

Company Profile

漢力能源科技股份有限公司
HanPower Energy Technology Co., Ltd.

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(4F. No. 124, Section 2, Nanjing East Rd., Zhongshan Dist., Taipei City, 10491, Taiwan, R.O.C.)

June 2025

About Us

- Company Name:

HanPower Energy Tech. Co. Ltd.

<https://hanpower.com.tw/>

- Founded In January 2015

- Parent Company

[Hanbell Precise Machinery Co. Ltd.](http://www.hanbell.com/index.html)

<http://www.hanbell.com/index.html>



- Location: Yangmei Dist., Taoyuan, Taiwan

- Headquarter: Nanjing East Rd., Taipei, Taiwan

Vision

Be the best total solution provider for conversing low-grade Heat to Power (H2P).

Mission

Providing tailor-made products to meet customers power and energy solutions, helping customers to harness waste heat recovery and renewable energy.

Products & Services

1. Low Grade Heat Recovery

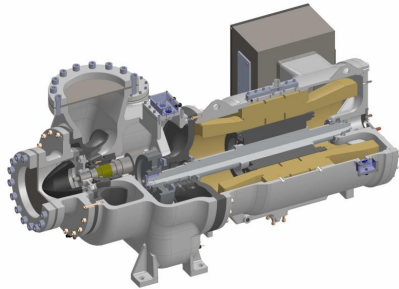
■ Screw Expander ORC (10kW ~ 300kW)

■ Turbine ORC (250kW~2,000kW)

2. Steam Turbine Power Unit (100kW~10,000kW)



ORCs Roadmap



2015
Star UP

2018

2020

2022

2025
New
Factory



Screw Expander
ORC



Single-Stage Turbine
ORC



Multi-Stage Turbine
ORC



Geothermal ORC Power Plant

Steam Turbines Roadmap

70kW



500kW



380kW



105kW



2018

2020

2022

2025



1,000kW



300kW



400kW

**Multi-Stage
Back Pressure Turbine**

**Multi-Stage
Condensing Turbine**

**Single Stage
Back Pressure Steam Turbine + Induction Generator**

On-Site Units

■ Industrial Waste Recovery

- Screw ORCs x 50
- Turbine ORCs x 20
- Back Pressure Steam Turbines x 12

全球頂尖實績

- 韓國：螺桿發電機 1 台，發電量 45kW
- 越南：螺桿發電機 4 台，發電量 292kW
- 泰國：螺桿發電機 2 台，發電量 250kW
- 中國：螺桿發電機 17 台、渦輪發電機 8 台，發電量 10,407kW
- 菲律賓：螺桿發電機 1 台、汽輪發電機 1 台，發電量 250kW

台灣創新應用

- 台北：螺桿發電機 1 台，發電量 16kW
- 桃園：螺桿發電機 3 台、汽輪發電機 3 台，發電量 325kW
- 新竹：螺桿發電機 1 台，發電量 300kW
- 苗栗：汽輪發電機 1 台，發電量 380kW
- 台中：螺桿發電機 1 台、汽輪發電機 1 台，發電量 1,110kW
- 彰化：螺桿發電機 1 台，發電量 100kW
- 雲林：螺桿發電機 8 台、渦輪發電機 3 台、汽輪發電機 1 台，發電量 4,496kW
- 台南：螺桿發電機 3 台、汽輪發電機 1 台，發電量 546kW
- 高雄：螺桿發電機 3 台、渦輪發電機 4 台、汽輪發電機 4 台，發電量 4,242kW
- 屏東：螺桿發電機 2 台，發電量 427kW
- 台東：螺桿發電機 1 台，發電量 16kW
- 宜蘭：渦輪發電機 1 台，發電量 12kW
- 金門：螺桿發電機 1 台，發電量 144kW

■ Geothermal Power Plant

➤ Ilan (Northern Taiwan)

◆ 400kW, 300kW, 840kW

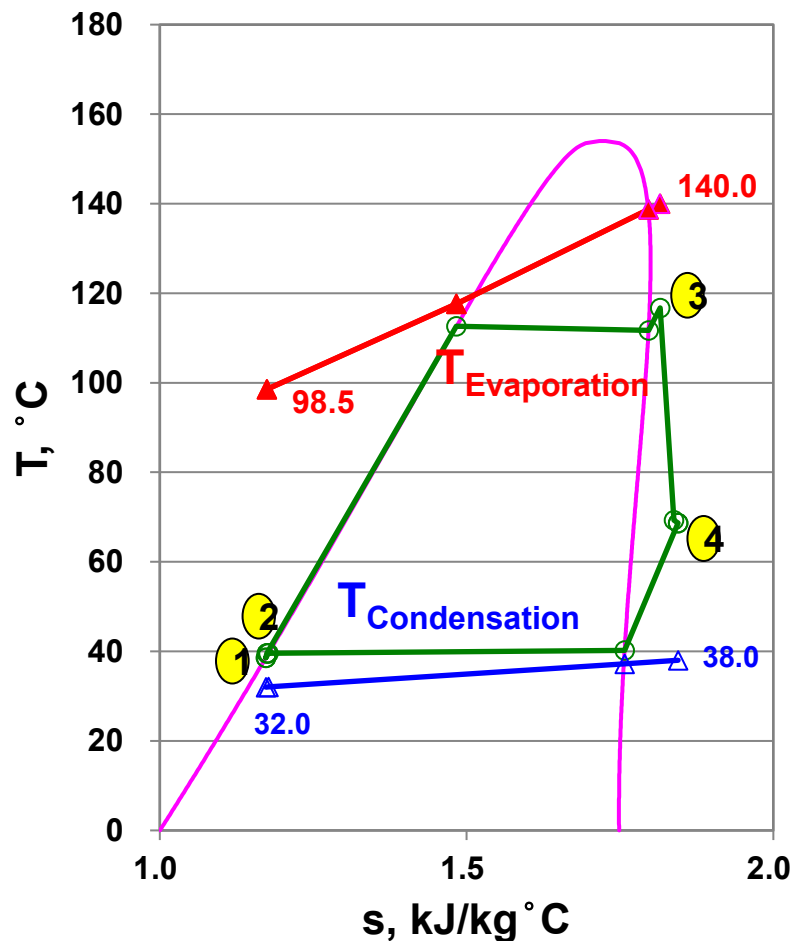
➤ Taitung (Eastern Taiwan)

◆ 550kW, 650kW

◆ 1000kW x 2 (under construction)



Heat engines, using low B.P. working fluids, convert low grade heat to power (H2P).



