LEADING IN PRODUCTION EFFICIENCY

ELECTRICITY GENERATION FROM WASTE HEAT

ORGANIC RANKINE CYCLE (ORC) TECHNOLOGY

www.durr.com

MAKE THE MOST OUT OF YOUR WASTE HEAT

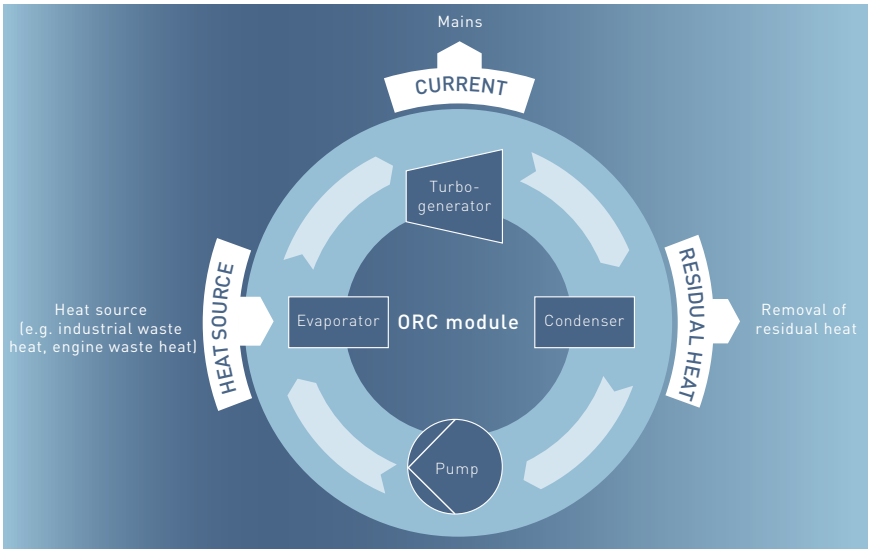
Organic Rankine Cycle (ORC) is a key technology used for generating electricity from decentralized heat sources. Thanks to its efficiency and flexibility, the ORC technology can be used to profitably recycle unused thermal energy at temperatures between 90 and 600 °C.

ORC technology by Dürr Cyplan:

- CO_2-free electricity generation from waste heat
- Increase in energy efficiency
- Conservation of resources
- More independence through the use of self-generated energy

ORC TECHNOLOGY BY DÜRR CYPLAN

The ORC process is a steam cycle that uses heat to generate electricity. First, hot exhaust gas flows from the heat source (e.g. combustion engine) into the ORC module. There, the working medium is evaporated by the thermal energy. The pressurized steam is led into a turbogenerator, where part of its thermal energy is converted into electricity. Thereafter, the vapor is condensed by cooling, and a pump injects the liquid working medium back into the evaporator.



RESIDUAL HEAT

Your benefits:
- Combined heat and power production with feed line temperatures up to 90 °C

EXHAUST GAS OUTLET

HERMETICALLY SEALED TURBOGENERATOR

Your benefits:
- No additional lubricating circuit
- Swivel-mounted turbine support for simple maintenance
- Greater efficiency through freely selectable operating speed
- Ideal blades for high pressure conditions

COMBINED RECUPERATOR/CONDENSER

Your benefits:
- Compact system design
- Minimal pressure losses
- Ideal heat transfer

EXHAUST GAS INLET

Current

MAINS

CONTROL PANEL/CONTROLLER

Your benefits:
- Fully automated operation
- Remote monitoring
- Compact module ready to connect

DIRECT EVAPORATOR

Your benefits:
- Simple incorporation without intermediate circuit
- Greater safety
- Better energy utilization
- Easy maintenance

AREAS OF APPLICATION

The ORC technology by Dürr Cyplan offers solutions for high and low-temperature applications

» Engines/CHP units
  » Biogas/natural gas
  » Landfill gas/gas from purification plants
  » Other fuels

» Furnaces
  » Biomass
  » Waste

» Gas turbines
  » Compressor stations
  » Decentralized electricity generation

» Geothermal systems
  » Modular geothermal power stations
  » Wellhead generators
  » Research power stations

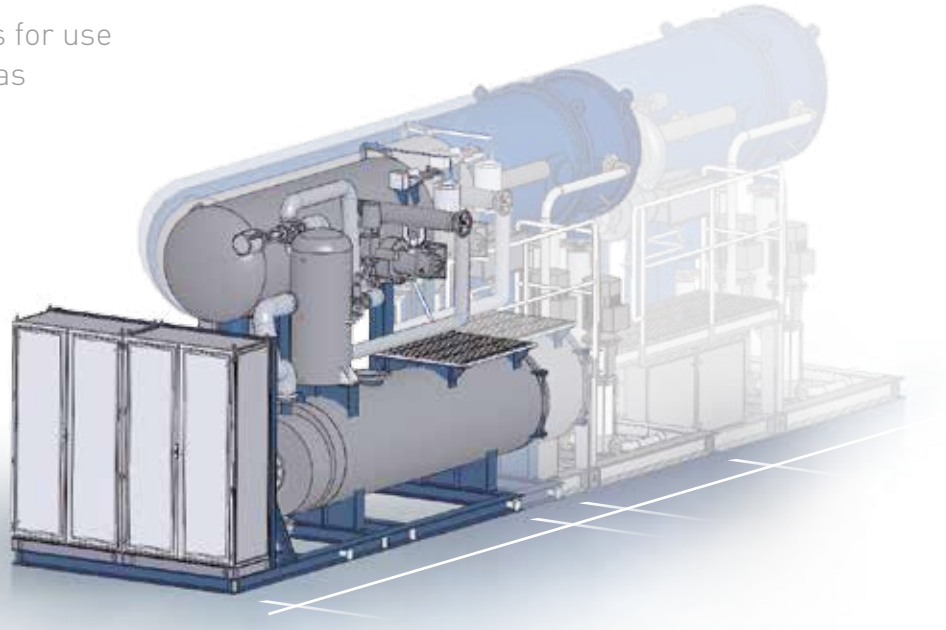
» Industry
  » Industrial production processes
  » Residual steam
  » Thermal exhaust air purification

