Rank®

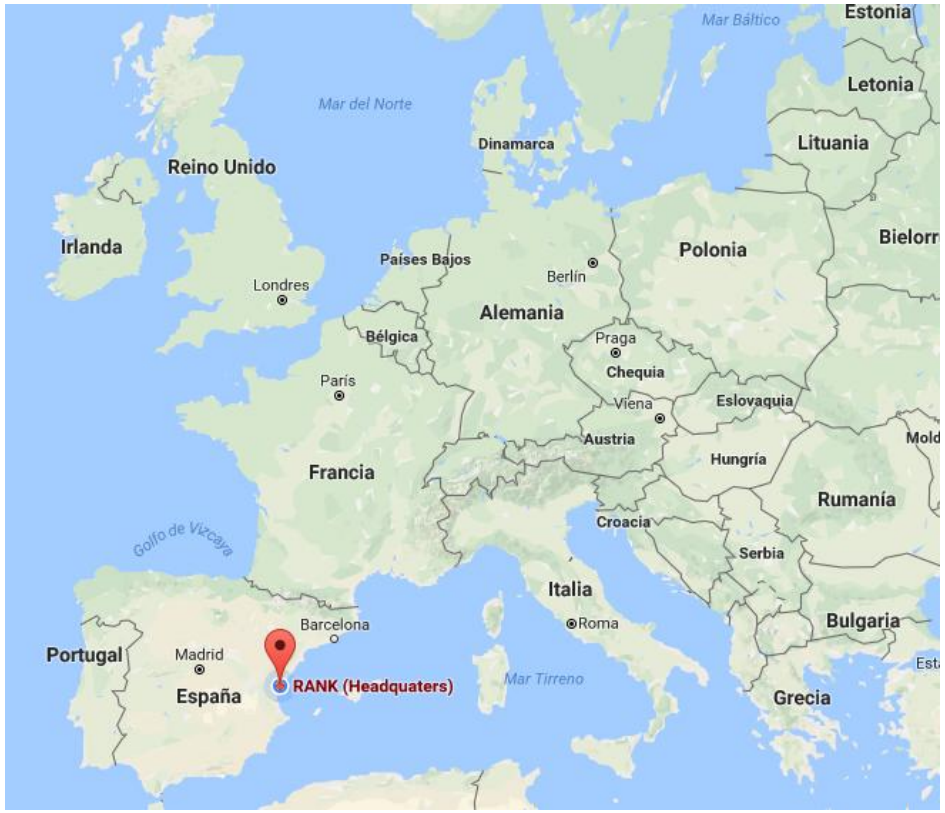
Small scale cogeneration equipment for low temperature heat sources

4th International Seminar on ORC POWER SYSTEMS

Rank®

ORC 2017
13 - 15 September
MILANO, Italy

RANK



- Technology based company from Spain
- Since 2007 developing and manufacturing Organic Rankine Cycles

