

# WOODCO

Heat and Power

## DOMESTIC CHP



**cogetherm<sup>®</sup>**

**cogemax<sup>®</sup>**

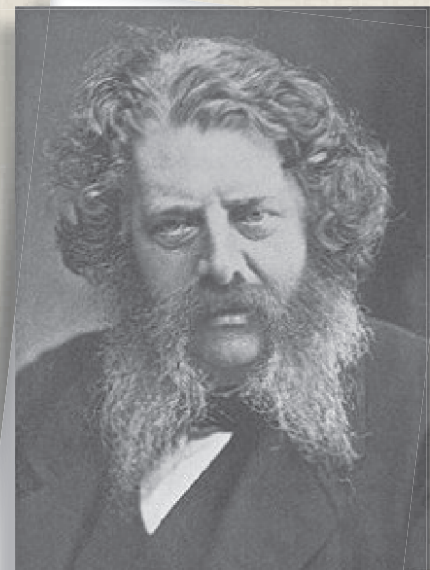
The Design team at WOODCO have pioneered the development of biomass CHP in Europe. WOODCO's Combined Heat & Power (CHP) units are revolutionising the low carbon heat and power.

Using WOODCO's patented scroll expander and based on Organic Rankin Cycle, organic liquid is converted to high temperature gas which drives the expander and generator.

A truly unique low maintenance cogeneration product Cogetherm and Cogemax provide carbon neutral heating and electricity to users across Europe.



Cogetherm® at Trade-show in Holland.



**William John Macquorn Rankine**, a Scottish polymath and Glasgow University professor.

The Rankine cycle, is a model that is used to predict the performance of steam turbine systems. The Rankine cycle is an idealized thermodynamic cycle of a heat engine that converts heat into mechanical work. The heat is supplied externally to a closed loop, which usually uses water as the working fluid.

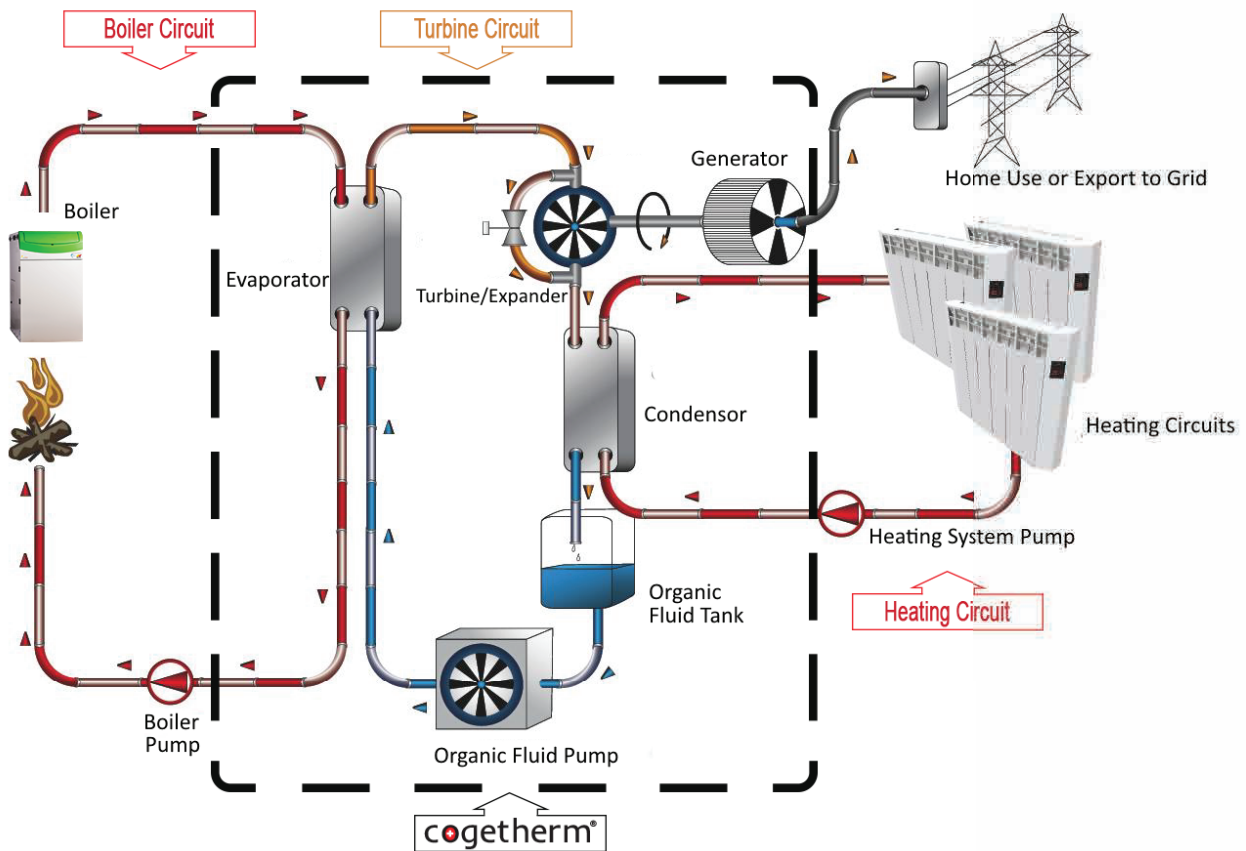
*Revolutionising  
Low Carbon  
Heat & Power*

# Organic Rankin Cycle Explained

**Organic Rankin Cycle (ORC)** is a thermodynamic process where heat from a low enthalpy energy source such as biomass is transferred to an organic fluid at a constant pressure and is vapourised and expanded in an expansion device that drives a generator producing efficient, clean reliable electricity.

