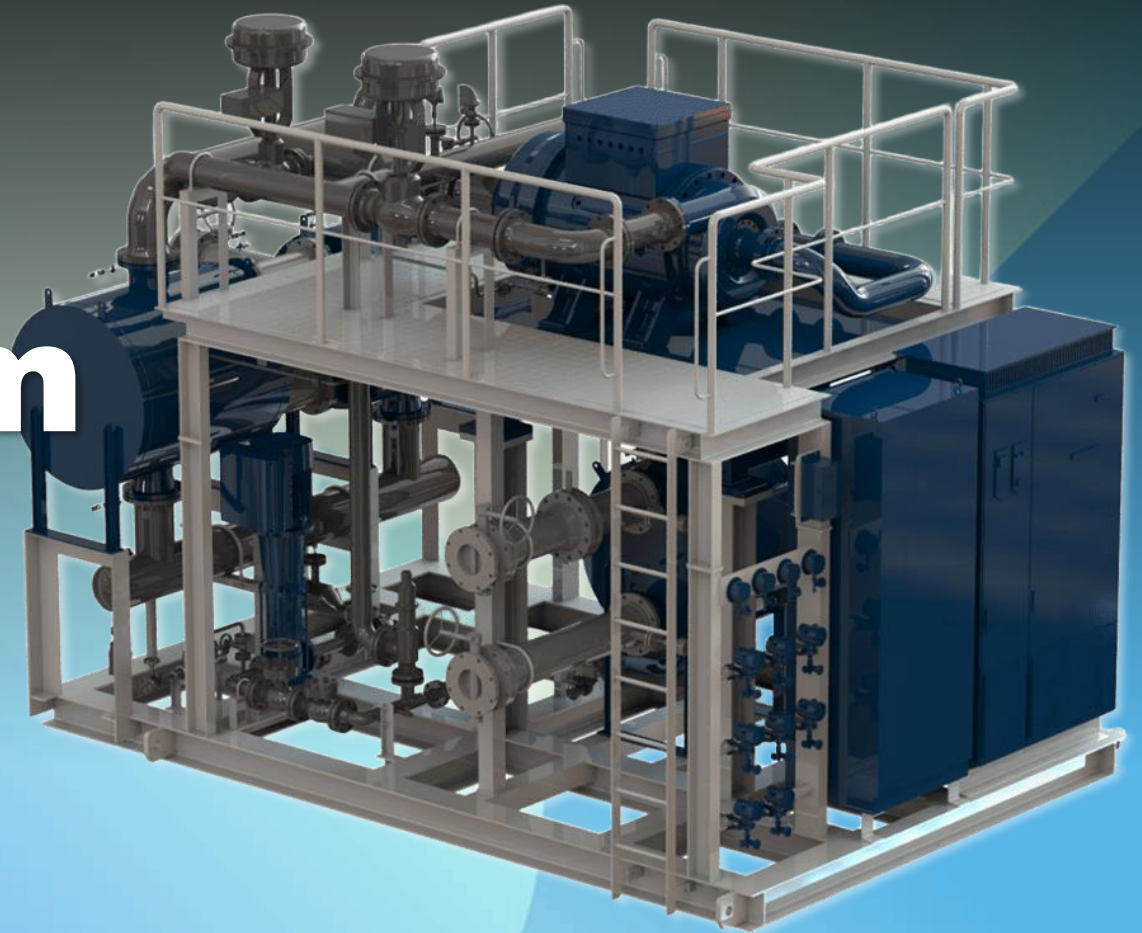
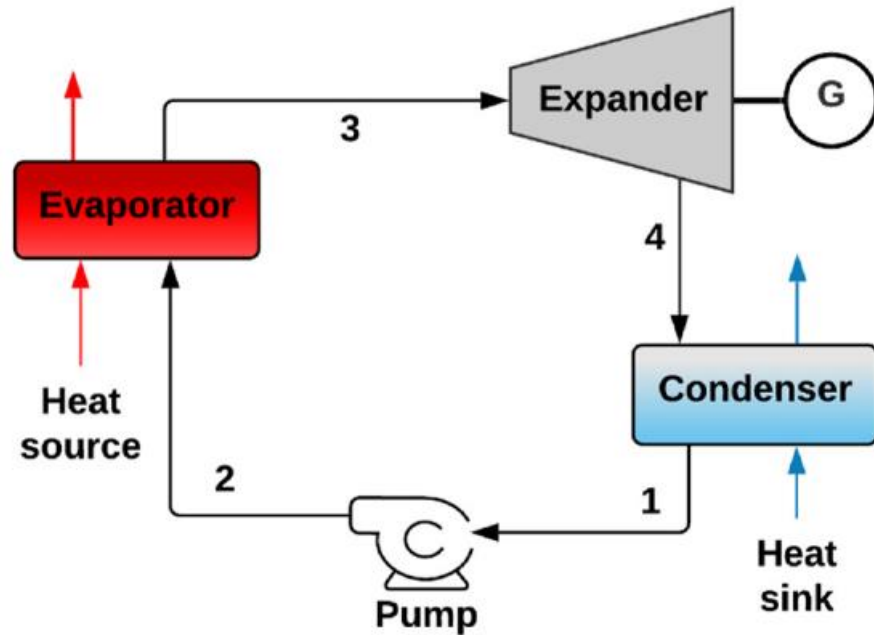


