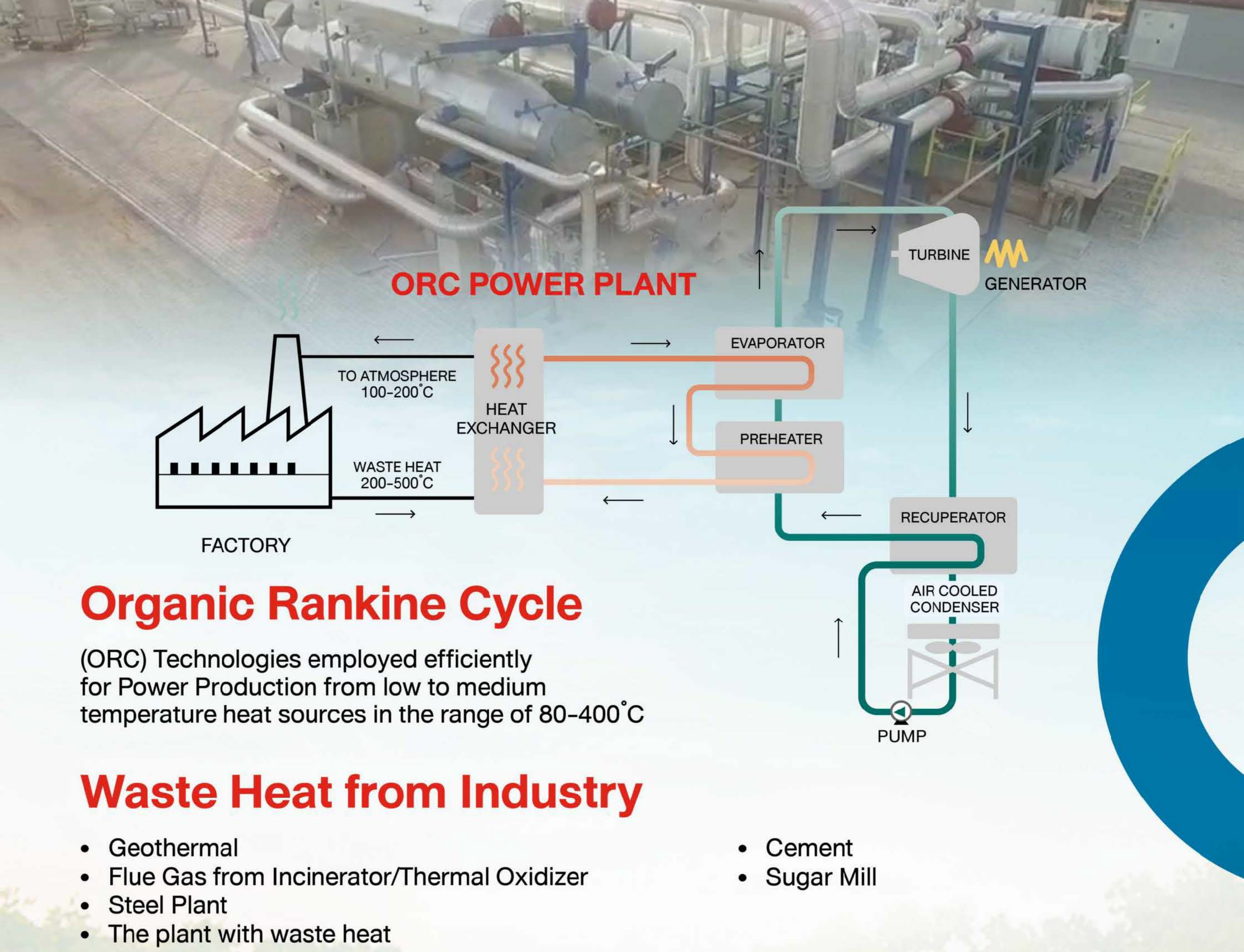
NET ZERO SOLUTION PROVIDER

ENERGY RECOVERY

Reuse : Waste Heat to Power

UNLEASHING POTENTIAL EXERGY POWERING THE FUTURE

Organic Rankine Cycle



Organic Rankine Cycle

(ORC) Technologies employed efficiently for Power Production from low to medium temperature heat sources in the range of 80-400˚C

