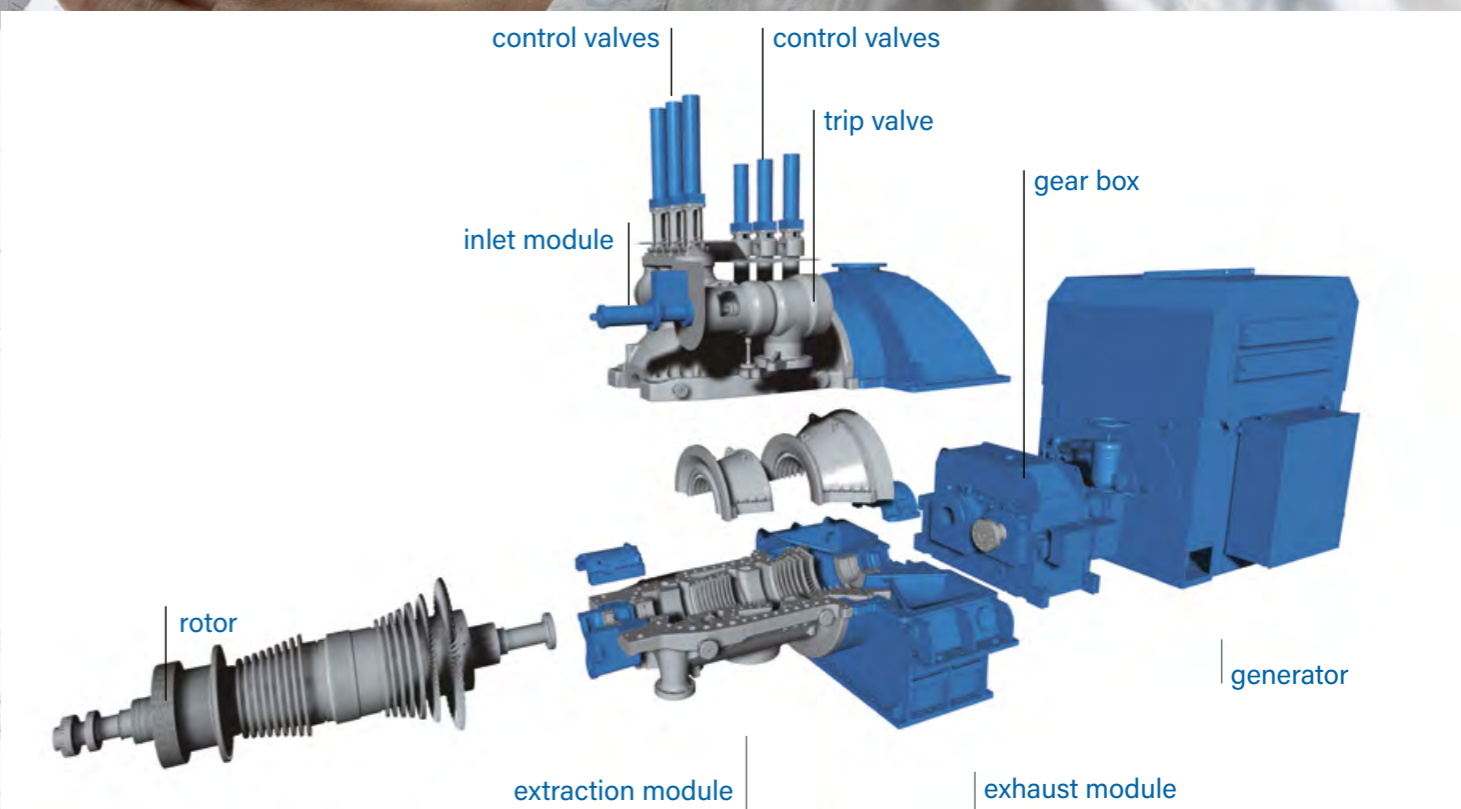
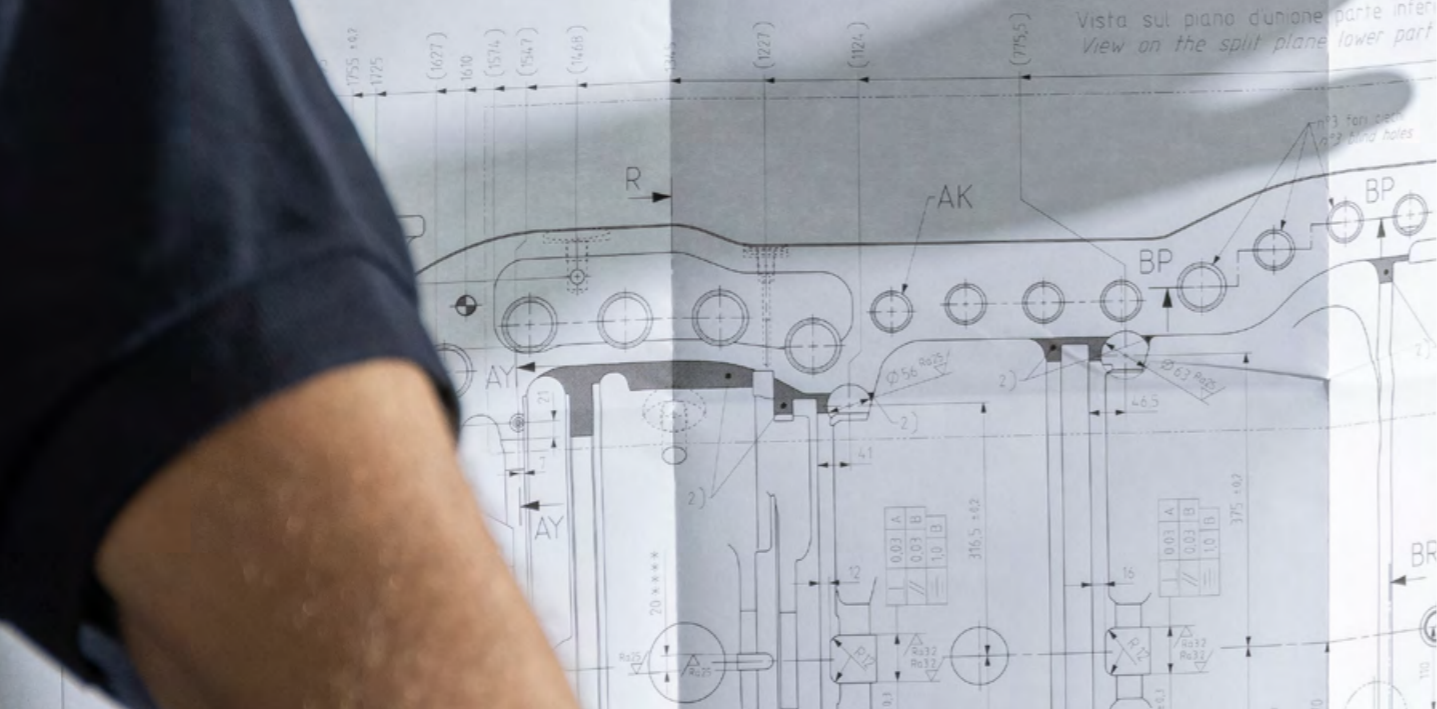
- Combined Cycles
- Biomass and Waste to Energy
- Concentrated Solar Power
- Heat recovery from Industrial Processes
- Combined heat and power productions
- Power Generation and Mechanical Drive (compressors, pumps, blowers, fans...).

