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## Steam Turbine Solutions for Boiler Feed Pump Drives



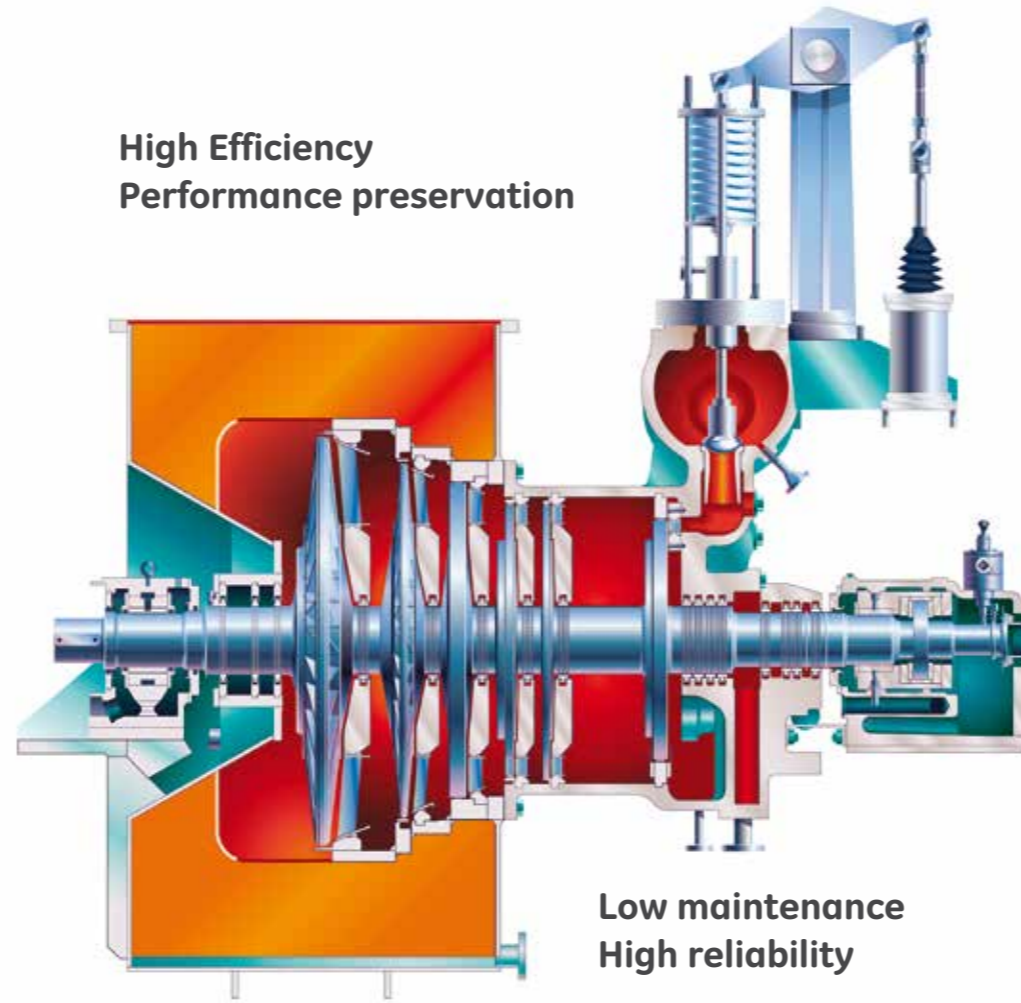
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**Applying proven, advanced technologies to deliver greater value**

Boiler Feed Pump Turbines (BFPT), generally have impulse blades for high reliability and efficiency with designs suitable for operation over a very broad speed range. These steam turbines are manufactured in our plant in Le Creusot, France, that encompasses more than a century of experience in steam turbine technology. The machines are customized using pre-engineered, field-proven stator and rotor components. Every steam path is optimized for the specific thermal cycle requirements to provide high efficiency over the entire operating range.