- Low temperature heat sources
- Small scale equipment

Web: www.rankweb.es
E-mail: info@rankweb.es

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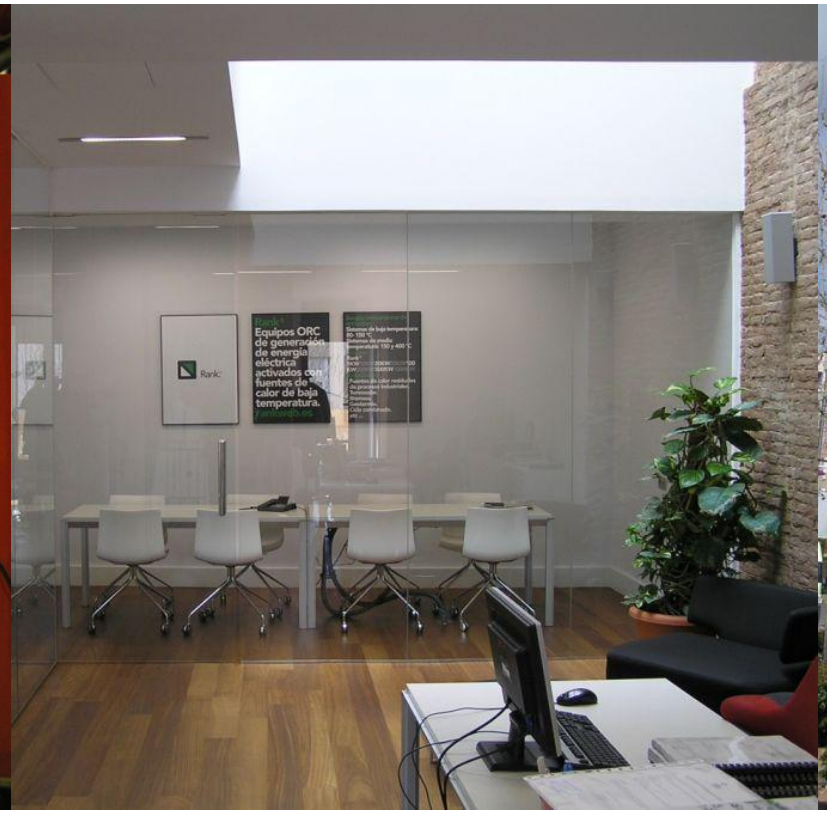

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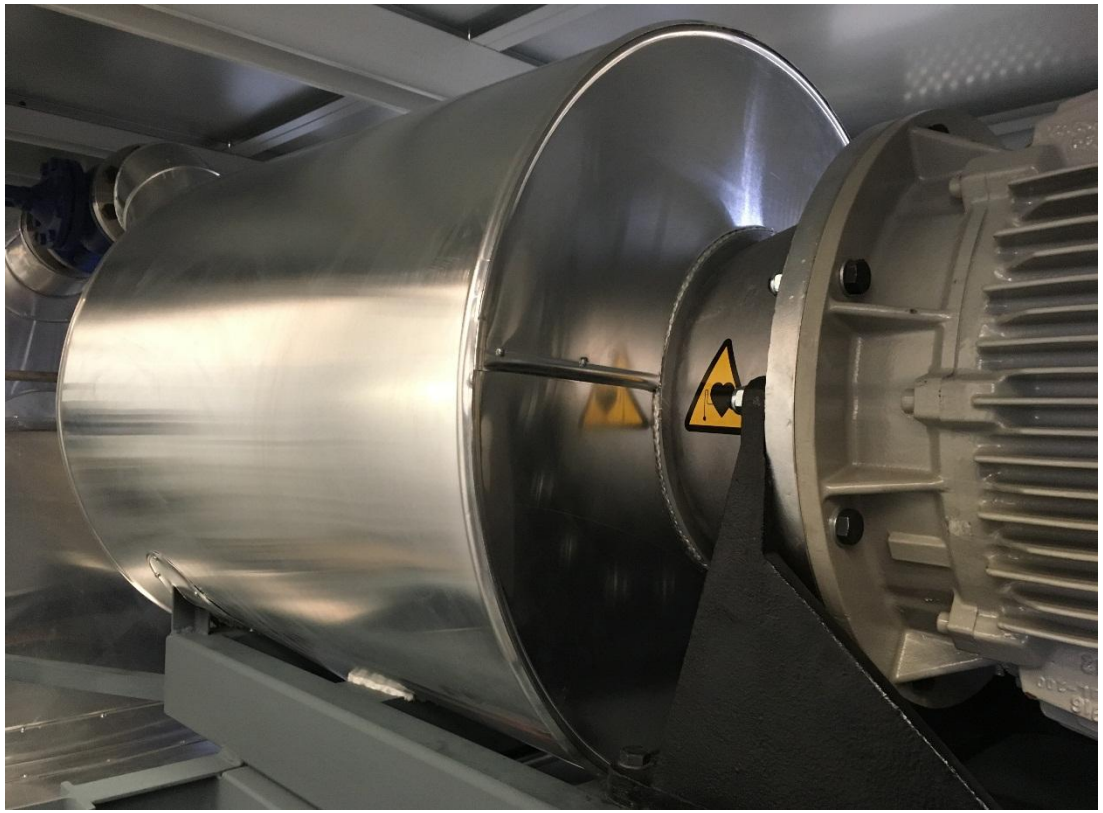
TECHNOLOGY