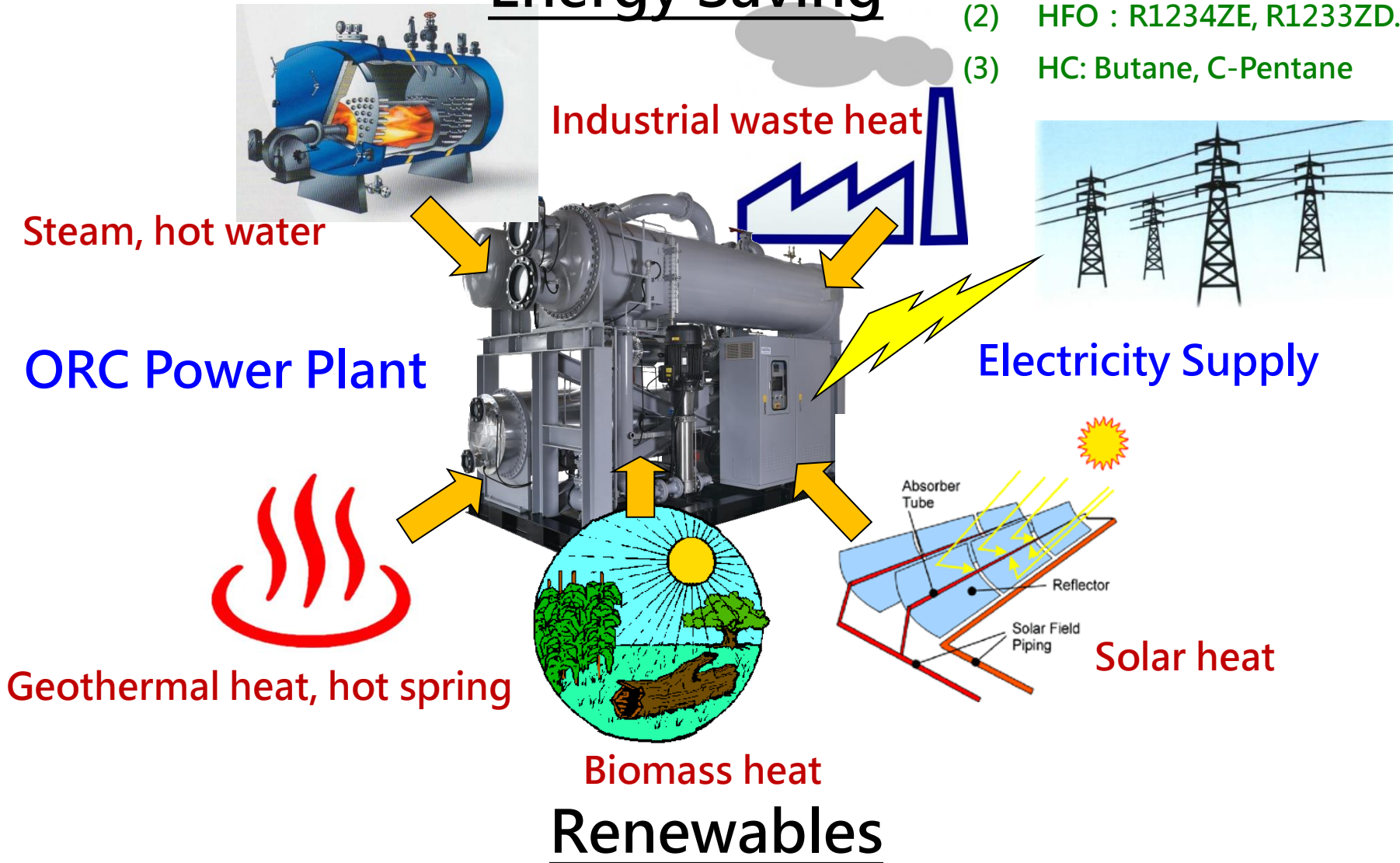
T-s Diagram

Applications

Energy Saving

Working Fluids

- (1) HFC : R245fa, R134a...
- (2) HFO : R1234ZE, R1233ZD...
- (3) HC: Butane, C-Pentane



Types & Key Components

Types

Engine Core

Heat Exchanger

Control/Communication

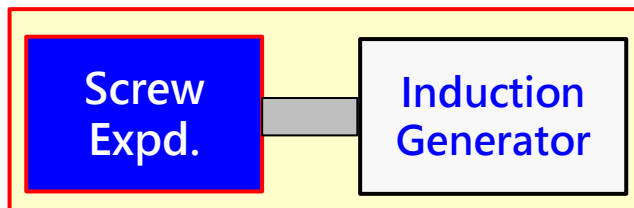
**Screw
Expd.
ORC**

10~300kW

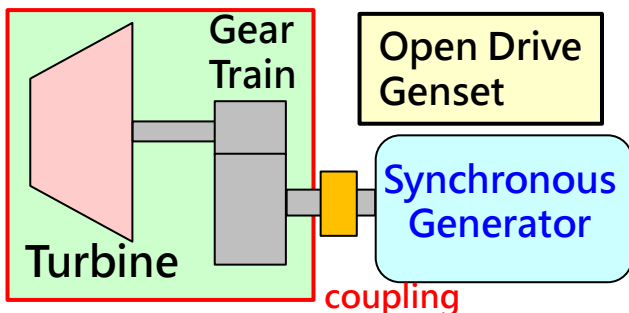
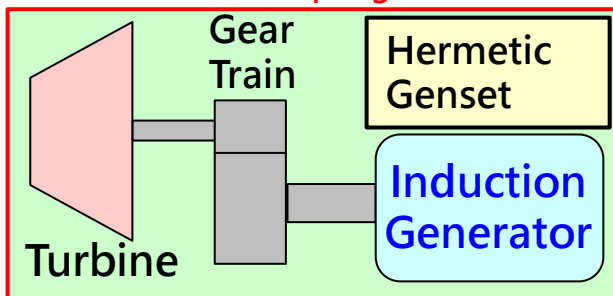
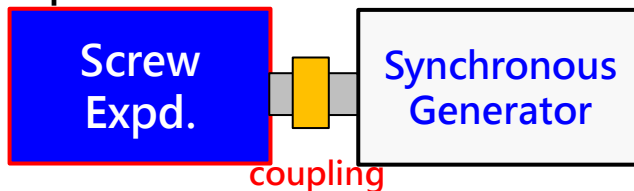
**Turbine
ORC**

250~2,000kW

Hermetic Genset



Open Drive Genset



Pre-heater
(Plate/Shell-Tube)

Evaporator
(Plate/Shell-Tube)

Recuperator
(Plate/Shell-Tube)

WCC
Water Cooled Condenser
(Shell-Tube/Plate)

ACC
Air Cooled Condenser
(fin tube)

