

What is ORC?

Organic Rankine Cycle uses an organic fluid heated in an evaporator (2-3), expanded through a turbine (3-4), condensed through a condenser (4-1) and pumped and pressurised back to the evaporator (1-2) in a closed loop system. The semi-hermetically sealed turbo-alternator generates high frequency AC power electronically converted to grid compatible supply.

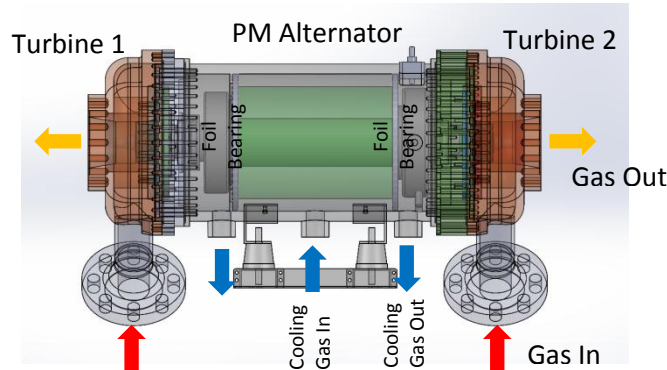
ORC is ideal for thermal waste recovery from as low as 60°C above the condensing temperature

- Highly tolerant to fluctuating source temperatures and flow
- Highly tolerant to source fluid composition and impurities (energy transfer by heat exchange)
- Electronic transfer from HFAC alternator to 50/60Hz AC supply assures efficient power conversion, turbine protection, IEEE1547 /AS4777 compliance and improves site PF balancing.
- Suitable for cogeneration applications providing hot water from the condenser or using air condensing where water is unavailable

Thermal Energy
converted to
green Power



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gTET's World Leading Turbo-Alternator

- Semi-hermetically sealed axial turbine reduces leaks
- PM rotor on a common shaft with the turbine rotor reduces coupling losses
- Internally gas cooled reduces complexity & maintenance
- Patented non-contact gas bearings for maximum life
- Large operating temperature range for wide applications
- No bearing lubrication or mag bearing circuitry required reducing complexity & maintenance



Wide Application Range

- Steam source: incl gas boilers, biomass boilers,
- Thermal oil sources: incl solar thermal, biomass oil heaters, steel/aluminium furnaces
- Hot water sources: incl geothermal, vats
- Exhaust gas: incl diesel genset, gas genset, furnaces, gas turbine exhaust, ship engines



gTET's State of the Art Power Management System

- Inverts varying AC output from PM alternator (max 600Hz) to DC using 6KHz digital sampling.
- Controls the PM alternator load transfer to assure set point RPM is maintained
- Full protection of alternator against over speed, current faults, phase faults, torque etc
- ORC auxiliary loads (working fluid pump, cooling tower etc) powered from inverters on DC bus.
- Grid connection from inverter on DC bus IEEE1547/ AS4777 compliant
- All drives on Profibus controlled by ORC controller



gTET's Heat Exchanger Portfolio for all applications

- A range of heat exchangers (HEX) are available to suit the specific ORC application with consideration of source temperature, source pressure and source fluid that meets reliability and economic targets.
- Copper Brazed Plate is the most common HEX applied suitable for thermal oil, steam or water up to 180°C, 800kPa.
- Stainless Steel plate and shell heat exchangers are generally applied with sources above 800kPa.
- Stainless steel tube and fin exhaust gas heat exchangers suitable for highly corrosive environments
- Air cooled condensers for applications without a cooling tower.



gTET's Working Fluid Pump Portfolio

- The working fluid pump has a unique requirement for very high head pressures, high temperature and very low leak rates
- Multi stage Can pump is pump applied for most applications
- The pumps have cast iron body and stainless steel shafts with mechanical Atlas twin seals compatible with hydrocarbon fluids
- Pumps can be vertical or horizontal shaft depending on capacity.

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