Organic
Rankine
Cycle system



Organic Rankine Cycle (ORC) is a modified version of the conventional Rankine Cycle, using an **organic working fluid** instead of water to generate power from **low-temperature heat sources**.



Main Components

Pump

Compresses the condensed working fluid to the pressure for efficient heat exchange.

Evaporator

Transfers heat from external sources (e.g., exhaust gas, solar thermal energy) to vaporize the working fluid.

Expander

Expand the vapor to generate mechanical power or electricity.

Condenser

Rejects heat to the cooling medium, condensing the vapor back into liquid form.

SPECIFICATION

PRODUCT NAME	200 kW ORC SYSTEM
POWER OUTPUT	Rated: 200 kW / Max: 260 kW
WORKING FLUID	R245fa
HEAT-SOURCE CONDITION	Temperature : 80 °C
COLD-SOURCE CONDITION	Temperature : 27 °C
CYCLE EFFICIENCY	10.6 % at design operating condition
COOLING METHOD	Seawater + Organic Refrigerant
SKID DIMENSIONS	5.0 x 3.2 x 4.0 m

- ✓ **ACTIVE MAGNETIC BEARING**
- ✓ **CONVERTER & INVERTER UNIT**
- ✓ **SHELL & PLATE HEAT EXCHANGER**



Turbine-Generator-Magnetic Bearing Package

- Directly converts waste heat to power
- High-speed, oil-free magnetic bearing
- Compact, efficient for marine & land use