MODULAR DESIGN

De Pretto Industrie's Steam Turbines are designed applying a modular approach. By using standardized elements for the main components we are able to optimize the overall design and therefore maximize the turboset efficiency.



Vista sul piano d'unione parte inferiore
View on the split plane lower part





Temperature up to 200 celsius degree



Pressure up to 10.000 psi



On-shore and Off-shore application
with highly corrosive sour gases



Hazardous area installation



MAIN FEATURES

Suitable for all applications and for installation in all industrial/O&G environments. Complete control solutions : package with a control system for the whole train. Greenfield and brownfield capabilities (new plants but also replacement/renovation of existing sites). Use of standard software available on the market.

Turbomachinery Packaging

GENERAL DESIGN DATA

Design, verification, development and supply of: Control Systems, Baseframes, auxiliary systems. Design, Routing of Piping according ANSI (31.3/31.1) or other standard (AD2000, EN) Calculation, Design. Realization and certification of pressure components.

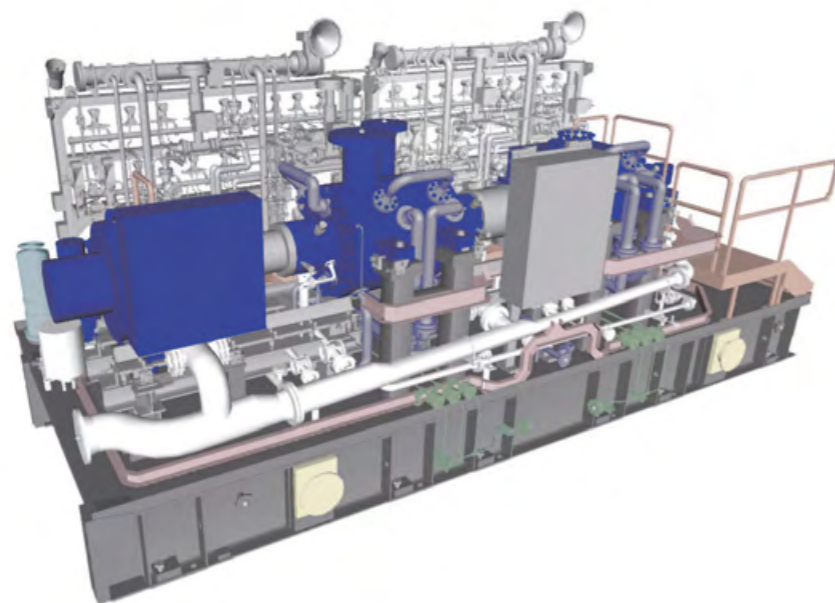
with PED requirement until III category (Category IV with notified body).

Complete Design and Realization of Lube Oil System for Turbo Group also according API Standards.

STANDARD & CERTIFICATION

ACE614
ATEX
CE
CSA
GOST
IECEX
NAC
NEC
NORSOK

SHELL DEP
NAC
NEC
NORSOK
SHELL DEP
UL





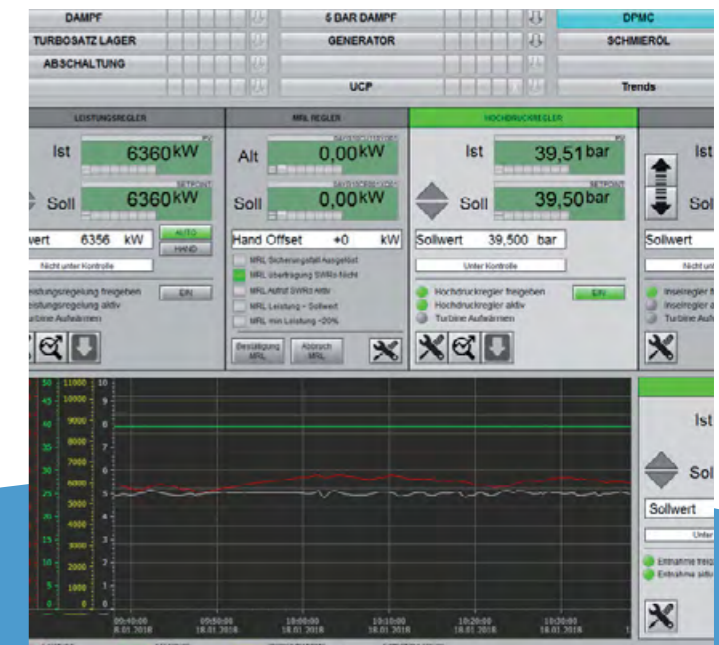
- Mechanical fly wheel control**
- Mechanical / Hydraulic control**
- Overspeed monitoring**
- Turbine governor DPMC**
- HMI**
- Control valve Servomotor**
- Trip valve servomotor**

