



Join us in making the world a better place. Today.

Clean Electricity from Waste Heat. Act Now and Remain Flexible for the Future

Rocco Fruggi Key Account Manager Oil & Gas

orcan
The Efficiency Company

Orcan Energy at a Glance



Orcan Energy turns waste heat into clean electricity, enabling a sustainable and profitable energy supply.

2008

Founded

170+

International patents

7+ million

Operation hours

95

Employees

650+

Modules marketed

2.0 M + t

CO₂ savings

New Orcan Office Isarwinkel 14
81379 München Germany



Our customers profit from ...

- Clean electricity at **globally competitive** energy prices
- For own consumption or grid feed-in.



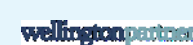
The modular energy solutions are ...

- **Compact, easy to install**
- **Flexible** in terms of energy source and volume.



Use of standard components ensures ...

- **low costs**
- **Minimal maintenance**
- **High reliability.**



Energy Efficiency

The International Energy Agency (IEA) refers to energy efficiency as the “first fuel” in clean energy transitions, since it offers some of the fastest and most cost-effective ways to reduce CO₂ emissions, lower energy costs, and enhance energy security.

750 Million Tons of CO₂

By implementing waste heat recovery, we could prevent the release of 750 million tons of CO₂ every year — an amount that would otherwise require a forest as large as Germany to absorb.

67+ TWh of Electricity

The waste heat generated by all cement plants worldwide—about 67 TWh—is equivalent to the annual electricity consumption of roughly 40 million European households.

We Make Sustainability Profitable



Save costs



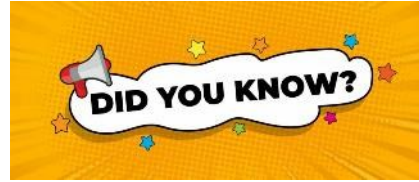
Lower CO₂
emissions



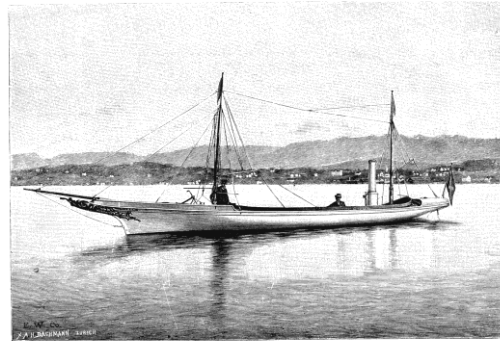
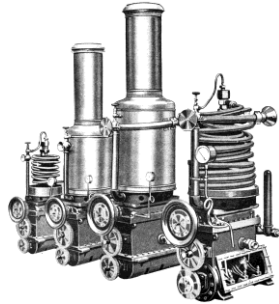
Increase efficiency

ORGANIC RANKINE CYCLE

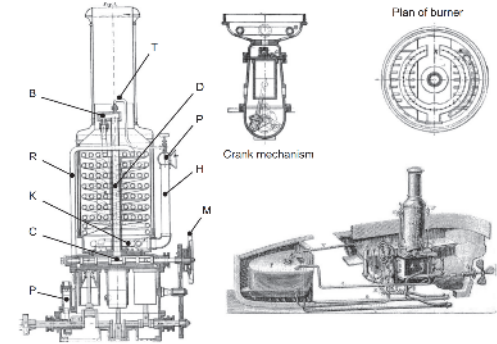
165 years since William Rankine, the pioneer of the thermodynamic cycle, laid the foundation for steam turbine technology



136 years since the first commercialisation



Aluminium-Yacht „Mignon“ des Hr. Nobel (Erfinder des Dynamits).



Petroleum vapor launch engine
Figure 2.2 Bücher Wyss — Oilfield petrol launch, 1880.

Source: „History of Organic Rankine Cycle systems“ 2017 L.Y. Bronicki (founder of Ormat) doi:10.1016/b978-0-08-100510-1.00002-8

4.5GW worldwide power capacity generated

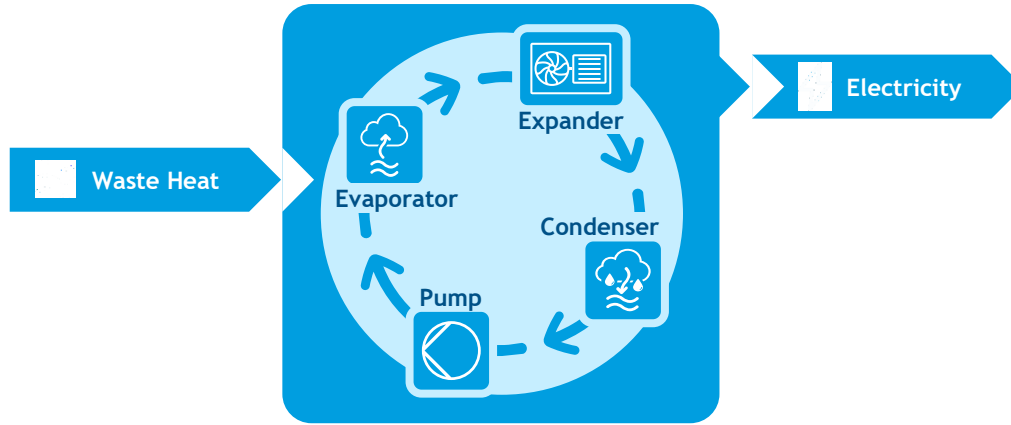


ORC

2700 the numbers of plants worldwide in operation.