## cogetherm®

### Organic Rankin Cycle

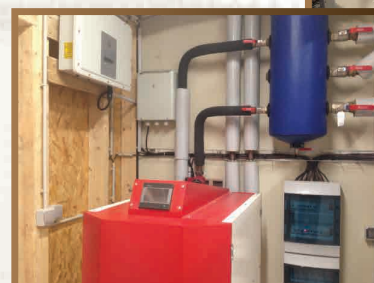


- Clean Renewable Power Generation
- 80°C to 300°C Heat source input range
- Modular and scalable to larger plants
- ORC capable of year round 24/7/365 operation
- Robust and Reliable components
- 20 year design life
- 2-4 year payback
- Exceptional low maintenance (closed system)

#### Organic Rankin Cycle Process

1. WOODCO' proprietary high pressure gas leaves the evaporator and enters the scroll expander that drives the generator to produce power
2. The low pressure expanded vapour leaves the expander and enters the condenser where it is cooled and condensed to a liquid again
3. The cooled liquid is sent to a pump where the pressure is increased dramatically and pumps to the evaporator
4. Hot water enters the evaporator and heats the organic fluid to boiling. This closes the cycle, and is continually repeated.

Pellet delivery  
to school,  
Galargues,  
France.



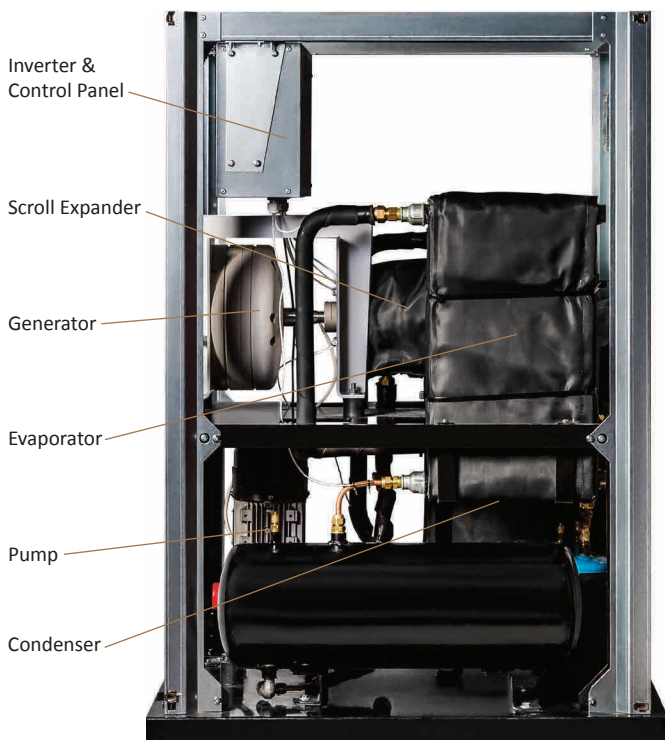
4kWe  
Cogetherm at  
Micocaulier School,  
Galargues,  
France.

# cogetherm<sup>®</sup>

# cogemax<sup>®</sup>

Model		1-3kWe	3-5kWe	5-10kWe
Thermal Power	kW	12	25	40
Width	mm	1200	1200	1200
Height	mm	700	700	700
Depth	mm	700	700	700
Weight	kg	110	120	120
Connections	inch	1"	1"	1.5"
Electrical Power Required	kWe	1.5	3	5
Refrigerant	kg	15	15	16
Maximum Temperature	°C	110	110	110
Condenser Water Flow	m <sup>3</sup> /h	1.5	2.2	4.2
Evaporator of Water Flow	m <sup>3</sup> /h	1.9	2.6	5.1
Power Supply	V	220/-240	220/-240	220/-240
Hydraulic Heating Connections	inch	1"	1"	1.5"
Sound Level	Db	52	56	59
Primary Circuit Pressure	bar	4	4	4
Probes	Ohms	PT100	PT100	PT100

Model		1.5kWe	2.8kWe
Maximum Power	kW	15	28
Minimum Power	kW	4.8	8.4
Maximum Temperature	°C	110	110
Minimum Temperature Water Return	°C	55	55
Primary Circuit Pressure	bar	3	3
Power Supply		230V, 50Hz	230V, 50Hz
Suction Kit		Yes	Yes
Unloaded Weight	kg	290	310
Width	mm	1000	1000
Height	mm	1550	1550
Depth	mm	500	500
Internet Control		Yes	Yes
Volume of Water in the Boiler	l	70	70
Silo Volume	l	160	160
Hydraulic Connections	inch	½"	½"
Boiler Output Diameter	inch	1"	1"
Boiler Return Diameter	inch	1"	1"
Water Flow	mbar	0.32	0.46
Full Load Temperature Smoke	°C	135	140
Partial Load Temperature Smoke	°C	90	95
Mass Flow Fuel for Full Load	kg	0.08	0.15
Yield	%	>92	>92
Chimney Draw	mbar	-0.1	-0.1
Starting Power	W	1300	1300
Operating Power	W	50	50



# WOODCO

Heat and Power

**Head Office:** WoodCo Energy SA,  
Rte de Courgenay 38, 2900 Porrentruy, Switzerland.  
t: +41 324668008

w: [www.woodco-energy.com](http://www.woodco-energy.com)

WoodCo Energy Ireland  
Unit D Cahir Business Park, Cahir, Co. Tipperary, Ireland.  
t: +353 52 7445330

e: [info@woodco-energy.com](mailto:info@woodco-energy.com)

MANUFACTURERS OF RENEWABLE HEATING PRODUCTS