Siemens Energy Geothermal Offerings

March 2026

Summary

In the size range from 30 to 60 MWe power output **we have developed a geothermal binary power block** based on the Organic Rankine Cycle (ORC) technology.

This so-called ORC module **offers a great deal of benefits.**

The ORC binary power plant **is completely water-free** and consists of a single casing axial turbine based on Siemens Energy's proven steam turbine platform.

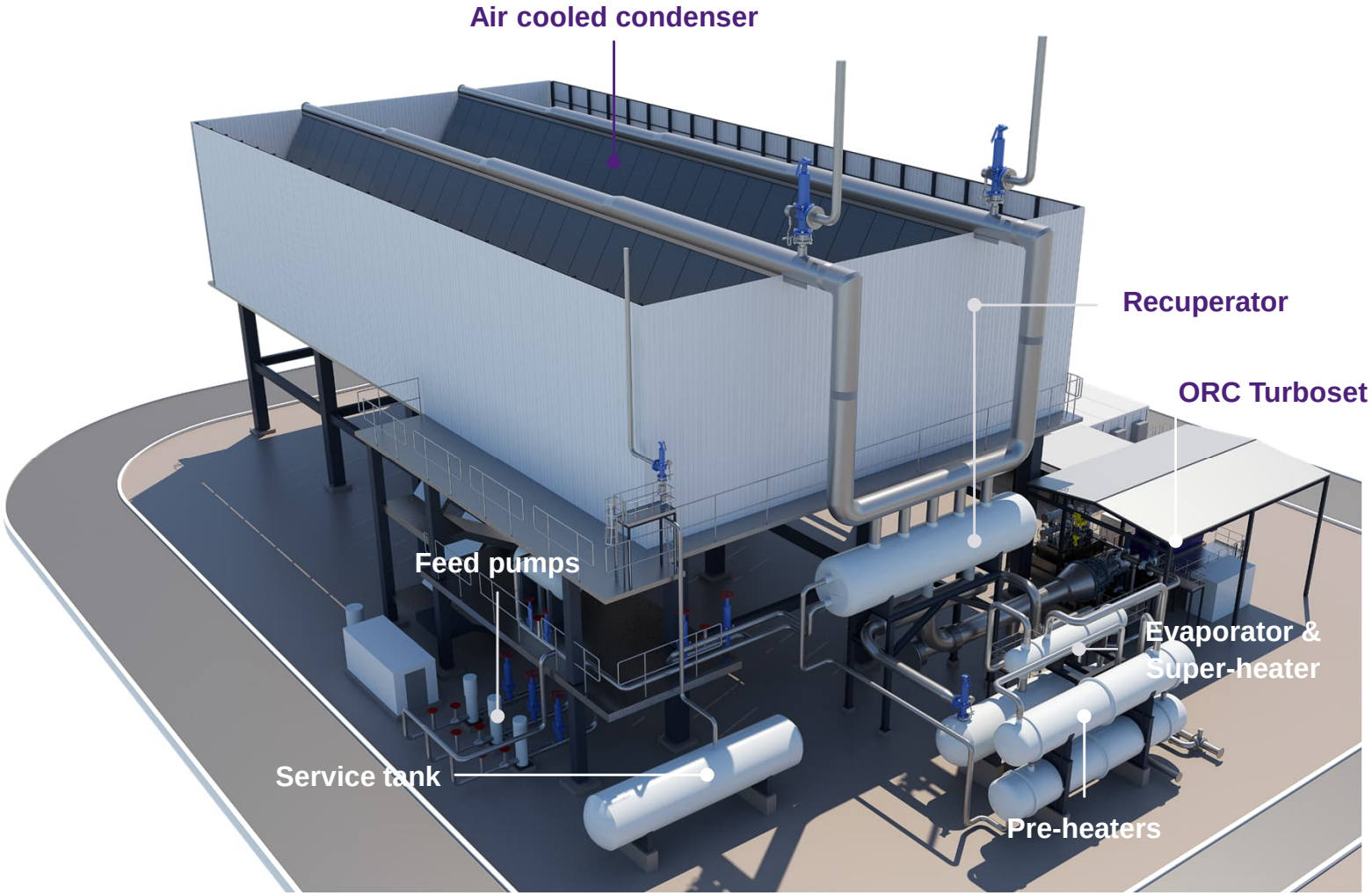
The attractive CAPEX and OPEX of this power plant solution **results in lower LCoE** for intermediate to base load power needs.