**GE's impulse type design BFPT constitutes one of the largest fleet of BFPTs in the world**



**Best in Class**

- Installed fleet of more than 700 BFPTs
- Statistical data on US installations reports a measured reliability of 99.84% over 15 years operation

**Impulse Design-Advantages**

- High efficiency
- No pressure drop in moving blades
- Low steam thrust, no leakages at the top of the blades
- No rotor axial displacement, no tight clearances
- No seal steam consumption
- Low vibration and higher stability

**High Construction Standard**

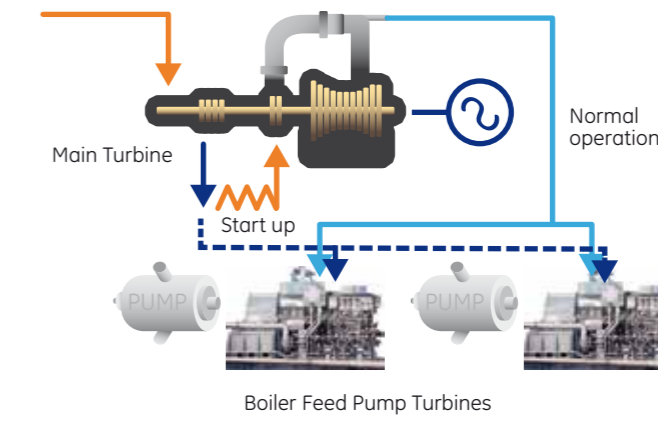
- Design as per API 612 special purpose rules
- Integral forged rotor
- Improved rotor and casing material
- Superior rotordynamic performance

**Modular Architecture**

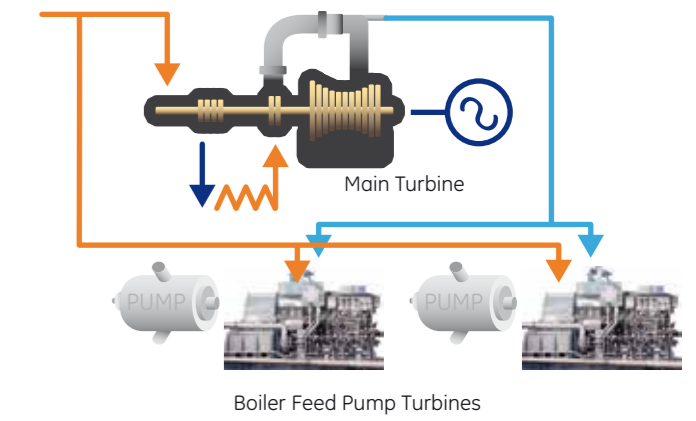
- Modular structured design permits a high degree of customization for main power generation steam turbo-generation unit optimization
- Suitable for a secondary steam inlet (dual inlet) to allow operation with high pressure steam for plant start-up sequences and overload cases.
- Speed can be optimized in conjunction with pump suppliers
- Equipped with spring-backed seals ensures perfect preservation of efficiency over time

**Typical BFPT configurations**

**BFPT Single admission**



**BFPT Double admission**



**Kobe Plant (Japan)**

- 2 x 65% BFPT, with 600 MW main turbine
- Start up and partial load (< 30%) ensured by separate EM driven pumps

**Cross stations, Pineville (USA)**

- 2 x 65% BFPT, with 600 MW main turbine
- Dual admission for start up and partial load (< 65%)

KEY FEATURES
Single or Double flow configurations
Impulse blades
Single or dual inlet
Broad operating speed range
Condensing or backpressure
Multi valves
Axial or Radial (up/down) exhaust
Single or double shaft ends
Baseplate or foundation mounting

PRODUCT CHARACTERISTICS	
Power Rating up to 30 MW	
Speed Range 2000 to 7000 rpm	
Rated Steam Conditions	
1 <sup>st</sup> inlet	9-15 bar (130-220 psi)
	330-400 °C (625-750°F)
(auxiliary steam)	Up to 65 bar (950 psi)
	Up to 440°C (825°F)
2 <sup>nd</sup> inlet	Up to 280 bar (4060 psi)
	Up to 580°C (1075°F)
Arrangement	Single casing

**Scope of supply**

- Fully packaged ST on baseplate with piping, instrumentation and cabling
- Separate lube and control oil console suitable for the whole shaft line
- Motor driven turning gear on ST shaft
- BN3500 shaft line monitoring and Woodward governor
- Erection supervision and commissioning
- Operation and Maintenance training

**Optional**

- Shaft line torsional analysis
- Control Cabinet for the whole shaft line with PLC and HMI
- Gearbox for booster pump (if any)
- No load test at shop and performance test at site