DPMC De Pretto Modular Controller

DPI MODULAR CONTROLLER

DPMC TURBINE GOVERNOR
 Steam turbine governor fully integrated in the PLC.
 Different types of PID controller can be implemented.
 Open source software.

- Multivariable regulation
- High stability
- Adjustable Droop
- Dead band compensation



Turbomachinery Control Systems

BENEFITS

REASONS FOR UPGRADING AN OLD HYDRAULIC / MECHANICAL SYSTEM

- Technical obsolescence
- Loss of production.
- Lack of experienced people in the plant.
- To improve system performance.

- Automatic control start up and **shutdown**.
- To simplify troubleshooting.
- To get an IEC 61508/61511 safety certified system.
- Improving system reliability and decreasing insurance cost.
- To gain flexibility on various plant operational mode.

BENEFIT OF AN AUTOMATED DIGITAL CONTROL SYSTEM

- Prevent unwanted trips
- Reduce downtime
- Increase diagnostic capability
- Minimize the effects and duration of process upsets
- Accurate and reliable valve and servomotor positioning
- Higher dynamic response

- Accurate speed and frequency control
- Flexibility in control strategy (multiple extraction, sliding bleeds)
- Remote operation and diagnostic.

TECHNICAL DOC & TEST

TECHNICAL DOCUMENTATION ACCORDING CE RULES AND INTERNATIONAL STANDARDS

- CE Declaration of conformity.
- Technical report according to: Machine Directive 2006/42/CE
- IEC 61508/61511 Functional Safety
- Risk analysis.
- IEC 62061 Safety of Machinery.

- EN 13849-1 Safety of Machinery-Safety Related parts of control systems:
- ATEX Directive 2014/34/UE
- Turbine regulator according to Electrical Energy Directive 2003/54/CE
- Use and maintenance manual
- Safety Manual

COMMISSIONING AND TEST

- F.A.T. report
- S.A.T. report
- Dielectric test
- Continuity check
- S.I.S. Validation Protocol
- Overspeed validation Protocol
- Training