HMI

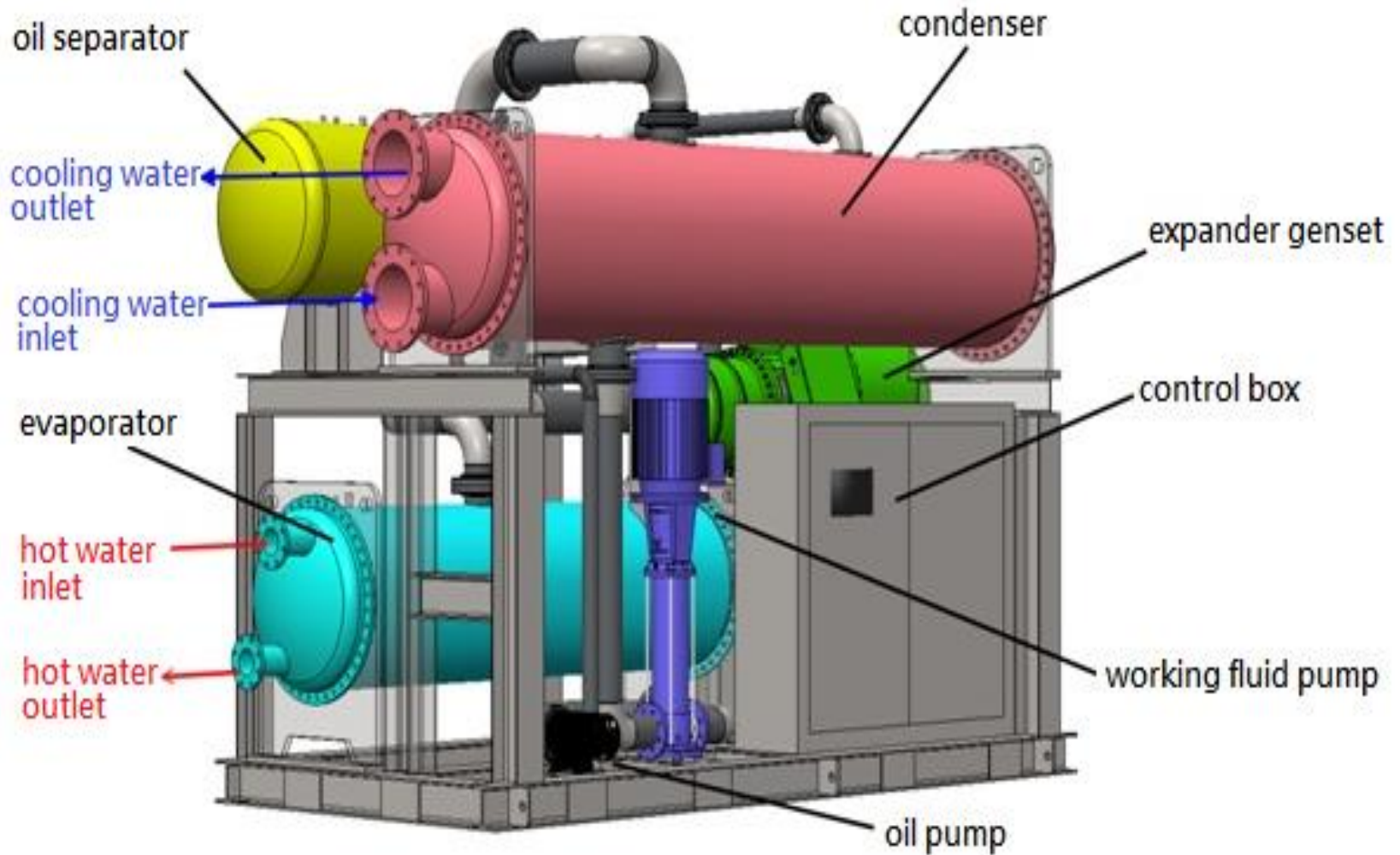
PLC

DCS

SCADA

Cloud

Screw-Expander ORC Unit



Screw Expander ORC Facts

■ Screw Expander

- Patented high efficiency rotor profile
- High reliable & robust rotor-bearing system

■ Generator

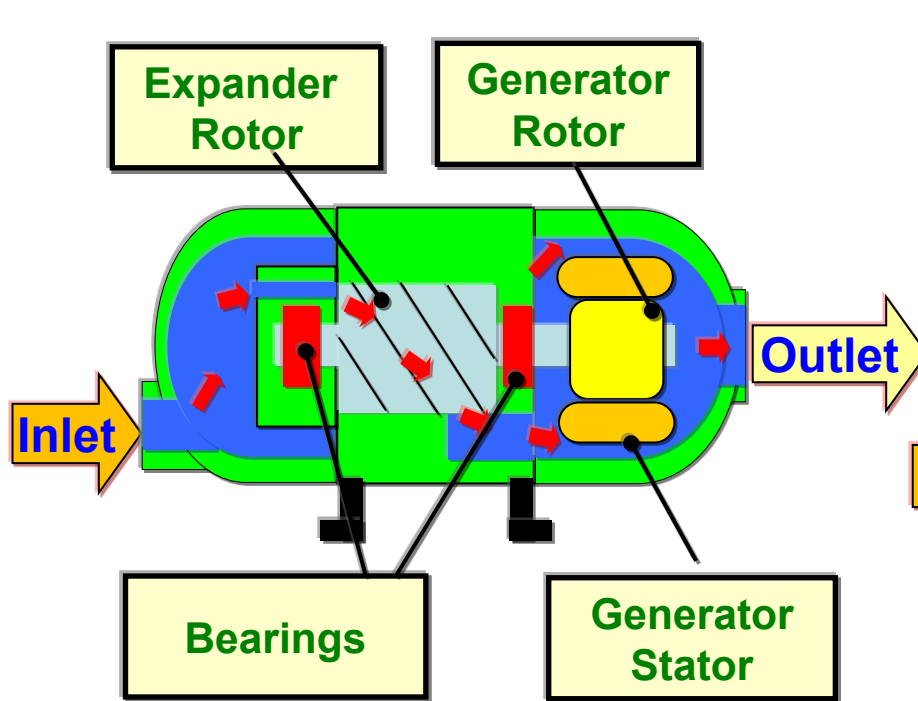
- 50/60Hz Induction generator/Synchronous generator
- Voltages : 220, 380~440, 3K/6K/10K

■ Product Features

- Series products
 - **Power range from 10kW to 300kW**
 - **Tailor-made to meet users' requirements**
 - **100% owned technology & MIT**
- High turn down ratio: 10%~110% power output
- Hermetic Type/Open Drive Type
- Product life-time over 20 years