Please **reach out to us** and learn more about our offerings.

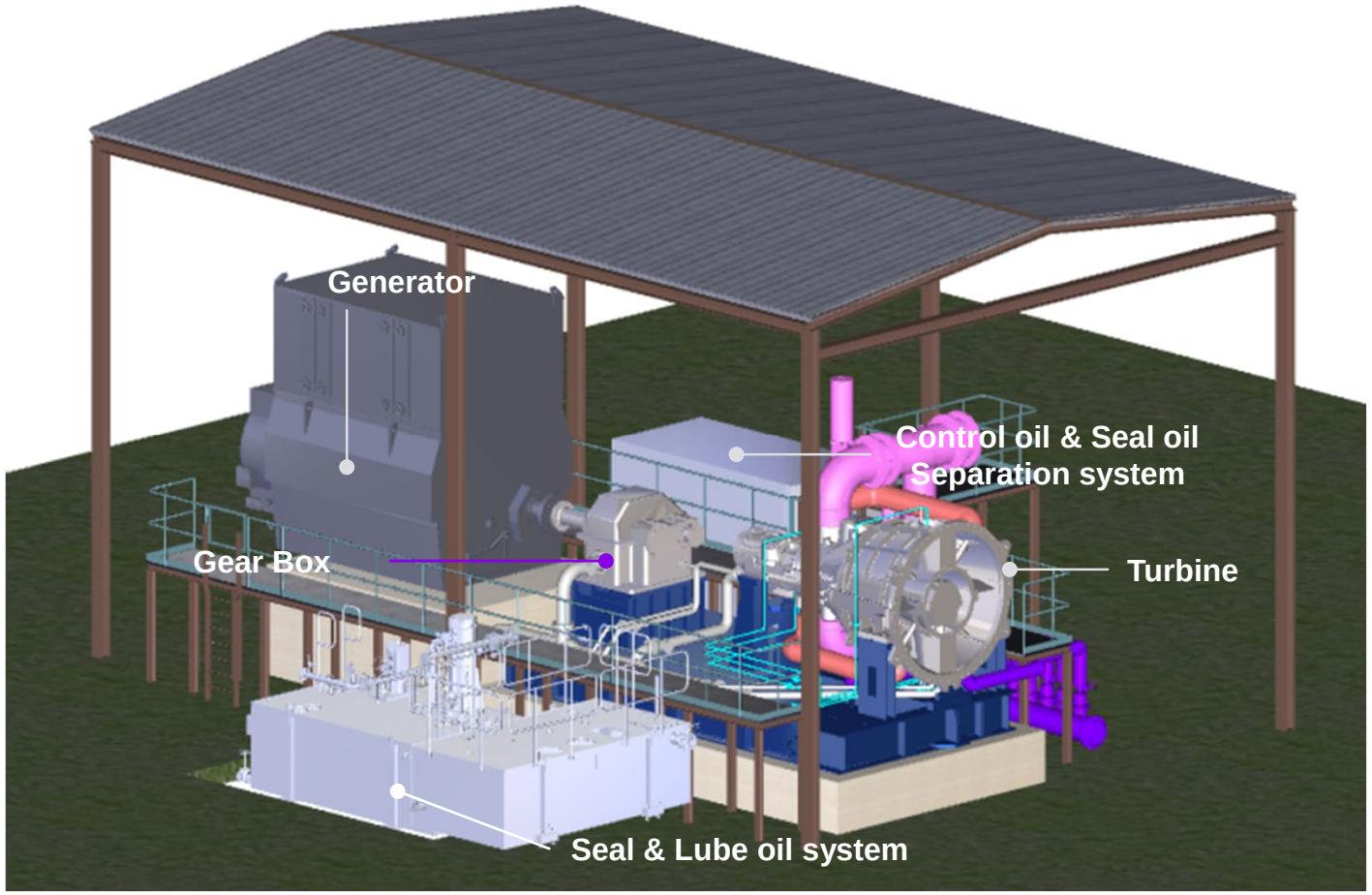
ORC Module (up to 20 MWe)
3D view

Main features of the arrangement concept

- **Binary cycle ORC system** (geothermal water as heat carrier)
- **Outdoor arrangement** of the main equipment
- Electrical and control system **containerized**
- Weather roof for turboset (rain & sun protection)
- **Air cooled condenser** (optimized auxiliary power consumption)
- **Air cooled** closed cooling water system via fin-fan coolers (optional)
- **Water free solution** for plant operation



SST-600 ORC Turbine Generator Set Up to 20 MWe
Technical Data & Layout Arrangement



Technical Data

- Inlet Parameters
  - **Pressure:** up to 40 bara
  - **Temperature:** up to 300°C
- **Exhaust Pressure:** based on cycle design
- **Speed:** 3000 RPM with gear box
- **Power Range:** 10 – 20 MWe gross
- **Inlet Connections:** Up to 1 x DN450 ESV
- **Exhaust Connection:** DN2160 Axial Exhaust
- **LP admission:** possible

Main features of the arrangement concept

- **Outdoor arrangement** of the main equipment
- Electrical and control system **containerized**
- Weather roof for turboset (rain & sun protection)
- **Low level plant arrangement** – lower civil costs

Scope options to fit our customers needs
all based on EP + TFA

ORC Turbo-Generator-Set

- Turbine w/gearbox (if applicable) on base frame
- Generator with auxiliary systems
- Auxiliary systems, e.g., lube oil, seal oil
- Optional: turbine control system