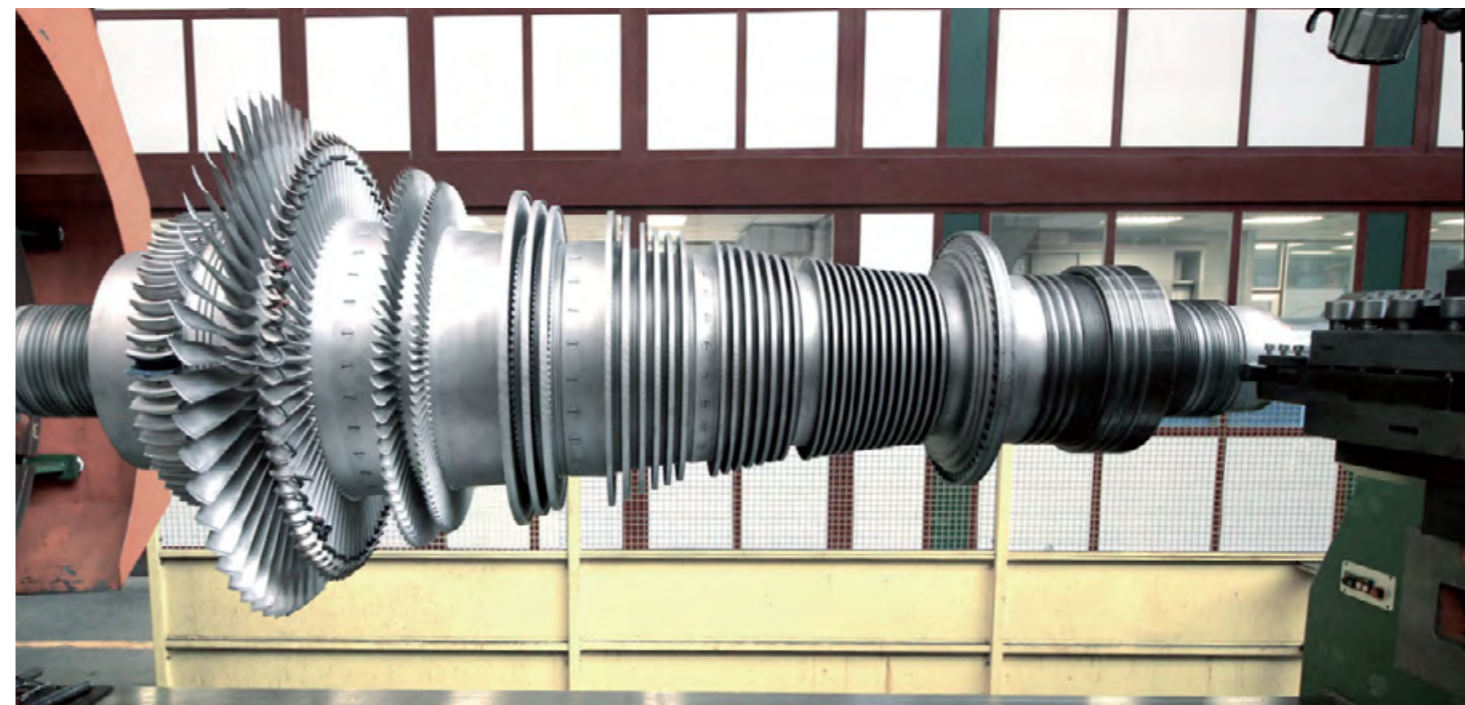
REVAMPING OF THE VALVE GOVERNOR SYSTEM AND TURBINE CONTROL SYSTEM

Turbomachinery Control Systems



Turbomachinery Service

Our range of service activities starts from field assessments, on-site inspections, shop repairs and also includes revamps using state of the art technology. CM&U capabilities are applied on our installed fleet and third party machines as well, with a long track records.