Waste Heat from Industry

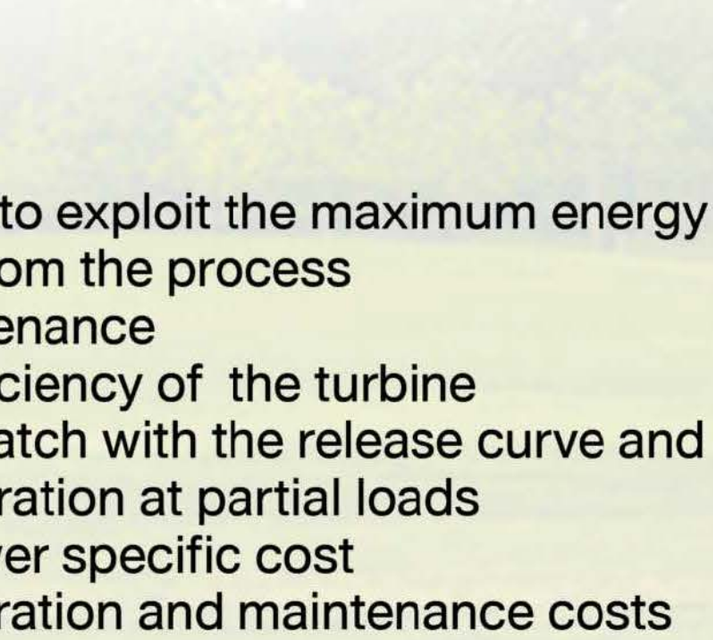
- Geothermal
- Flue Gas from Incinerator/Thermal Oxidizer
- Steel Plant
- The plant with waste heat
- Cement
- Sugar Mill

Advantages

- No need of operators thus lower running cost
- No limitations and constraints on placement, better fitting available soil and production process requirements
- Higher amount of productive hours
- Easy maintenance
- No need of water consumption
- Hight Sustainability
- Possibility to exploit the maximum energy available from the process
- Low maintenance
- Higher Efficiency of the turbine
- Optimal match with the release curve and better operation at partial loads
- Lower power specific cost
- Lower operation and maintenance costs

Case study

- **Plant size** : 5MWe
- **Application** : Heat Recovery Gas Turbines
- **Heat Source Temperature (Diathermic Oil)** : 294˚c -140.8˚c
- **Water or Cooling Agent** : Cold water from LNG regasification cycle as heat sink
- **Temperature Water** : 5-38˚c
- **Environmental Savings** : <23,460tCO_2/y
  : <7,497 TOE/y



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BIH

Waste Heat Recovery Unit

A reputation for engineering excellence, quality and responsiveness to individual client's expectations.