- Self-developed technology
- Tested technology, clean and safe
- High efficiency components and design
- Zero-leakage system
- Environmentally friendly working fluid
- Automatic management system
- Local/remote operation
- Main parameters measurement
- Remote assistance
- Easy maintenance

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PRODUCTS

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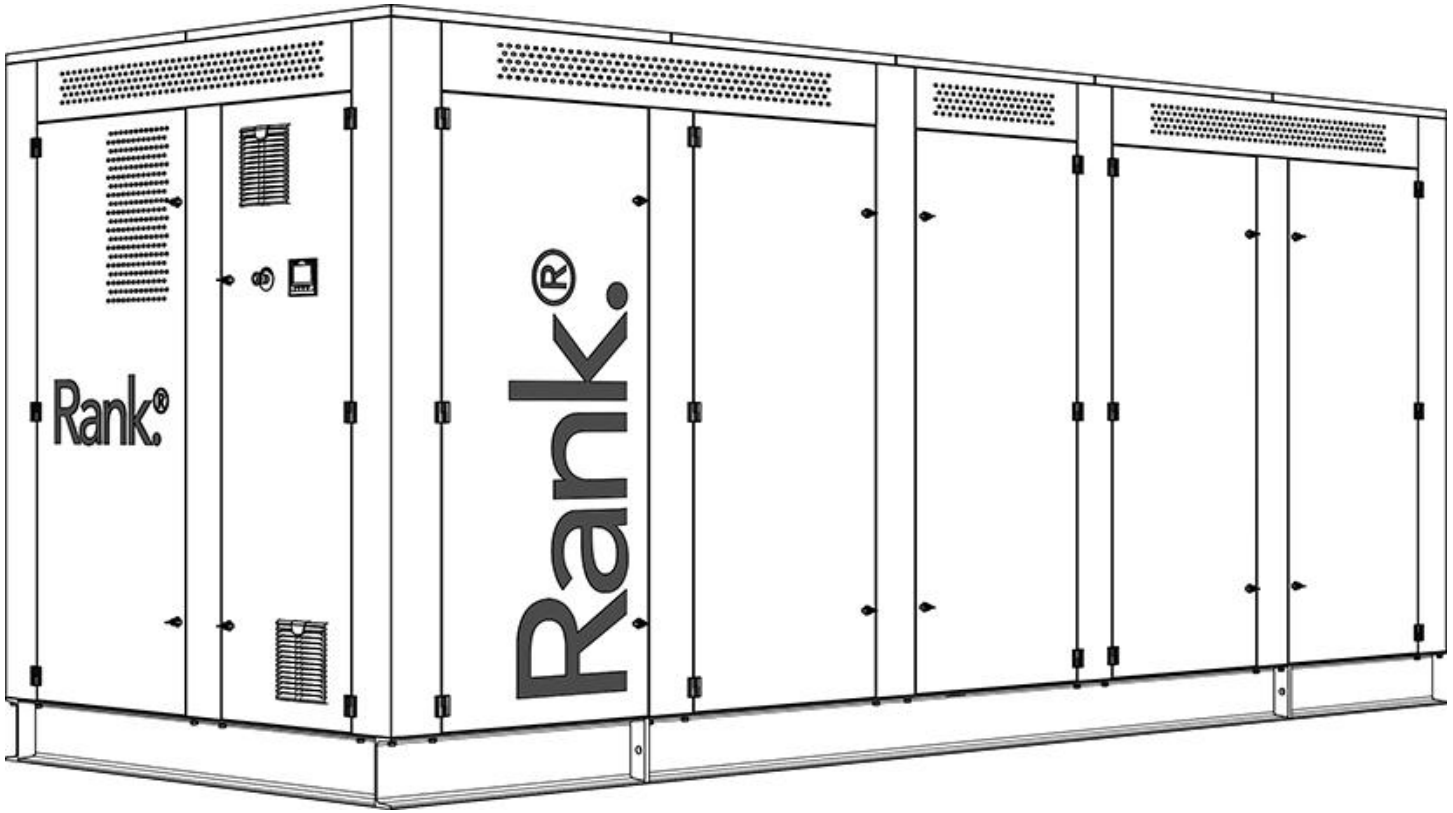
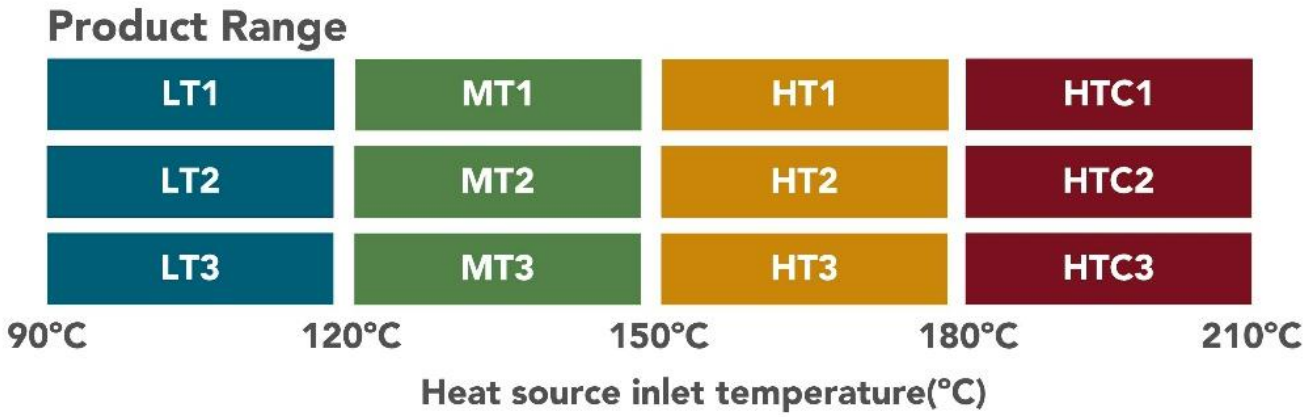
PRODUCTS



