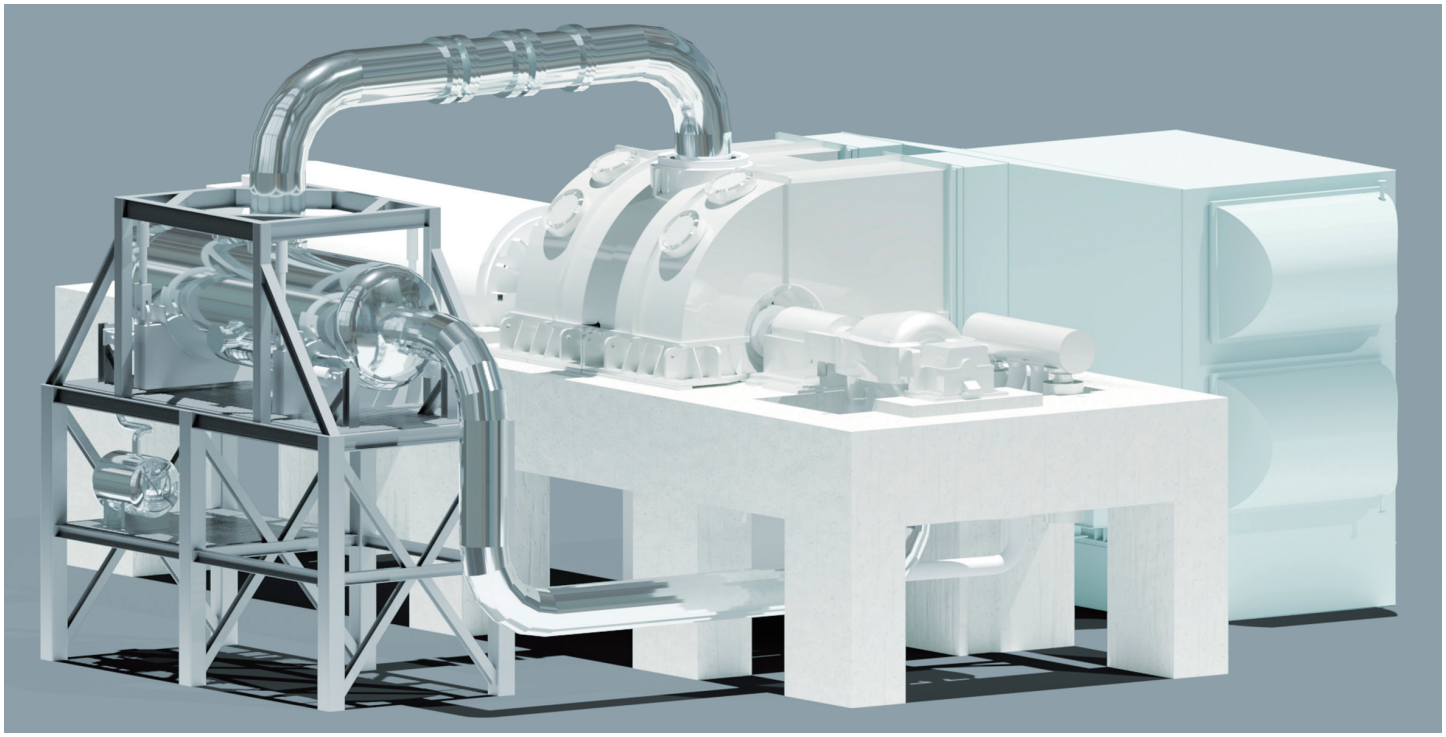
MITSUBISHI POWER

Nuclear Steam Turbine Plant

For Small Modular Reactors,

taking a Crucial part in Carbon Neutral World



Concept

Small quantity and simplified system
to shorten construction period with high priority in SMR project.

Efficient Operation and Maintenance
for reducing the O&M cost and outage period.

Flexible operation
such as load follow operation or cogeneration with variable heat demand load.

Competency

Provenness
based on successful histories in both of nuclear and fossil power turbine plant.

High Reliability
by Comprehensive verification of latest technology before field application.

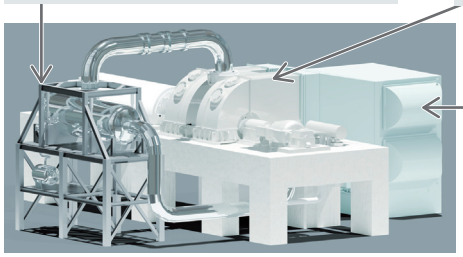
Optimization
from fossil and nuclear steam turbine plant technologies.

Nuclear Steam Turbine Catalogue
Our experience and technology of Nuclear steam turbine plant are explained.

Configurations

Moisture Separetor Reheater
Single stage reheat and horizontal type

Steam Turbine
Full speed (3000/3600 rpm)



Condenser
Surface cooling type
Side flow
(option: Down flow)
Air cooled type is applicable.

Configuration of LP turbine flow(s) :
Three types of LP turbine flow based on the reactor thermal power and condenser vacuum pressure.

Number of flow	Reactor Thermal Power (MWt) 100 500 1000
1 flow	
2 flows	
4 flows	

Mitsubishi Power is a power solutions brand of Mitsubishi Heavy Industries.

