

*Mechanical Drive Turbines to 60,000 MW  
Boiler Feed Pump Turbines*

*Steam Turbine Generators drive up to 100 MW  
Geared units to 35 MW*

*Impulse & Reaction  
Technology Steam Turbines  
including Industrial Co-Generation,  
Combined Cycle and Geothermal*



**GE Oil & Gas Steam Turbines**  
*...Your Dedicated Support Team  
Contact your local Sales Representative or...*



**GE Power Systems  
Oil & Gas**

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**GE Power Systems  
Oil & Gas**



**S**  
**TEAM  
TURBINES**

# STEAM TURBINES

## GE Oil & Gas Nuovo Pignone - Thermodyn

GE Oil & Gas designs and manufactures a complete line of steam turbines for mechanical and generator driver applications. They are designed for top thermodynamic and mechanical performance for installation in chemical, petrochemical and industrial plants, provided as either stand-alone drivers or as part of a GE Oil & Gas complete turboset.

GE Oil & Gas total system capability guarantees the best thermodynamic and mechanical match between the steam turbine and the driven machines. It also offers the advantage of single source

responsibility. All the machines are manufactured, assembled, tested and serviced by a single company. The advantages of this single supplier responsibility are easy installation, long periods of continuous service, low maintenance cost and high reliability and availability..

GE Oil & Gas steam turbines are manufactured in Florence, Italy by Nuovo Pignone and in Le Creusot, France by Thermodyn.

Novuo Pignone steam turbine main features:

- Basic design with impulse control stage(s) followed by reaction stages with high steam expansion efficiency
- Solid rotors
- Blade carriers which withstand steam pressure and temperature together with the outer casing form a double shell design which allows a thinner outer casing and consequently lower thermal inertia and shorter start-up time
- Inlet and control valves designed to reduce pressure losses
- Tilting pad journal and thrust bearings

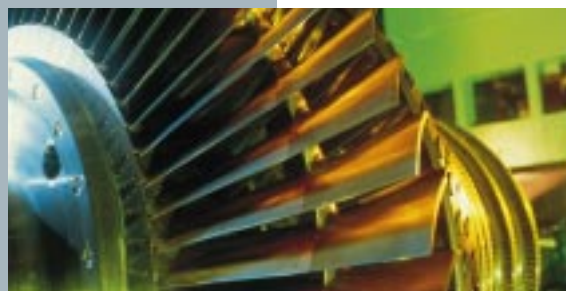
The design meets API 612 recommendations.

Thermodyn steam turbine main features:

- Impulse stages providing enhanced wear resistance and ability to withstand water inflows, twisted blade profiles to improve last stage efficiencies
- Solid rotor
- Inlet and control valves designed to reduce pressure losses
- Tilting pad journal and thrust bearings
- Spring-back labyrinth seals

The design meets API 611 or 612 recommendations

<b>Novuo Pignone</b>	NK condensing	HNK condensing	NG / HNG backpressure	HG backpressure
Power range (MW)	22 - 65	5 - 100	1 - 50	1 - 40
Speed (RPM)	3000 , 16000	3000 , 12500	3000 , 16000	3000 , 16000
Max. Live Stem Press. (Bar)	70	140	70 / 140	140
Max. Live Stem Temp. (°C)	540	540	540	540
Max. Backpressure (Bar)			20	60



<b>Thermodyn</b>	P back pressure	C condensing	MP backpressure (multivalves)	MC condensing (multivalves)
Power range (MW)	up to 5	up to 6	up to 40	up to 40
Speed (RPM)	up to 16000	up to 16000	up to 16000	up to 16000
Max. Live Stem Press. (Bar)	80	80	150	150
Max. Live Stem Temp. (°C)	480	480	540	540

### The GE Oil & Gas Advantage:

- Maximizes reliability and performance
- Minimizes product cost
- Minimizes delivery cycle
- Quick installation through packaged designs

## Markets and Applications

### Mechanical Drive

- MDT's, 1 MW to 60MW
- BFPT's, 1-35 MW
- Applications
  - LNG
  - Ethylene / methanol
  - Urea / ammonia
  - Refineries
  - Synfuel
  - Process air
  - Utility boiler / reactor feed pumps
- Features
  - Inlet steam up to 140 bar/540°C
  - Double shell construction for high pressure applications
  - Integral forged rotors
  - Single or double end drive
  - String test available for turbine/compressor trains



### Generator Driver

- 3,000 to 100,000 KW, 50/60 Hz, Up to 26" LSB (5mq)
- Geared and direct drive
- Impulse and reaction designs
- Condensing / non-condensing
- Reheat option
- Applications
  - Waste to Energy
  - Cogeneration
  - Combined cycle
  - Small power production facilities
  - Geothermal power generation
- Configurations
  - Complete packages for quick installation
  - Up, down and axial exhausts
  - Multiple extractions/admission



### Extended Scope-Features

- Integrated systems design
- Condenser Systems
- ST Bypass Systems
- Feed Water Heater Systems
- Feed Water Pumps
- Controls and Electricals
- Project Management
- Installation
- Partnering/Teaming