- CE Low voltage Directive 2006/95/EC
- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2004/108/EC Pressurized Equipment Directive 2014/68/EC
- ENA ER G59/3
- ASME B31.1 – Power Piping Code, Mechanical
- ASME B31.3 – Process Piping Code
- Receiver complies with ASME Boiler and Pressure Vessel Code Section VIII
- Built in accordance with UL 508A- Control Panel Wiring
- Sound pressure tested in accordance with EN/ISO 3744:2010

PRODUCTS

90-210°C INLET TEMPERATURE
100-1500 kWt THERMAL POWER
5-120 kWe ELECTRICAL POWER
UP TO 80°C CHP



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PRODUCTS

Product	Model	LT1	LT2	LT3
Heat source	Fluid	Water	Water	Water
	Flow rate (m^3/h)	17,0	36,5	77,5
	Inlet temperature (°C)	90-120	90-120	90-120
	Thermal power (kWt)	125-245	265-515	570-1105
Heat sink	Fluid	Water	Water	Water
	Flow rate (m^3/h)	14,0	29,5	63,0
	Inlet temperature (°C)	20-40	20-40	20-40
	Outlet temperature (°C)	30-50	30-50	30-50
	Thermal power (kWt)	95-170	200-360	430-775
Electrical power	Gross power (kWe)	6-18	12-38	27-82