Evaporator

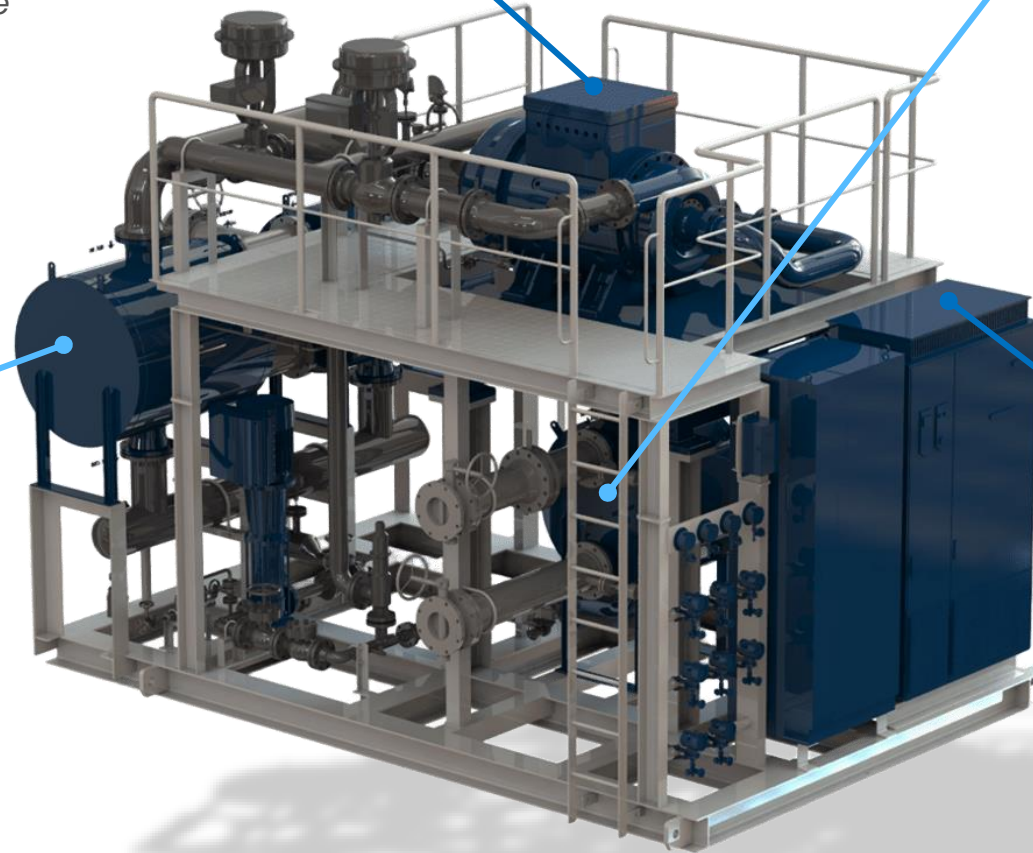
- Shell & Plate Heat Exchanger
- High-temp, high-pressure output
- Optimized for diverse heat sources

Converter & Inverter

- Converts turbine power for grid/load
- Stable voltage & frequency control
- Seamless land-marine mode switch

Condenser

- Cools fluid to liquid for cycle continuity
- Low-pressure boosts efficiency
- Reliable in marine & land operations



INSTALLATION & MAINTENANCE



Compact skid-mounted package enables quick installation and commissioning.



Modular design allows seamless integration with existing heat-source systems.



Low-maintenance layout with magnetic bearings eliminates oil service and minimizes downtime.

OPERATIONAL FLEXIBILITY



Wide operating range handles varying heat-source temperatures and flow conditions.



Automatic load control and remote monitoring via PLC-based smart operation.



Seamless land-to-marine mode switching for diverse operating environments.

LAND-BASED



Petrochemical Plant



Cement Plant



District Heating & CHP



LNG Terminal

- ✓ 100 - 300 kW ORC ideal for industrial waste-heat recovery.
- ✓ Rising demand for distributed power with 2–5 years ROI.
- ✓ Global ORC market ≈ USD1.0-1.5 B (2024), 8-10 % CAGR

MARINE



Ship Main Engine



Engine Exhaust Gas



LNG Process



Offshore Plant

- ✓ 200 kW fits auxiliary power or auxiliary-boiler replacement.
- ✓ Best for ships running 6,000–8,000 h/yr, cutting fuel & CO₂.
- ✓ Marine ORC market to rise 2025–2030 on carbon rules, fuel costs.

ECONOMIC BENEFITS



Maintain engine efficiency while delivering ~200 kW of additional power for auxiliary use



Fuel savings of 3 - 5 %, equivalent to \approx 150 - 250 t/year at 6,000–8,000 h/yr operation



Replaces ~150 - 200 MWh of onboard auxiliary power annually, lowering OPEX

ENVIROMENTAL BENEFITS



CO₂ reduction of \approx 450 - 750 t/year, supporting IMO EEXI/CII compliance



Contributes to greener operation and reduces exposure to carbon-related costs



Enhanced ESG performance, with potential access to green financing or tax incentives

O rganic
R ankine
C ycle system