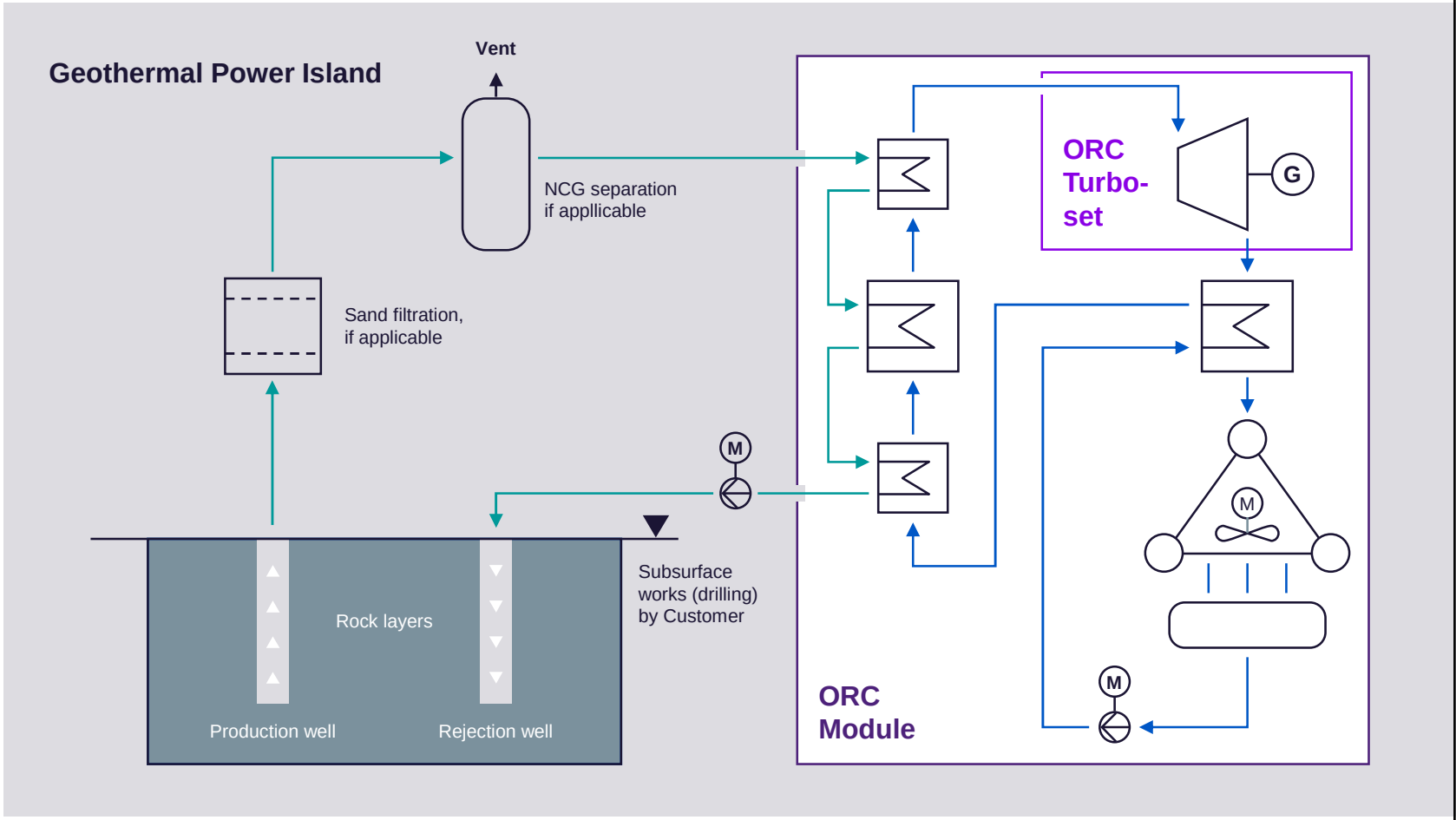
ORC Module → ORC Turbo-Generator-Set **plus** below scope:

- Heat exchangers
- Air cooled condenser
- Feed pumps
- Interconnecting piping system
- Electrical system
- Control system

Geothermal Power Island → by Customer

- Interconnecting piping system
- Sand filtration system, if applicable
- NCG separation system, if applicable
- Electrical system for entire Geothermal plant
- Controls system (DCS) for Geothermal plant