PRODUCTS

Rank LT1 performance

								nominal			
Heat source	**Inlet temperature (°C) (1)**	90.0	90.0	100.0	100.0	100.0	110.0	**110.0**	110.0	120.0	120.0
	Fluid	Water	Water	Water	Water	Water	Water	**Water**	Water	Water	Water
	Flow rate (m^3/h)	17.0	17.0	17.0	17.0	17.0	17.0	**17.0**	17.0	17.0	17.0
	Thermal power (kWt)	120-135	115-125	150-165	150-165	140-155	180-200	**185-200**	185-205	220-245	205-230
Heat sink	**Inlet temperature (°C) (2)**	20.0	30.0	20.0	30.0	40.0	20.0	**30.0**	40.0	30.0	40.0
	Fluid	Water	Water	Water	Water	Water	Water	**Water**	Water	Water	Water
	Flow rate (m^3/h)	14.0	14.0	14.0	14.0	14.0	14.0	**14.0**	14.0	14.0	14.0
	Thermal power (kWt)	90-100	85-95	105-120	110-125	105-120	125-140	**130-145**	135-150	155-170	150-165
Electrical power	**Gross power (kWe)**	7.5-8.0	5.5-6.0	10.0-11.0	9.0-10.0	7.0-7.5	13.5-14.5	**12.5-14.0**	11.5-12.5	16.5-18.0	14.0-15.5
	Net power (kWe)	7.0-7.5	5.0-5.5	9.5-10.5	8.5-9.5	6.5-7.0	12.5-14.0	**11.5-13.0**	10.5-11.5	15.0-17.0	13.0-14.5

(1) The output temperature in the heat source for the nominal operating conditions is 100°C (a temperature difference of 10°C). For all other operating conditions, the outlet temperature should be obtained using the provided thermal power.
(2) The output temperature in the heat sink for the nominal operating conditions is 40°C (a temperature difference of 10°C). For all other operating conditions, the flow rate should be adjusted in order to obtain the same temperature difference (10°C).

CASE STUDIES

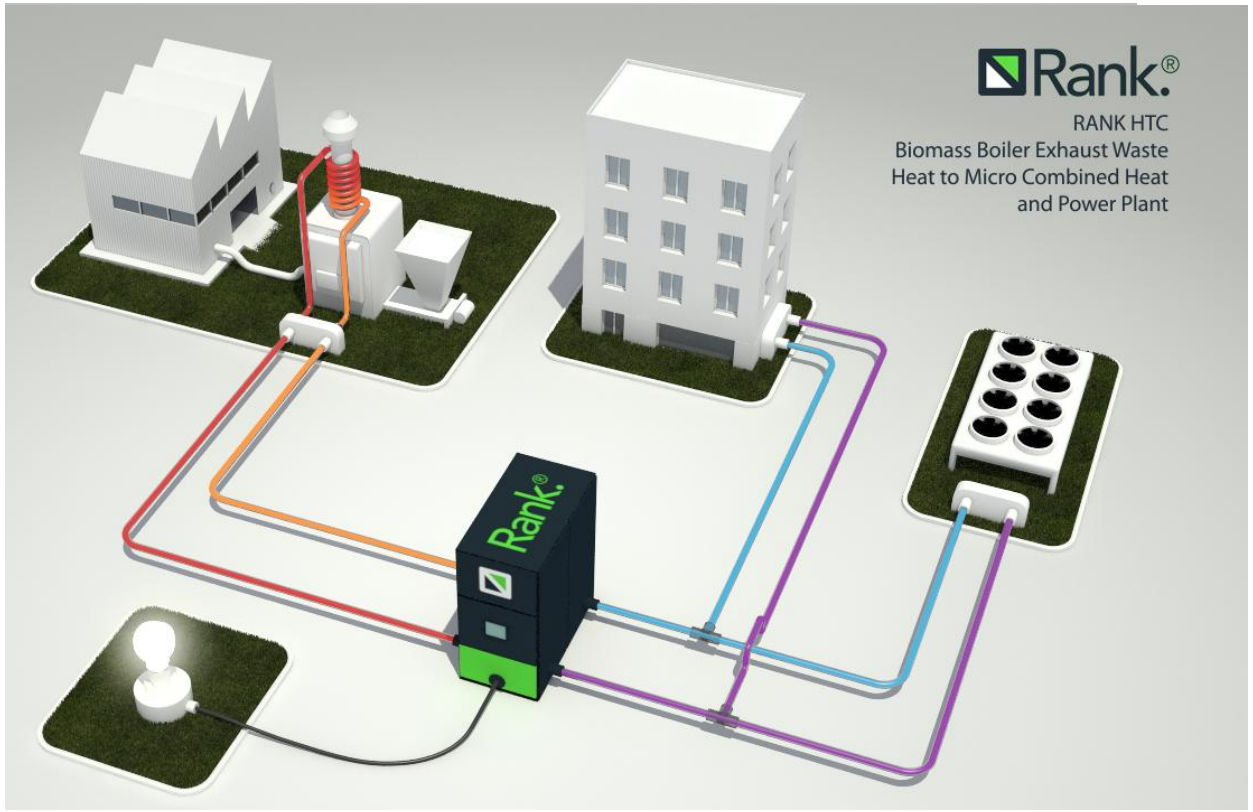
- Several installed and commissioned equipment in Europe
- Three examples of the main applications