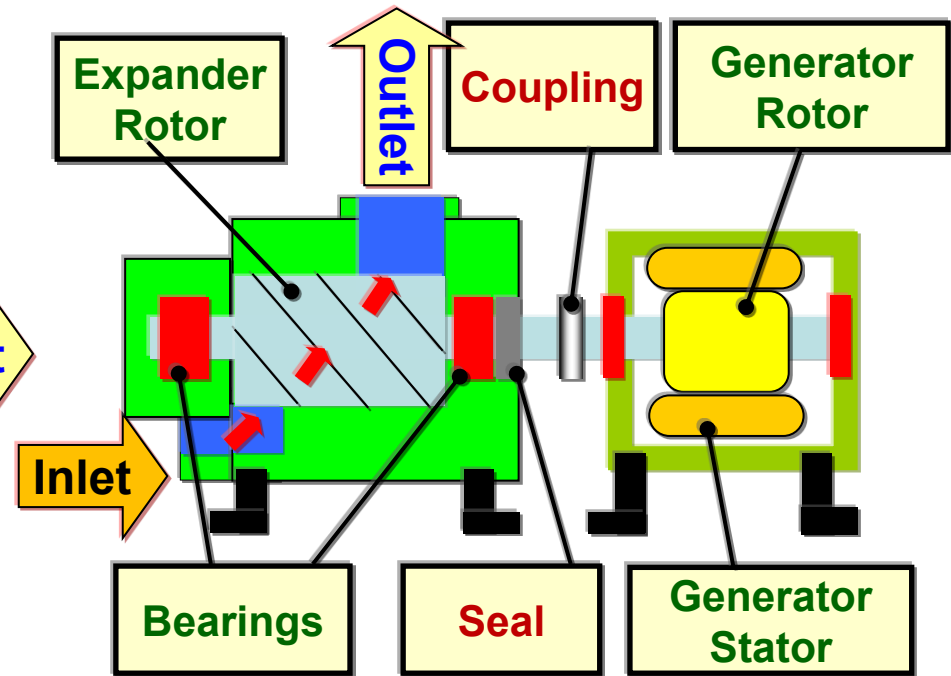


Hermetic Screw-Expander Genset



Hermetic Type

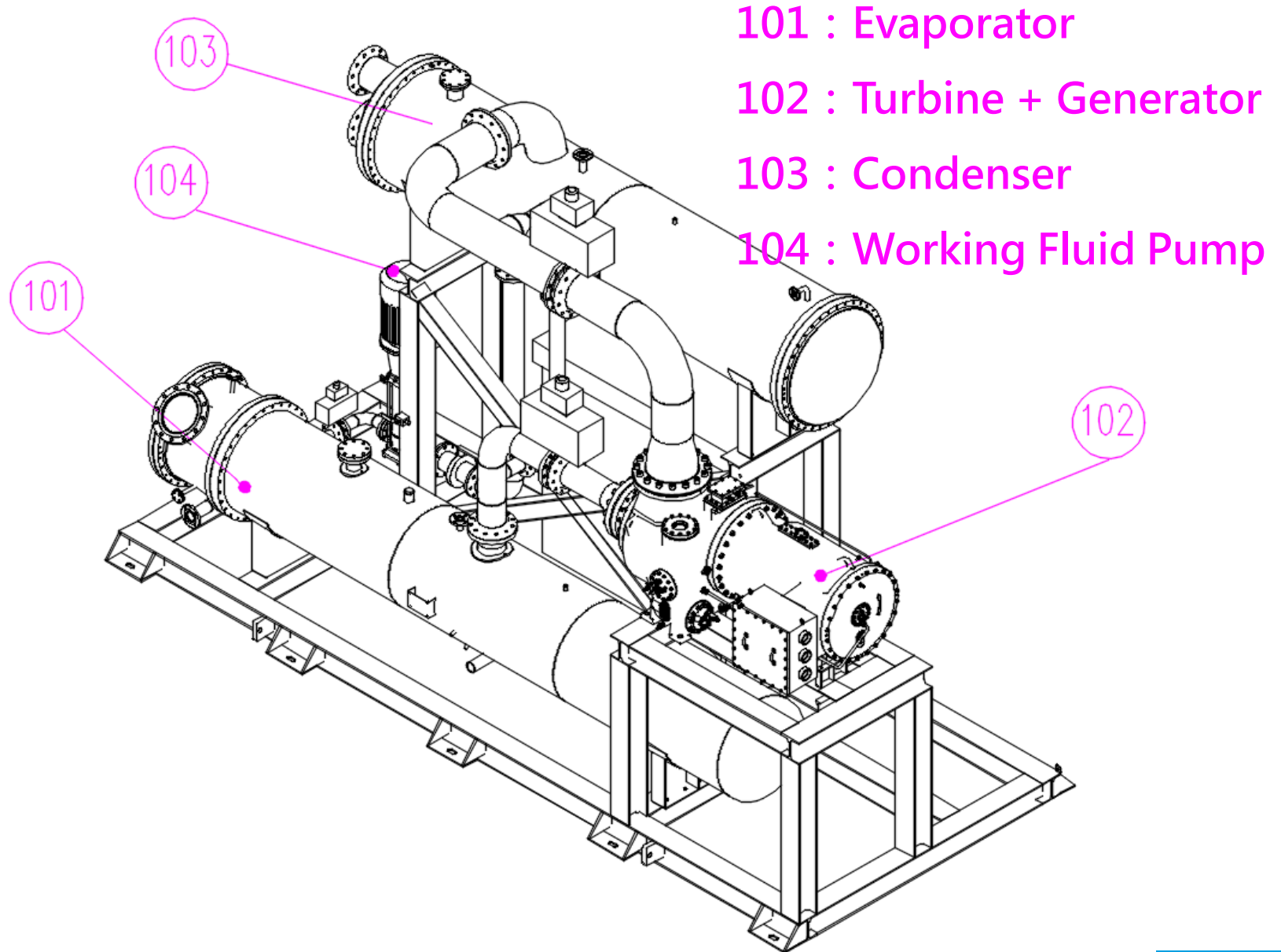
- No Coupling: Common Shaft
- No Mechanical Seal
- No Fan: Working fluid Cooling



Open Drive Type

- X Coupling: misalignment, Vib. ↑
- X Seal: Leak-off, Maintenance ↑
- X Fan: Reducing Generator Eff. ↓

Turbine ORC Unit



Turbine ORC Facts

■ Turbine

- Axial type, simple construction
- Rigid rotor, no resonance through operating speeds.
- Isentropic efficiency $\geq 80\%$ (1-stage), $\geq 85\%$ (2-stages)



■ Generator

- 50/60Hz Induction generator/Synchronous generator
- Voltages : 380~440, 3K/6K/10K



■ Product Features

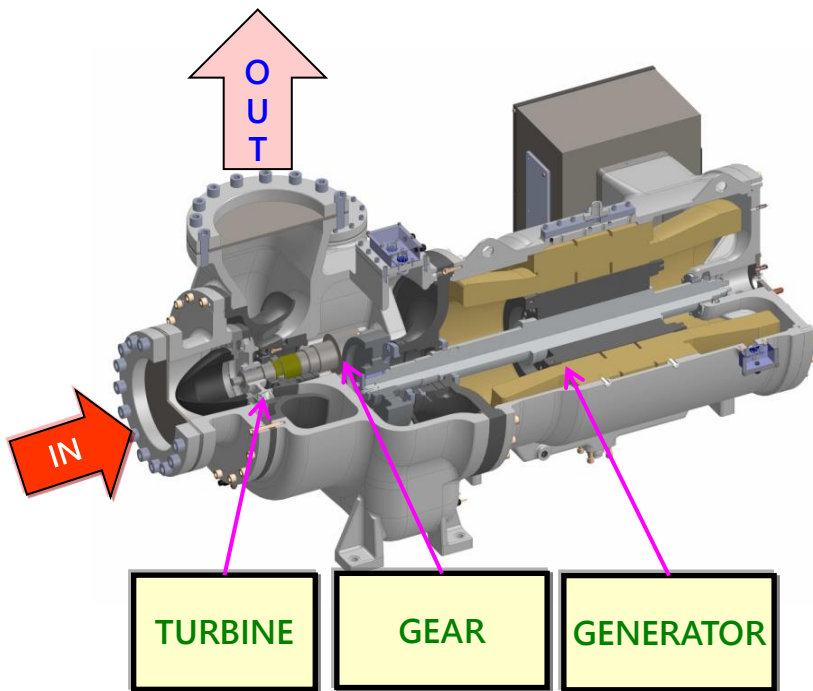
- Series products
 - **250kW ~ 2,000kW**
 - **Tailor-made**
 - **100% Made In Taiwan**
- High turn down ratio, 30%~110% power output
- Hermetic Type/Open Drive Type
- Product life-time over 20 years