MOVE THE WORLD FORWARD MITSUBISHI HEAVY INDUSTRIES GROUP

Process Flow for SMR Turbine Plants

: for shorter construction period

Site conditions
Requirements
↓
Planning/Design
- System simplification
- Reduction of Bill of Quantity
- Design Optimization

Vendors Manufacturers
↓
Assembly
- Skid assembly
- Prefabrication

Transportation
- Railway
- Truck
- Ship, etc.

Local Assembly
- Blocking
- Modularisation

Commisioning & Commercial Operation

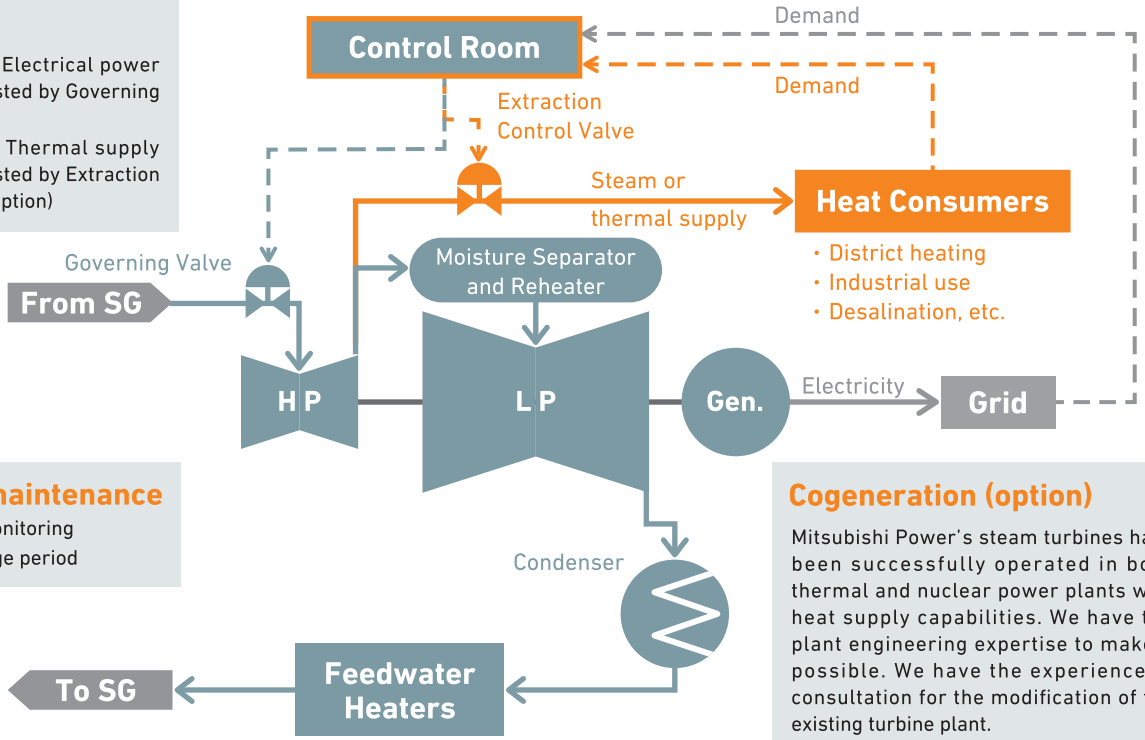
It is important to make the size and shape of products easy to transport in consideration of transportation restrictions.

Consistent Quality Management System from Planning Phase to Maintenance Service Phase

Major features of SMR Turbine Plants

Flexiblity

Fluctuations of Electrical power demand is adjusted by Governing Valve.
Fluctuations of Thermal supply demand is adjusted by Extraction Control Valve. (option)



Reduced maintenance

- Predictive monitoring
- Shorter outage period

Cogeneration (option)

Mitsubishi Power's steam turbines have been successfully operated in both thermal and nuclear power plants with heat supply capabilities. We have the plant engineering expertise to make it possible. We have the experience of consultation for the modification of the existing turbine plant.

Frequently Asked Questions

Q: What are the differences between steam turbine plants for SMRs and those for fossil?

A: Although SMR steam turbine plants apply full-speed turbines like those in fossil fuel power generation, there are differences in steam conditions. To improve reliability, SMR turbine plants require moisture separation and reheating through Moisture Separator and Reheater. Moisture separation may not be necessary for the steam turbine applied to Gen. IV reactors.

Q: Do you have any recommendations for the condenser back pressure?

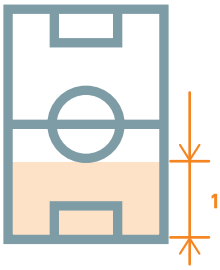
A: The optimal condenser back pressure should be studied based on the reactor type and site conditions.

Q: Are there any reference plants for the SMR turbine plant?

A: The steam turbine is based on thermal power plants. Moisture separators and reheaters, which distinguish SMR turbine plants from thermal power plants, are based on those in nuclear power plants. We have a lot of experience applying both technologies.

Q: What is the estimated size of the turbine building?

A: The estimated size is approximately one-third of a soccer field.



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