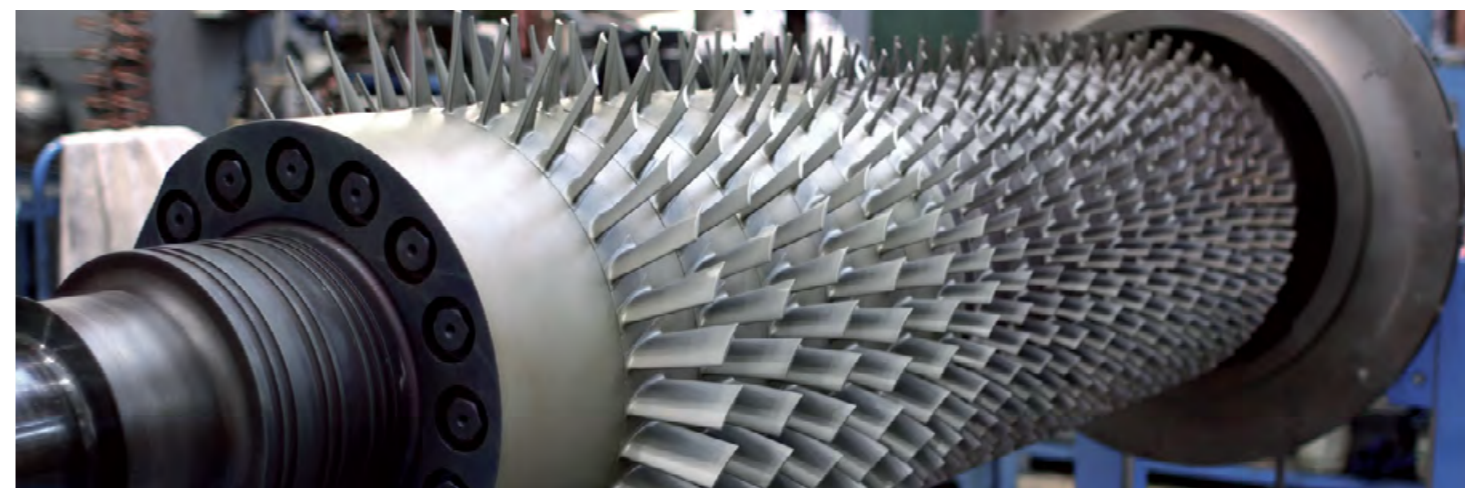
REPAIR OF ROTATING EQUIPMENT

De Pretto Industrie applies its vast engineering knowhow to solve turbomachinery problems assisting customers around the world. We strive to offer customized repair solutions using our technical, commercial and strategic experience.

Service approach is to use OEM competence taking advantage of Independent Service Provider flexibility.

BENEFITS:

- One stop solution provider for rotating equipment
- Repair in emergency situations
- Products manufactured in compliance with customer requirements and specifications
- OEM-equivalent warranties
- Cost and lead time advantages



SPARE PARTS

De Pretto Industrie provides spare parts management for its machine fleet, as well as alternatives for a variety of rotating equipment make.

CAPABILITIES:

- Reverse engineering of complex parts with 3D technology
- Post processing utilizing OEM knowhow
- In-house workshop support
- Compliance to industry wide specifications
- Supply of parts under emergency situation
- Cost and lead time advantages