Case study : Distribution Plant

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Organic Rankine Cycle

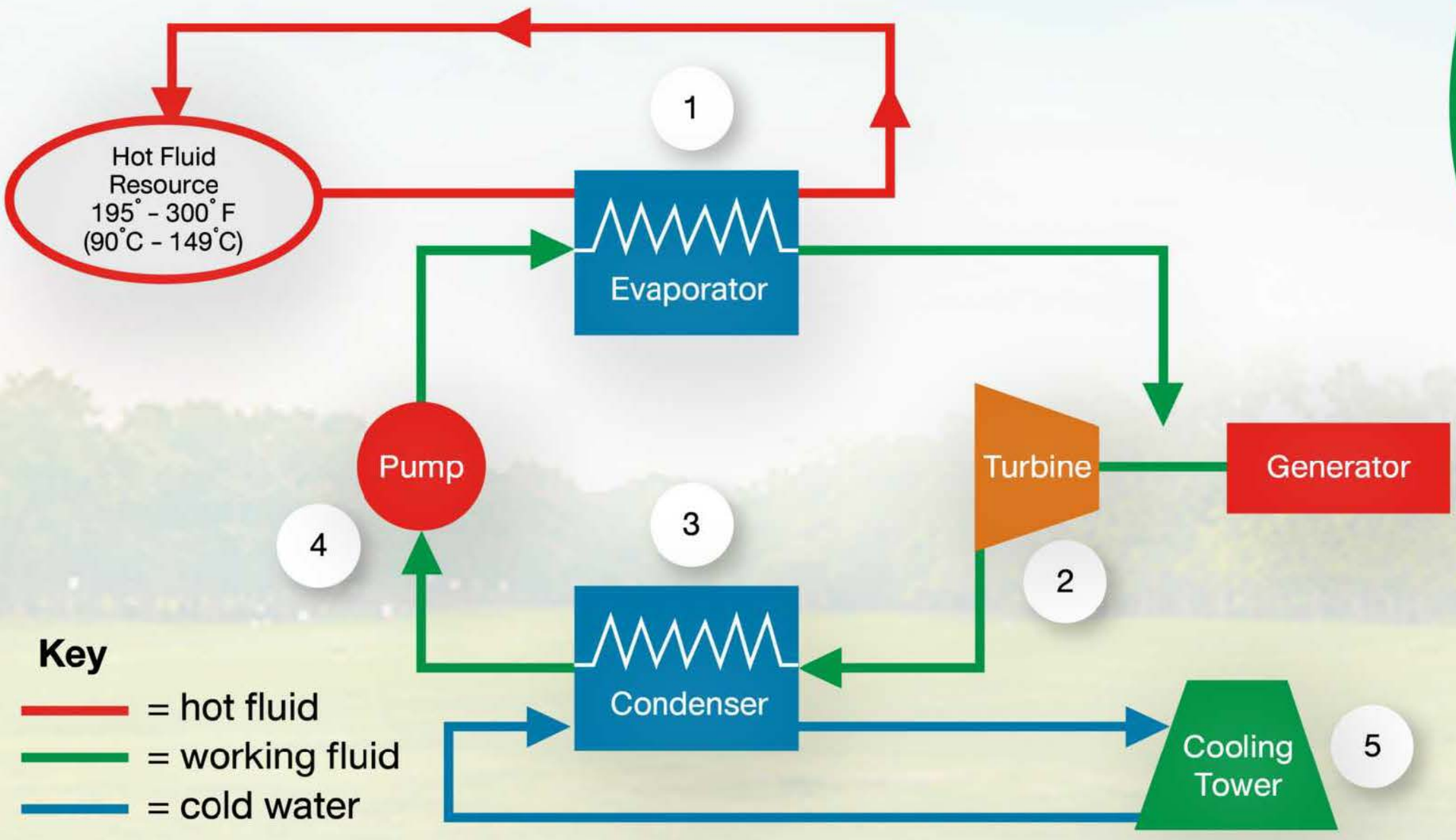
Pure Cycle

Standard Package

Specification

Size :	**5.8 x 2.3 x 3.5 m**
Output Power :	**272/280 kW**
Frequency :	**50/60Hz** (Customer determine)
Voltage :	**380 ~ 460V** (Customer determine)
Heat Source :	**Steam**
Heat Temperature :	**101~150˚C**
Heat Flowrate :	**2.5 ~ 5 t/h**
CW inlet temperature :	**25 ~ 35˚C** (Change with the ambient)
CW Flowrate:	**300t/h** (Delt T = 8˚C, for each unit)
Empty Weight :	**14 t / unit**
Operating Weight :	**17 t /unit**

System Operation



In the Specified conditions, the expected performancesof **TICA's ORC Purecycle 280 units** are following :

	Hot Source				Cooling Water			Power Output	
	Inlet Temp. ˚C	Inlet Press. KPa.a	Outlet Temp. ˚C	Flow Rate t/h	Inlet Temp. ˚C	Outlet Temp. ˚C	Flow Rate t/h	Gross kW	Net kW
Unit 1	126	500	80.6	55	30	35	465	245.2	228
Unit 2	126	500	80.6	55	30	35	465	245.2	228
Unit 3	126	500	80.6	55	30	35	465	245.2	228
Total				**165**			**1,395**	**735.6**	**684**