CASE STUDIES

Combined Heat and Power (CHP) using **biomass** as renewable heat source

- ADAMS Farm – UK
- 2017
- LT2
- 30 kWe net
- Hot water at 45ºC

CASE STUDIES



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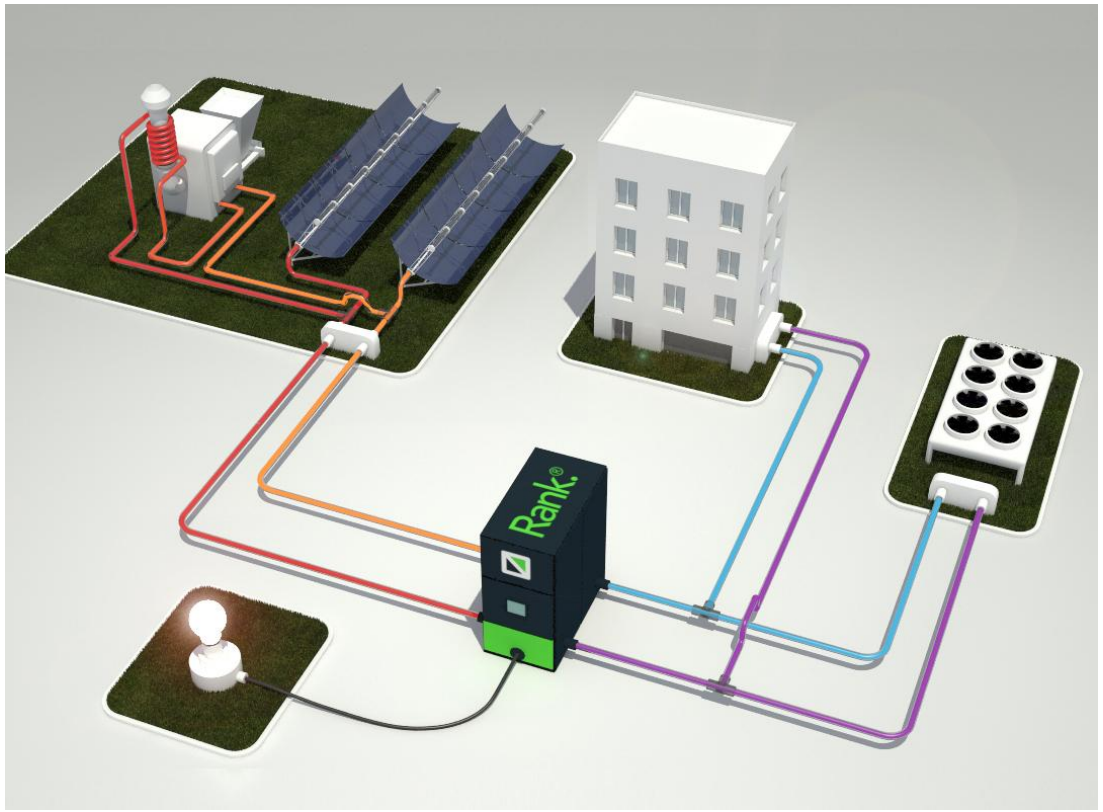
CASE STUDIES