46% increase in the last 5 years

Second Generation ORC Technology



Organic Rankine Cycle: The Technology in the Efficiency PACK

Solutions



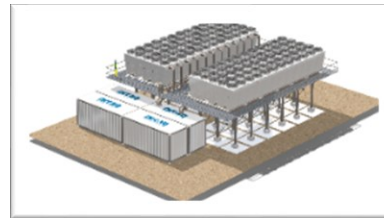
eP 100



eP 200



eP 200 Water Cooled



eP 1000

The **evaporator** transfers the waste heat into the efficiency PACK, vaporizing the working fluid in the process. The superheated vapor drives the **expander** and thus the generator, which produces electricity. The gaseous working fluid is then liquefied in the **condenser**. The now liquid working medium is pressurized to high pressure in the **pump**. This closes the cycle and starts it all over again

Economic

Fast revenue

Flexible

Wide range of applications

Robust

Proven standard components

The heat source is irrelevant.



Glass & Ceramics



Steel & NF Metals



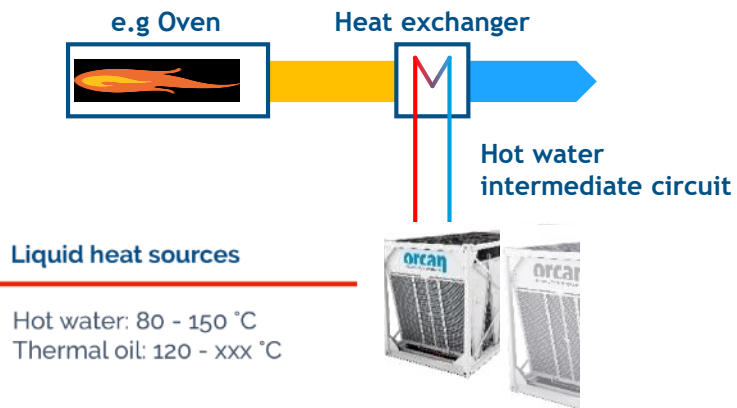
Cement



Oil & Gas



Manufacturing



Liquid heat sources

Hot water: 80 - 150 °C
Thermal oil: 120 - xxx °C

Gaseous heat sources

Flue gas: 150 - 800 °C
Steam: 100 - 200 °C

Plug & Play
containerized **modules** -
scalable from 50 kW_{e,net}
up to **several MW**_{e,net}

Different heat sources

+ Adapted heat extraction

+ Fully standardized secondary loop

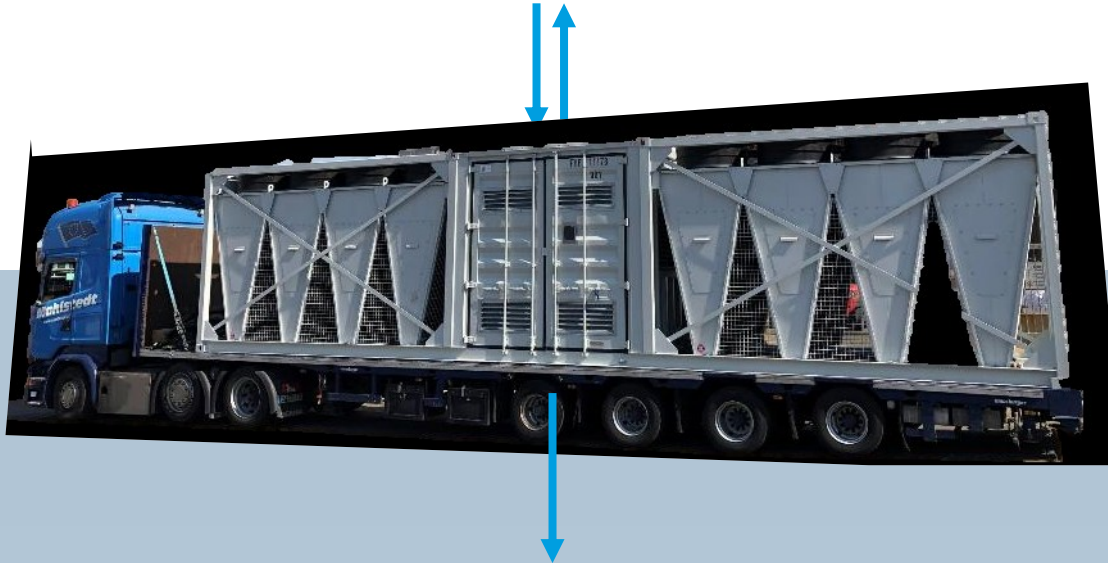
+ Fully standardized efficiency PACKS

= one solution

Simple Integration: Plug and Play

Heat in (water)

2 x DN100, Water pump integrated!