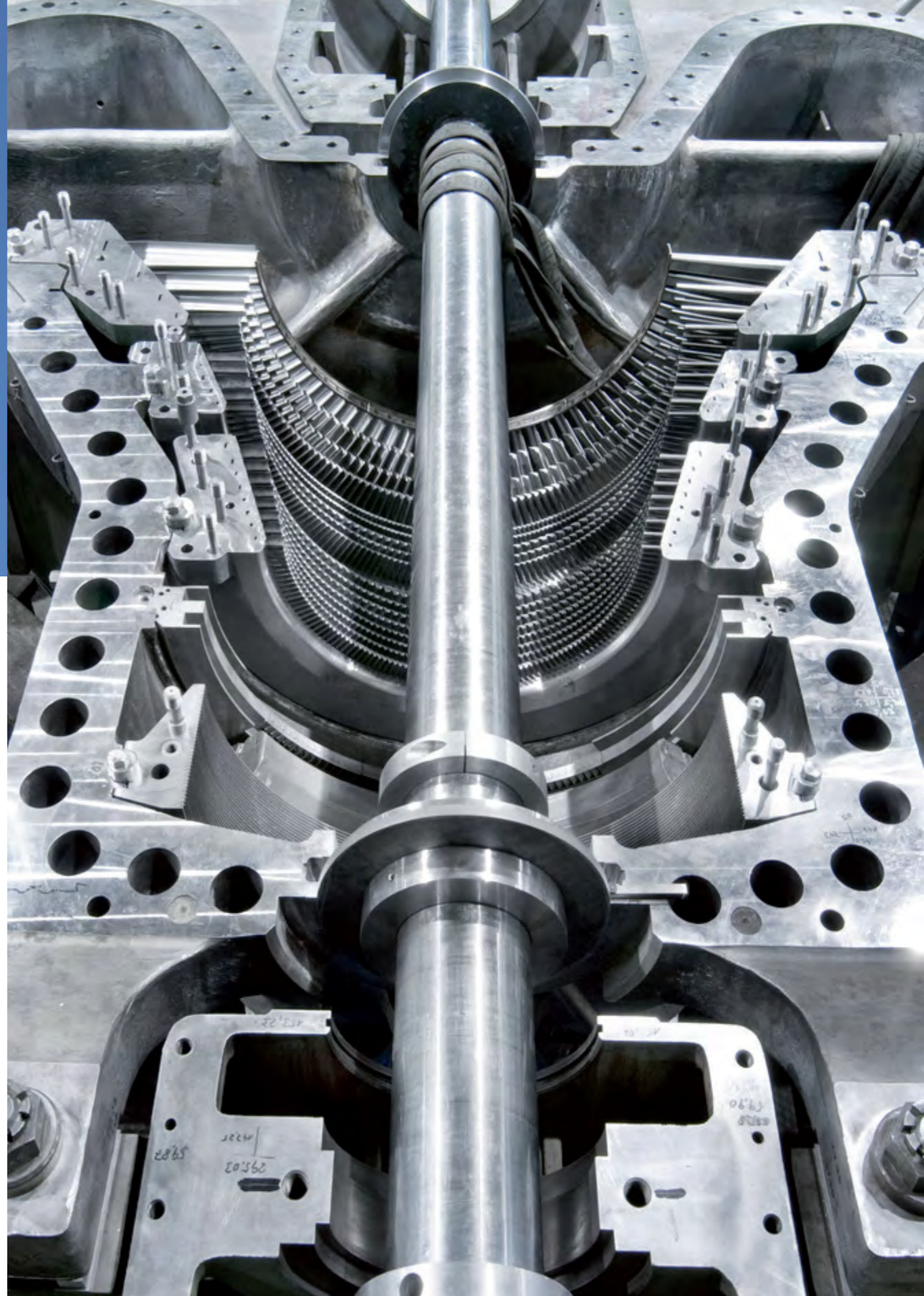
RE-ENGINEERING AND CONSULTING

De Pretto Industrie provides unique engineering solutions considering the 130 years of experience in the turbomachinery field.

CAPABILITIES:

- Steam turbines redesign and rerate
- Turbocompressors redesign and rerate
- Root cause analysis
- Residual life assessment
- Troubleshooting
- Revamp of control systems
- Performance assessment
- Compliance to industry wide specifications





FIELD SERVICE

De Pretto Industrie has a pool of specialized technicians and engineers with diverse end well-rounded skills.

CAPABILITIES:

- Complete turnkey operations
- Maintenance planning and scheduling
- Execution of scheduled outages, shut down and turnarounds
- 24/7 service support
- Commissioning skills
- On site reverse engineering
- Customer training



SERVICE CONTRACTS

De Pretto Industrie can propose contractual service agreements flexibility to meet Customer requirements.

CAPABILITIES:

- LTSA, Long term service agreement
- Condition based maintenance
- Customized interventions
- Reliability, availability and criticality analysis
- Cost management
- 24/7 hot line for technical assistance
- Diagnostic and preventive analysis
- Telemonitoring

REVAMPS

De Pretto Industrie has extensive engineering competence in revamps of turbomachinery, developing customized solutions for each product and make.

CAPABILITIES:

- Revamps and recertification of steam turbines and compressors
- Revamp of control systems for steam turbine and compressors
- Steam turbine conversion from condensing to backpressure
- Compressors oil seals to dry gas seals
- Relocation of units
- Second hand machines
- Telemonitoring



Via A. Fogazzaro, 5 | 36015 Schio (VI) | ITALY | T. +39 0445 691511 | F. +39 0445 511138

info@deprettoindustrie.it | www.deprettoindustrie.it

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