Hermetic Type Turbine Genset

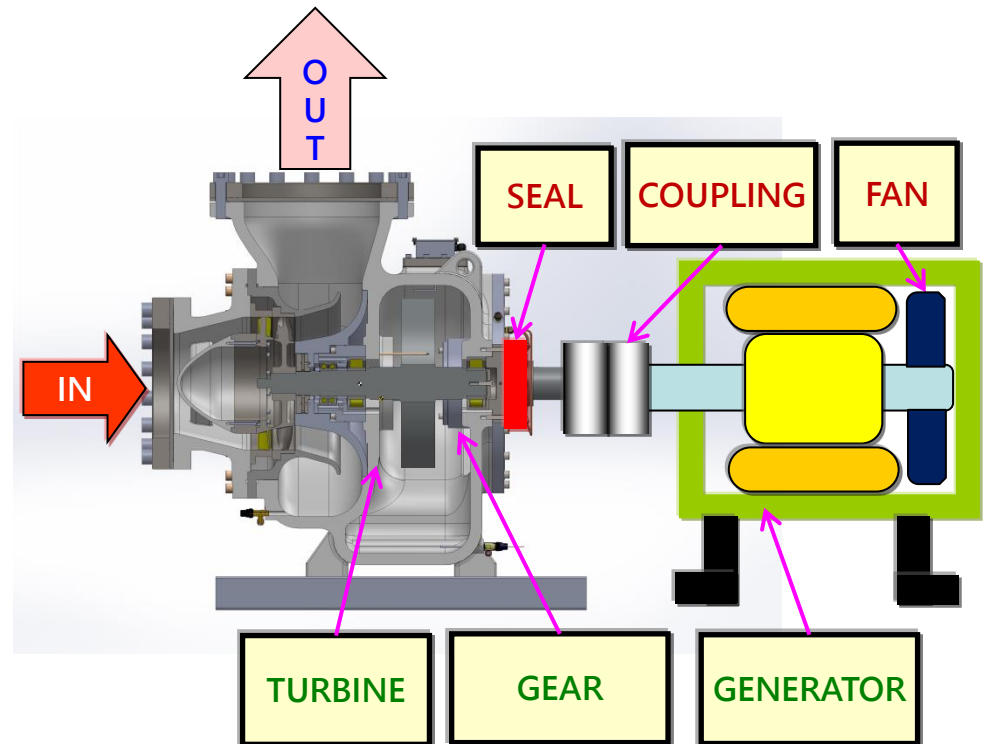
Hermetic Type

- No Coupling: Common Shaft
- No Mechanical Seal
- No Fan: Working fluid Cooling

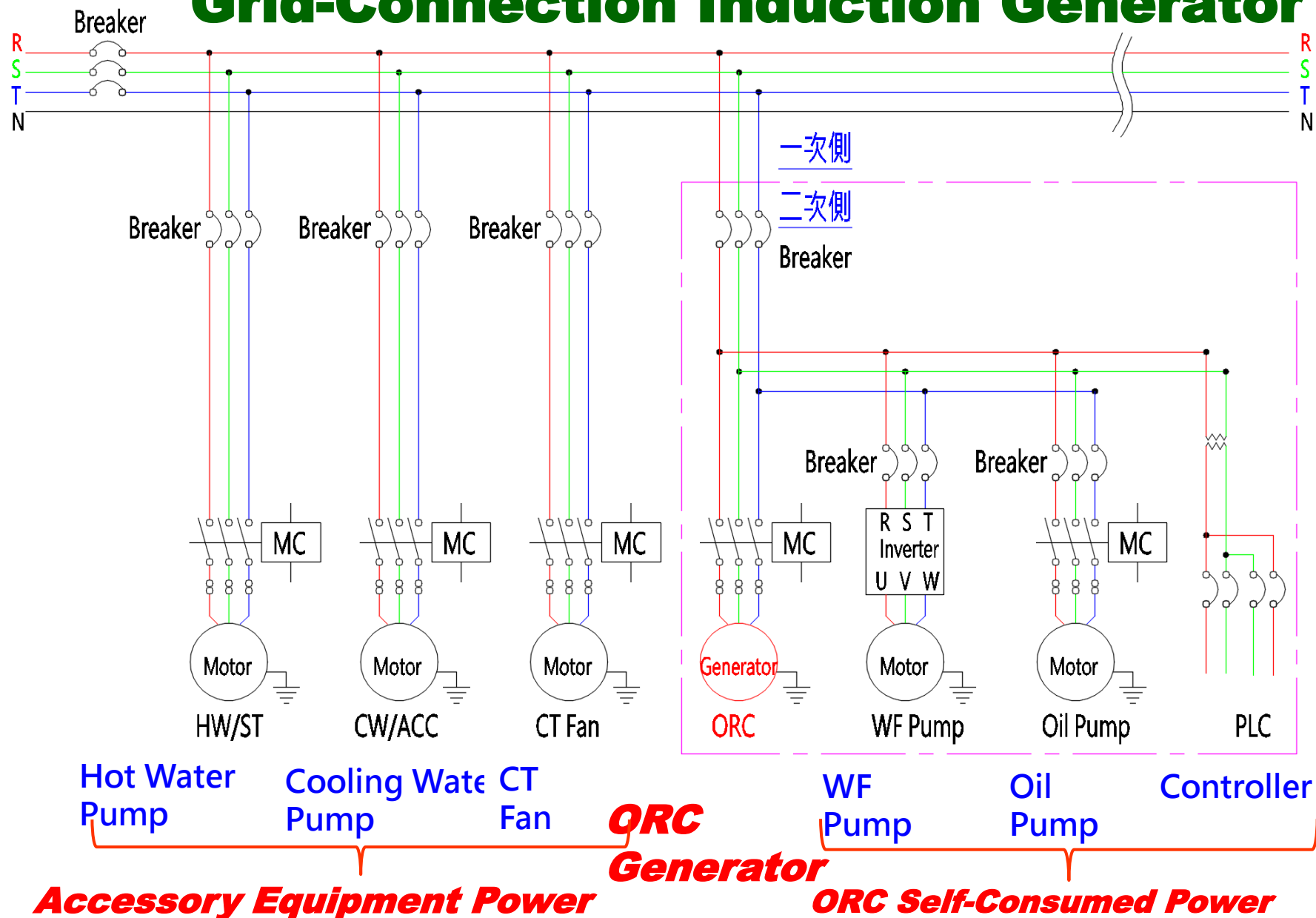


Open Drive Type

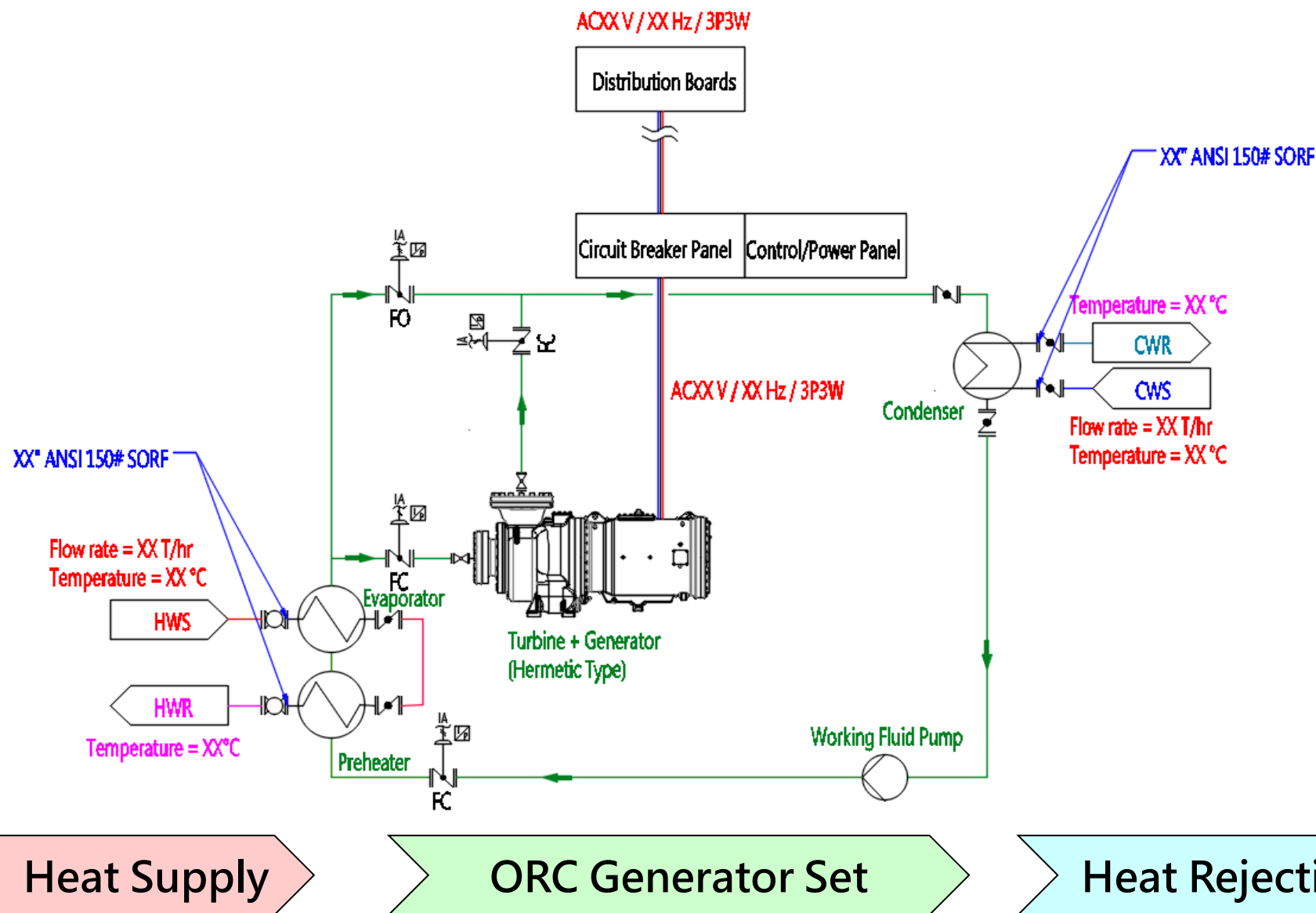
- X Coupling: misalignment, Vib. ↑
- X Seal: Leak-off, Maintenance ↑
- X Fan: Reducing Generator Eff. ↓



Grid-Connection Induction Generator



ORC Power Plant