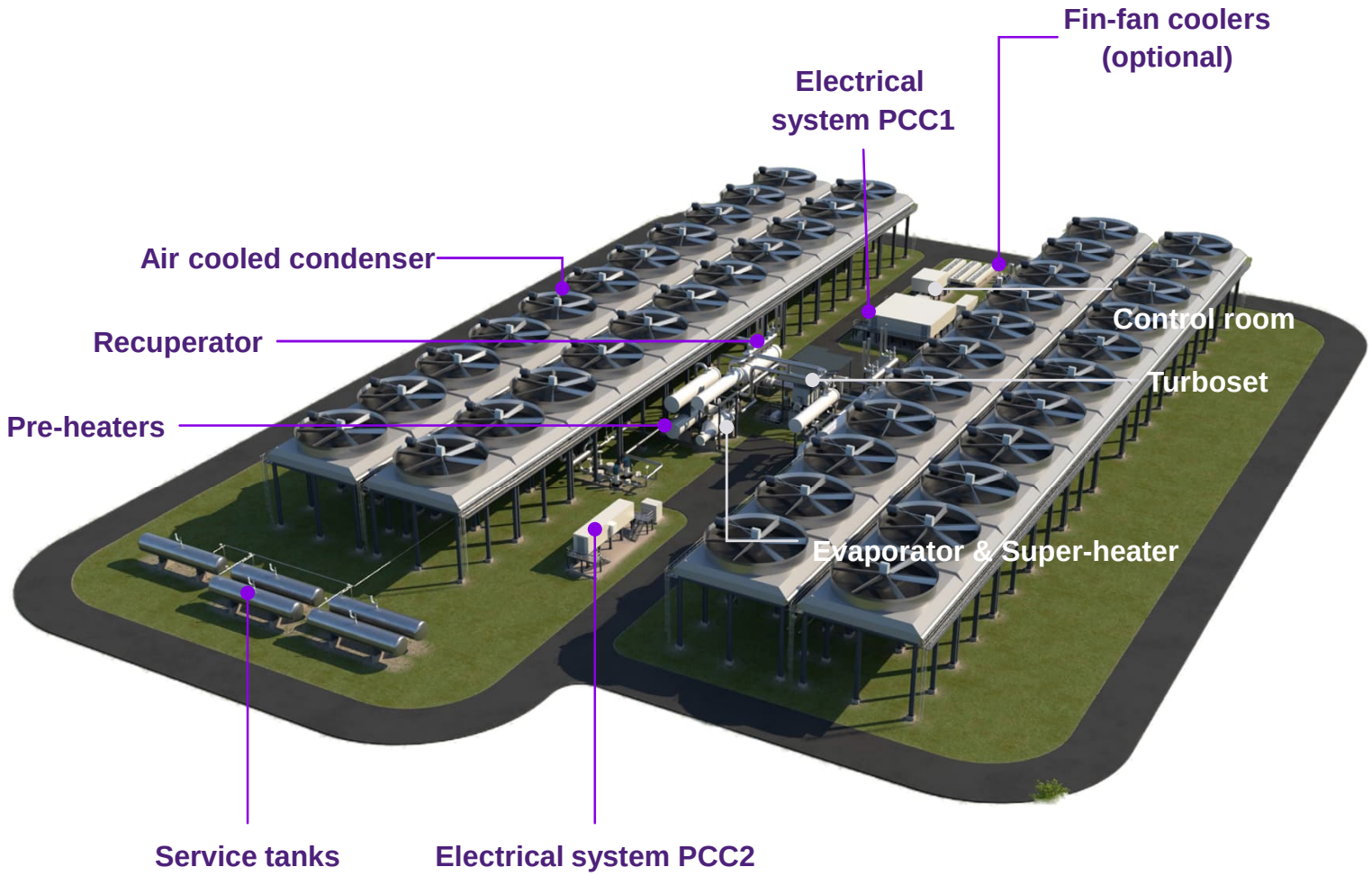
ORC: Organic Rankine Cycle



ORC Module (up to 60 MWe)
3D view

Main features of the arrangement concept

- **Binary cycle ORC system** (geothermal water as heat carrier)
- **Outdoor arrangement** of main equipment
- Electrical and control system **containerized**
- **Weather roof for turboset** (rain & sun protection)
- **Air cooled condenser** (optimized auxiliary power consumption)
- **Air cooled** closed cooling water system via fin-fan coolers (optional)
- **Water free solution** for plant operation



ORC Module Efficiency & Performance
More value to your facility

Heat input

Total heat input	MW_{th}	~45 – 330
Heat transfer fluid (HTF)		Geothermal water
Temperature HTF circuit (in/out)	°C	200/90 (typical values)