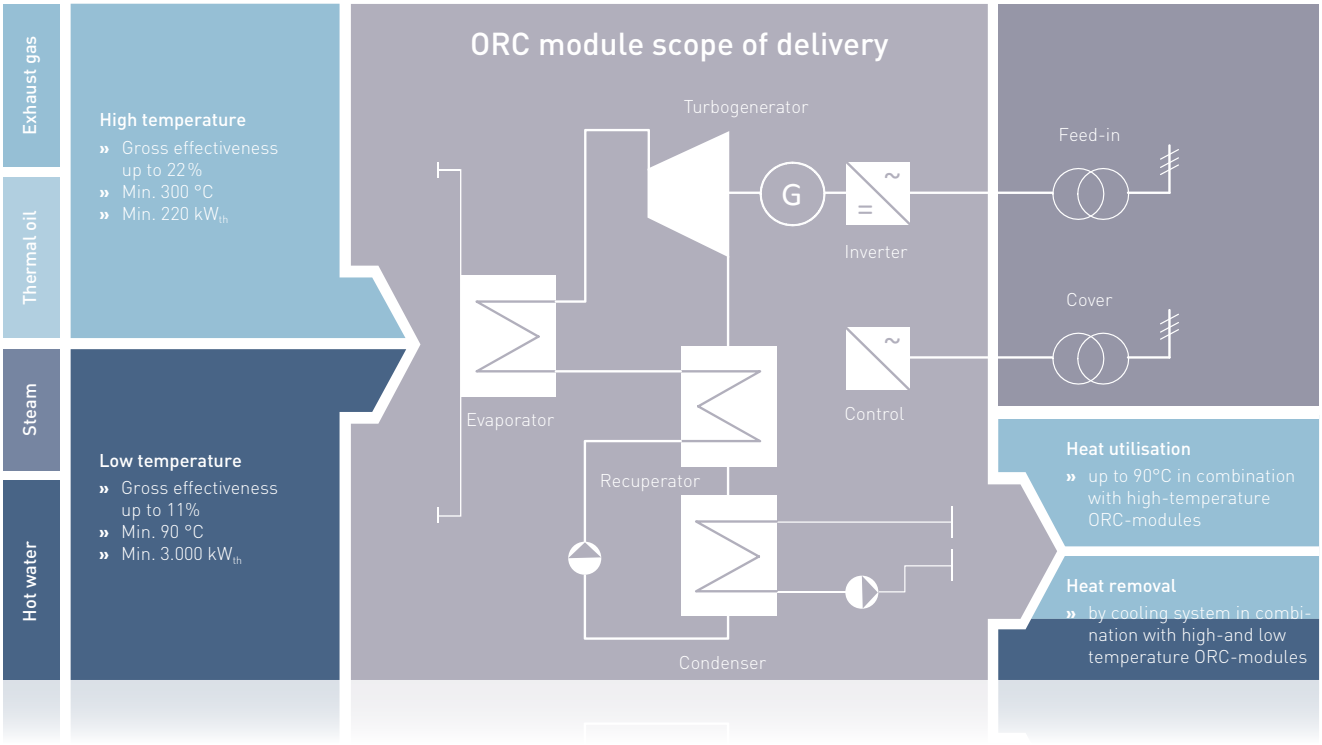
» Solar heat
  » Modular solar heat power station
  » Hybrid power station

PRODUCT OVERVIEW

Standardized compact modules for use in all your applications and areas

- Our ORC plants are available as standardized compact modules within a capacity range of 40 kW to 1.000 kW electrical output.
- Both high and low-temperature heat sources can be used for generating electricity.
- In high-temperature plants, the condensation heat can be supplied at a temperature which enables further use and thus combined heat and power operation.





» *Always there for you*

RELEASE ENERGY WITH US!

Dürr develops tailor-made ORC solutions for your application. From consulting to engineering, production and commissioning, through maintenance and service – your satisfaction is our goal.

Our ORC know-how for you:

- Consulting, proposals and planning for new projects and repowering
- Remote surveillance and monitoring
- First-class service solutions, expert maintenance and repair services
- Training and seminars in our test and development center

» *Engineering*

» *Commissioning*

» *Service*

DÜRR CYPLAN ORC TECHNOLOGY

- Electricity generation using residual heat from combustion or production processes
- Pre-tested compact modules for a broad temperature and performance range
- High electrical efficiency with minimum power consumption
- Easy system integration thanks to direct evaporation technology
- Optional utilization of condensation heat
- Fully automatic operation and remote monitoring

LEADING IN PRODUCTION EFFICIENCY

Dürr – Leading in Production Efficiency

Five divisions, one goal: maximum production efficiency for our customers

- **Paint and Final Assembly Systems:** paint shops and final assembly systems for the automotive industry
- **Application Technology:** robot technologies for the automatic application of paint as well as sealants and adhesives
- **Measuring and Process Systems:** balancing systems as well as assembly, testing and filling technology
- **Clean Technology Systems:** exhaust-air purification systems and energy-efficiency technology
- **Woodworking Machinery and Systems:** machinery and systems for the woodworking industry

CYPLAN

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