Applications & Services

■ Low-Grade Heat to Power (H2P)

- Industrial waste heat, geothermal heat, biomass heat, solar heat

Heat Source	Hot Water	Steam	Flue Gas
Application Temperature	$\geq 80^{\circ}\text{C}$	$\geq 70^{\circ}\text{C}$	$\geq 150^{\circ}\text{C}$

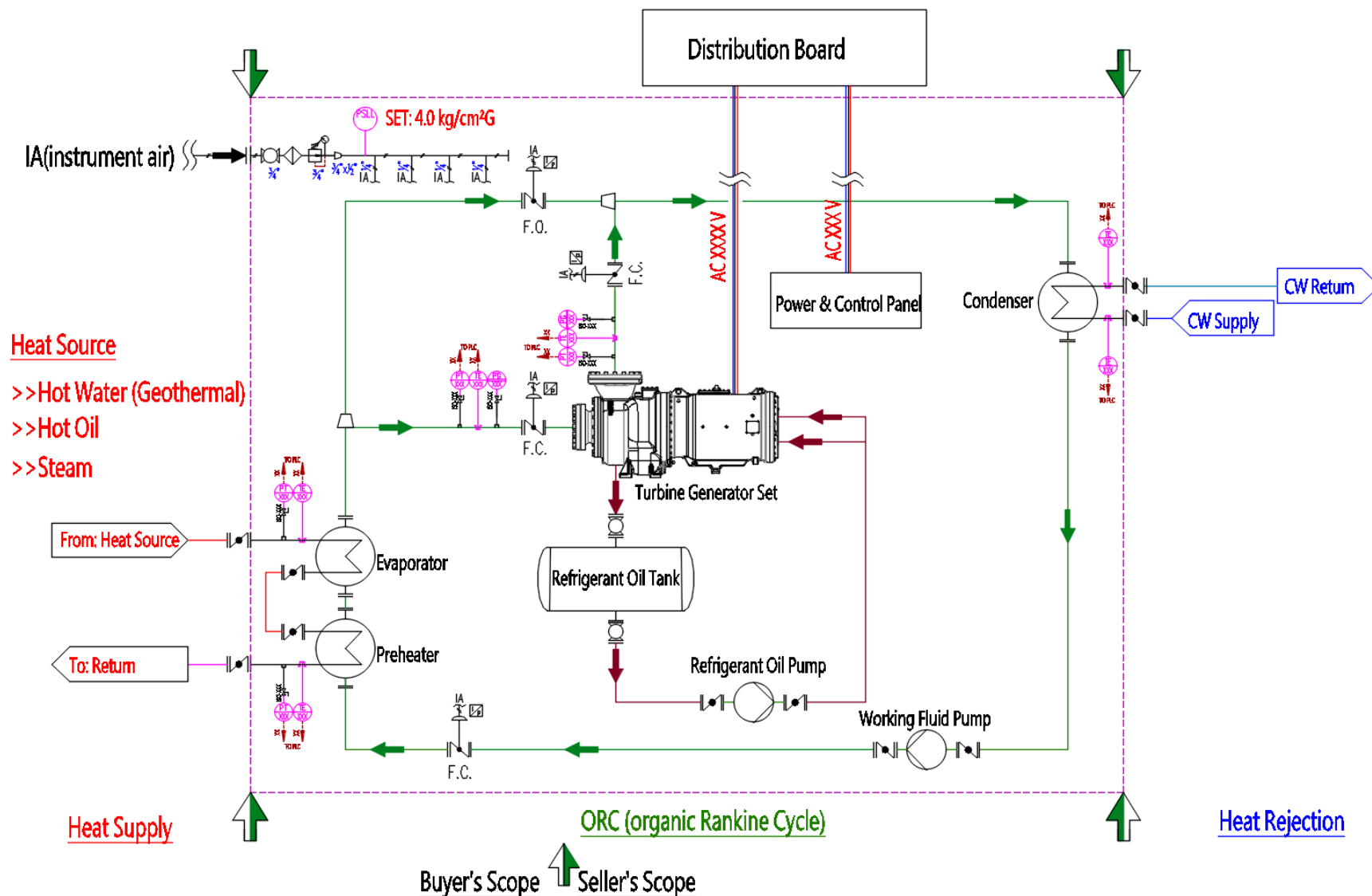
■ ORC Provider

- Optimizes ORC to meet heat sink/source conditions
- Provides a variety of ORC layout and power rating