Electricity out

400V, 50Hz, 3ph, Compliant to EU grid codes!

Plug ...

- + Connection within 1 day
- + Light: 14 t
- + Integrated cooler
- + Compact 40' container

... and Play

- + 1 day O&M per year
- + Autonomous operation
- + No consumables
- + Non-flammable medium
- + Factory tested

Perfect Fit for your Waste Heat



ECONOMICAL



Fast savings

Cash flow positive from day 1 with our financing or attractive payback periods on purchase



Modular design

Low technical effort for plant planning and dimensioning



Low operating costs

No consumables, autonomous operation



FLEXIBLE



Various waste heat sources

Usage of all types of decentralized heat sources thanks to different module sizes



Wide temperature range

Liquid waste heat sources usable from 80 °C gaseous from 150 °C



Excellent part load capability

Nearly constant efficiency even with fluctuating temperatures and heat quantities



ROBUST



Fast installation

Fast transport and easy installation in only 24 hours thanks to Plug & Play



High utilization rate

Only 1 day of maintenance per year - spare parts quickly available thanks to standard components



Secure operation

Stable, non-toxic and non-flammable working fluids

Waste Heat Power Generation - Worldwide



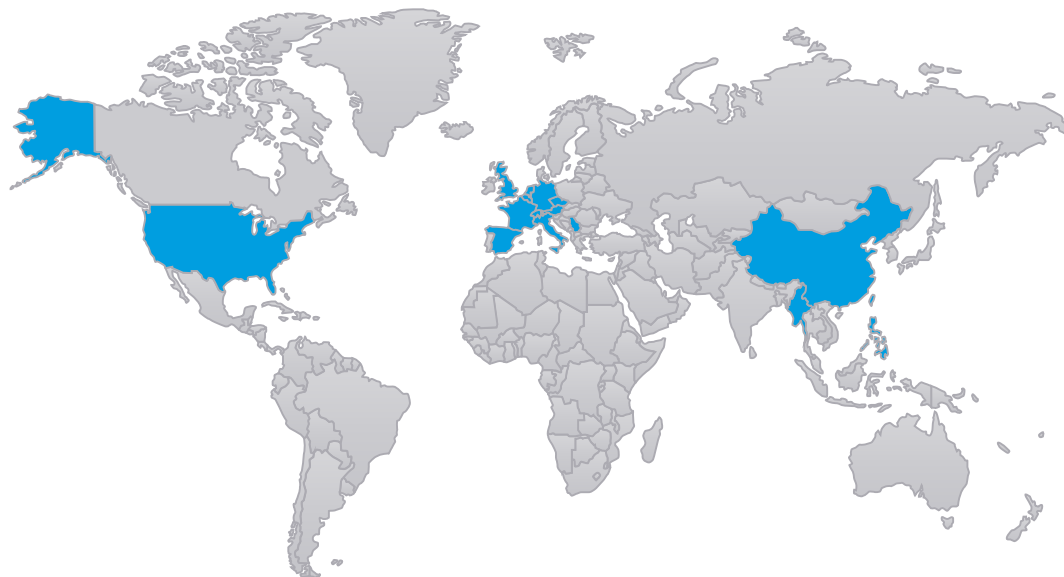
Oil & Gas



Marine



Cement



7+ million

Operation hours

650+

Modules marketed

2M + t

CO₂- savings



Steel & NF Metals



Engine Power Plants



Geothermal

Wittekind



Project Reference: Metal



4x
eP 150.200
660
kW_{el}

5.5
GWh
net electricity
production
p.a.

>2800 t
CO₂ p.a.
avoided

World Premiere: 70 Energy Modules in One Power Plant



70

Energy modules
(efficiency
PACKs)

100 000

People can be
supplied with CO₂-
free electricity

Motor Oil Corinth Refinery Reference - Greece



2x
eP 150.200
330
kW_{el}

2.8
GWh
net electricity
production
p.a.

>1400 t
CO₂ p.a.
avoided



[\(4\) Post](#) | [LinkedIn](#)

Project Reference: Geothermal Germany

e-on



Fast and simple
decommissioning of 3 modular
ORC units

Transport and comissioning
to separte sites and
different applications

Flexible solution for
enabling cost and CO₂ saving
without investment risk

Thank You!!



Rocco Fruggi

Sales Management | Market Research &
Analysis | Revenue Generation | Sustainabilit...



Rocco Fruggi
Global KAM O&G



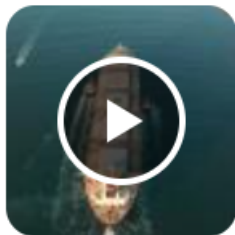
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youtube.com