Combined Cold, Heat and Power (CCHP) using **solar/biomass** as renewable heat source

- EROSKI Supermarket – SPAIN
- 2016
- HTC1
- 30 kWe net
- Hot water at 85ºC

CASE STUDIES



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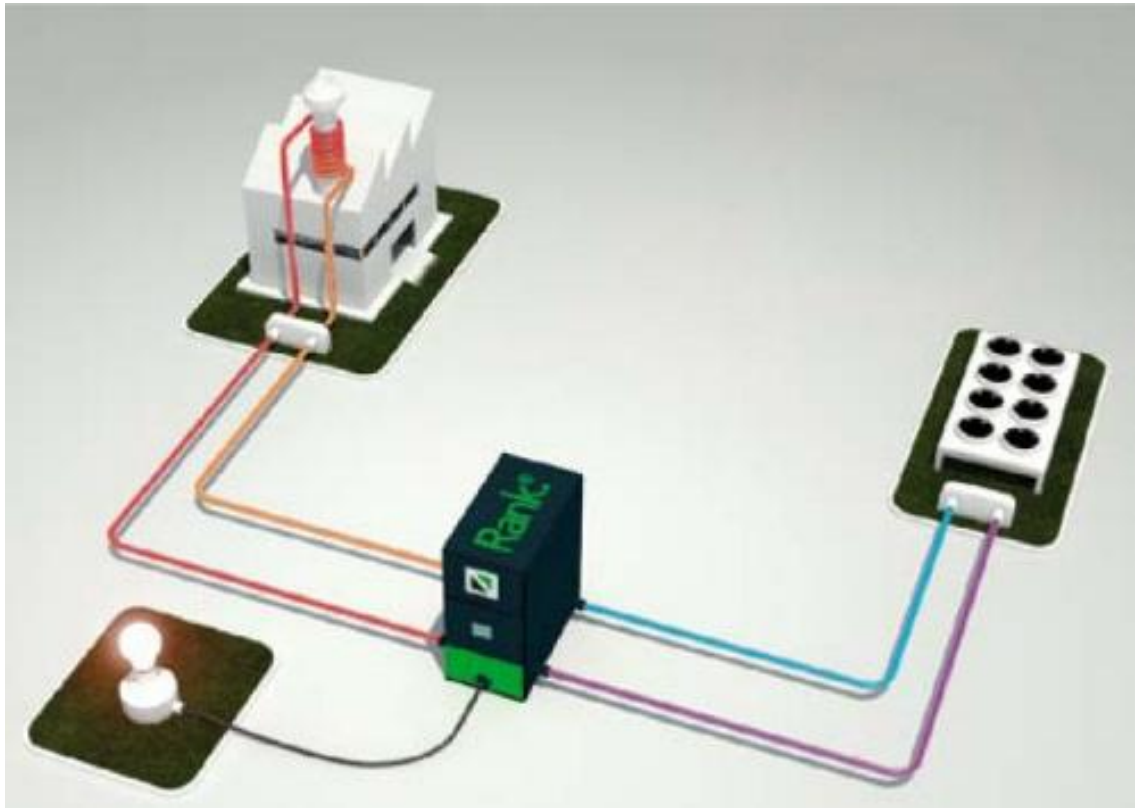
CASE STUDIES

Waste Heat Revalorization (WHR)
from industrial processes

- KEROS Ceramics – SPAIN
- 2012
- HT1
- 25 kWe net

CASE STUDIES



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STAND


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5-120 kWe ELECTRICAL POWER
UP TO 80°C CHP
Product Range
LT1 MT1 HT1 HTC1
LT2 MT2 HT2 HTC2
LT3 MT3 HT3 HTC3
90°C 120°C 150°C 180°C 210°C
Rank.®
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