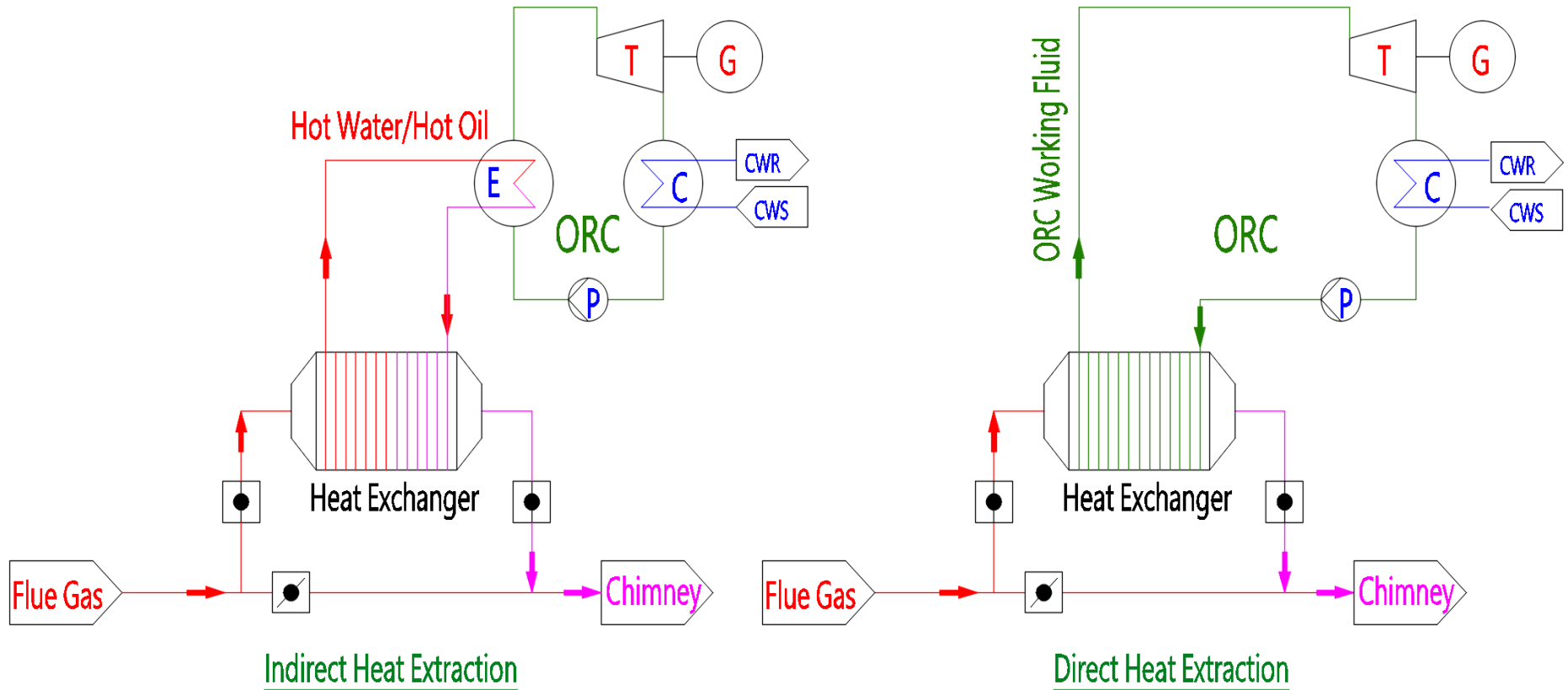
■ Total Solutions

- Requirement analyses
- ORC system and unit Optimization
- Installation & commissioning
- Logistic service

Heat Supply: Hot Water / Hot Oil/ Steam



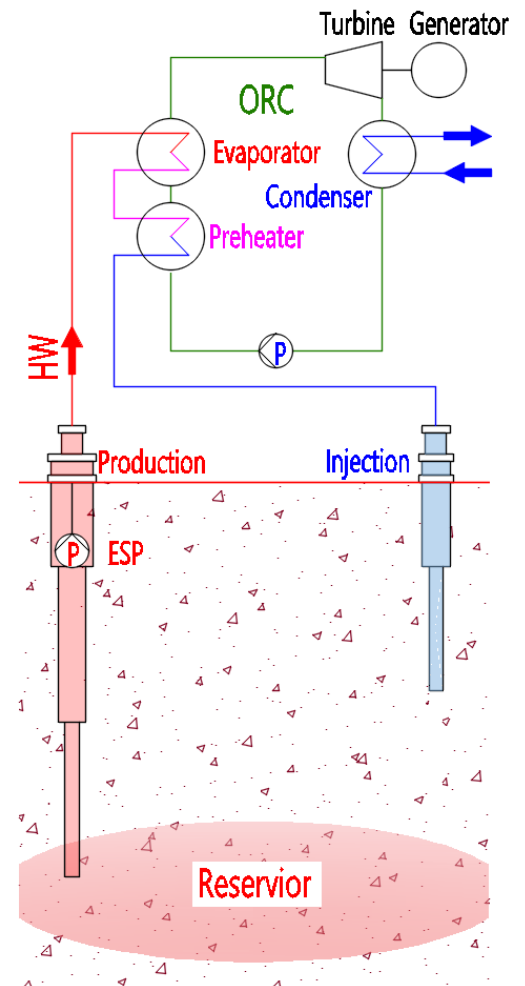
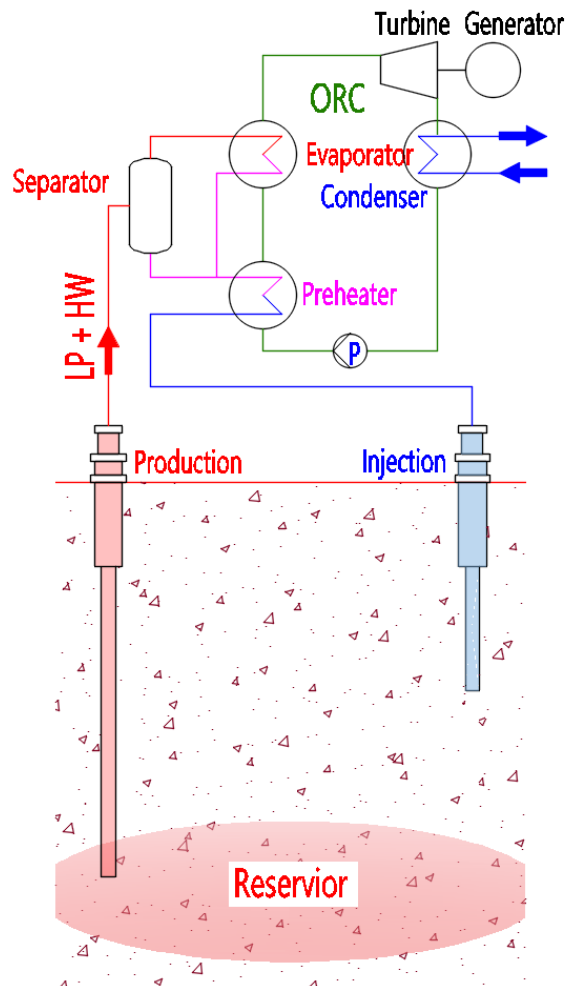
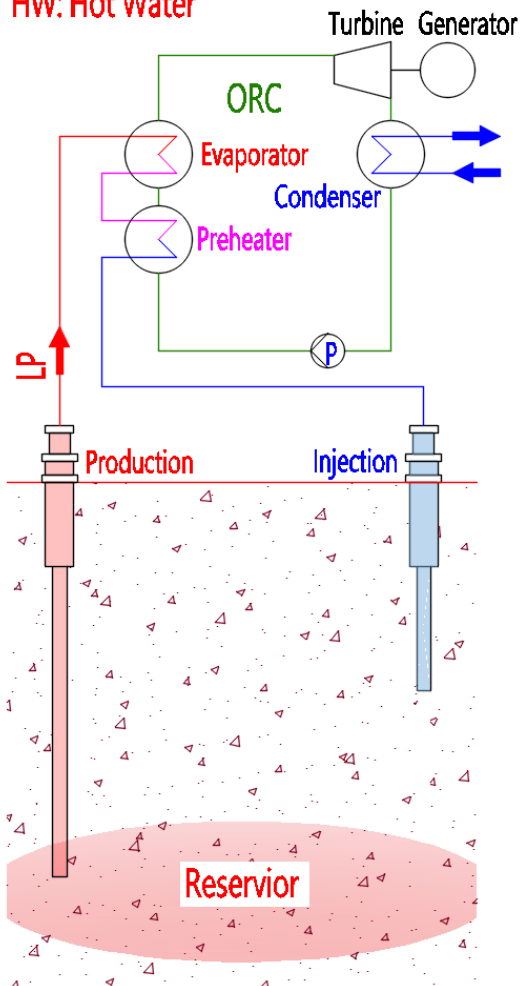
Heat Supply: Flue Gas