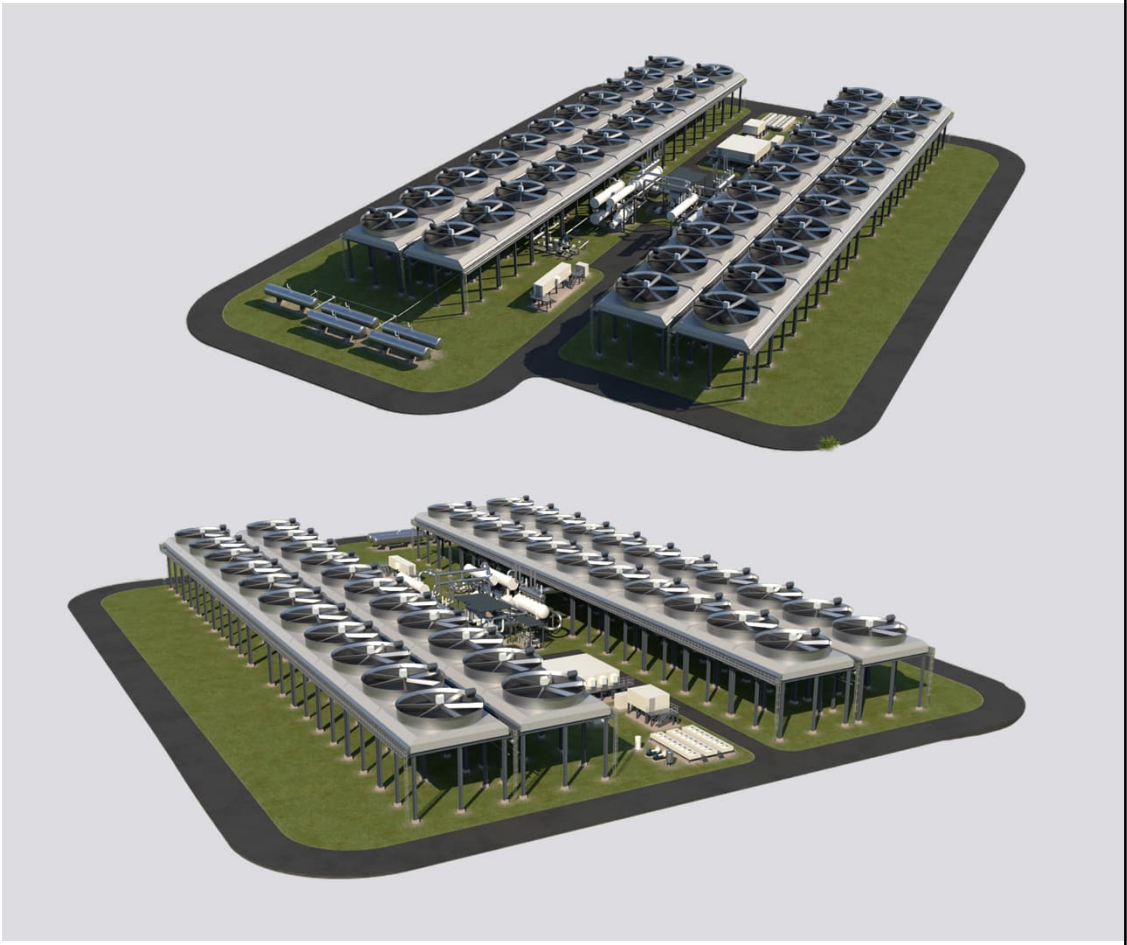
Electrical output per ORC module

Power output (gross)	MW_e	~10 – 60
Own power consumption		~16 – 18%
Electrical efficiency (gross)		~18 – 23%

Heat rejection (cold end)

Cooling method	ACC or WCC
CHP possibility	yes

ACC: Air Cooled Condenser | **WCC:** Water Cooled Condenser | **CHP:** Combined Heat & Power



SST-600 ORC Turbine Up to 20 MWe
same DNA as our Steam Turbines

High Synergy between SE Steam Turbine Technology and ORC

- Reaction Blading Technology
- >90% turboset efficiency (@ Generator terminal)
- In-between bearing concept
- Axial exhaust for low level installation & easier maintenance
- Single Casing Design
- One HP and one LP blading group
- LP admission possible for dual pressure concept
- Robust double acting Mechanical Seal design at both shaft ends
- Long Service Intervals due to less complex design