Heat Supply: Geothermal

LP: Low Pressure Steam

HW: Hot Water



220kW Screw-Expander ORC

- Site: Petrochemical Industry, Taiwan
- R134a Screw-Expander ORC + Induction Generator
- Heat Source: Hot Water
 - 200T/hr, 82°C→62°C
- Heat Sink: Cooling Water
 - 800T/hr, 32°C→36.8°C

(1) FAT: Factory Acceptance Test

(2) SAT: Site Acceptance Test



ORC機組運送

230kW Screw-Expander ORC

- Site: Steel Company, Thailand
- FAT: Feb. 2016
- SAT: Aug. 2016
- R245fa Screw-Expander ORC + Induction Generator
- Heat Source: Flue Gas → Hot Water
 - 140°C → 100°C
- Heat Sink: Cooling Water
 - 32°C → 39°C



330kW Screw-Expander ORC

- Site: Electrical Company, China
- FAT: Dec. 2016
- SAT: Aug. 2017

- R134a Screw-Expander ORC + Induction Generator
- Heat Source: Hot water
 - 105T/hr, 95°C→59.3°C
- Heat Sink: Cooling Water
 - 686 T/hr, 15°C→20°C



1,000kW Turbine ORC

- Site: Chemical Company, China
- FAT: March 2019
- SAT: June 2019
- R245a Turbine ORC (open type) + Synchronous Generator (AC10,000V/50Hz)
- Heat Source: Condensate
 - 197 T/hr, 127°C→70°C
- Heat Sink: Cooling Water
 - 1460 T/hr, 26°C→33°C

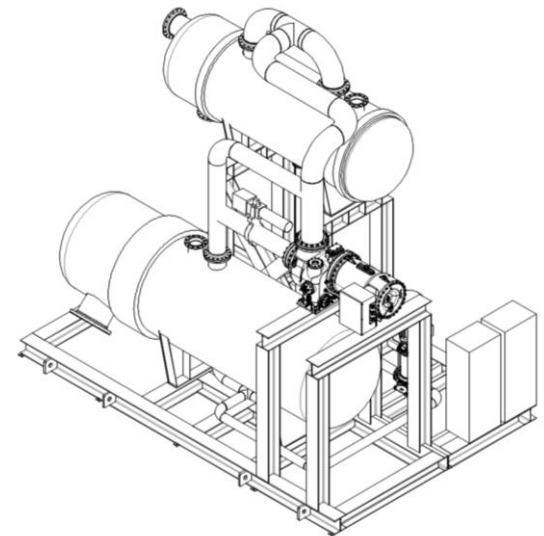


930kW Turbine ORC

- Site: Chemical Company, China
- FAT: Nov. 2019
- SAT: April 2020



- R245fa Turbine ORC + Induction Generator (AC10,500V/50Hz/3P3W)
- Installed at Explosive-Proof Area
- Heat Source: Steam , Hot Air Mixture
 - T: 188~255°C
- Heat Sink: Cooling Water
 - T: 32°C



500kW Turbine ORC

- Site: Chemical Company, Taiwan
- FAT: March 2020
- SAT: May 2020
- R245fa Turbine ORC + Induction Generator (AC460V/60Hz/3P3W)
- Heat Source: LP Steam
 - 7 T/hr, 2.5 bar Saturated Steam
- Heat Sink: Cooling Water
 - 486T/hr, 30°C→37°C



980kW Turbine ORC(Steam+CO₂)

- Site: Chemical Company, Taiwan
- FAT: Aug. 2020
- SAT: Dec. 2020
- R245fa Turbine ORC + Induction Generator (AC3,300V/60Hz/3P3W)
- Heat Source: Steam, CO₂ Mixture
- Heat Sink: Cooling Water



750kW Multi-Stage Turbine ORC

- Site: Chemical Company, Taiwan
- FAT: June 2022
- SAT: Nov. 2022

- R1233zd Turbine ORC + Induction Generator (AC11,400V/60Hz/3P3W)
- Heat Source: **LP Steam**
 - 7.5 T/hr, 2 bar Saturated Steam
- Heat Sink: Cooling Water
 - 486T/hr, 30°C→37°C



550kW Turbine-ORC

- Site: Geothermal Site, Taiwan
- FAT: June 2021
- SAT: Oct. 2021



- R245fa Turbine ORC + Induction Generator (AC380kV/60Hz/3P3W)
- Heat Source: **Geothermal Water** Extracted by ESP
 - 90 T/hr, 140 °C
 - Heat Exchanger
 - Material: **Titanium**
 - Plate Type: 3 +1
- Heat Sink: Water Cooled Condenser (WCC)
 - 30°C→37°C

840kW Multi-Stage Turbine ORC

- Site: Geothermal Site, Taiwan
- SAT: June 2023
- Commercial Operation: Sep. 2023

- R245fa Turbine ORC + Induction Generator (AC11,400V/60Hz/3P3W)
- Heat Source: Geothermal Water, Steam Mixture (steam 8%)
 - 4.5 T/h Steam, 51T/h Fluid
- Heat Sink: Air Cooled Condenser (ACC)



Q&A



Thank You