



ORC FOR BIOMASS POWER PLANTS AND CHP

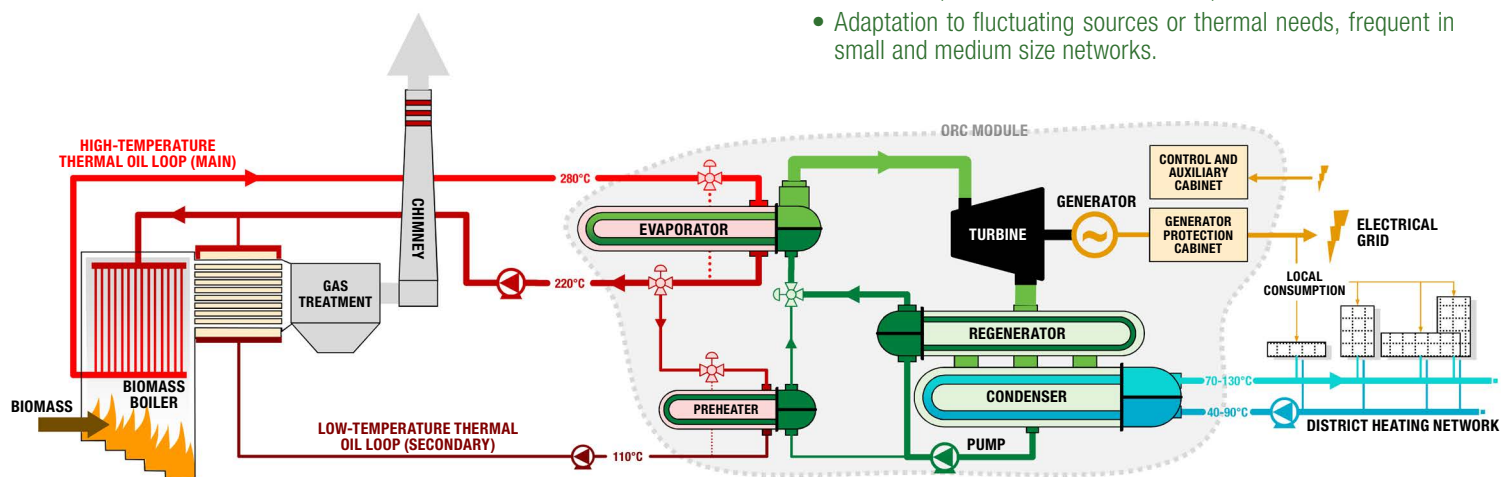
Enertime offers two types of biomass ORC plants:

- **Biomass cogenerations (CHP)** for simultaneous generation of power and hot water for district heating networks or industrial processes (biomass drying, process heat, etc.) with a global efficiency above 80%
- **Power-only machines**, for electrical efficiency maximization without heating needs (sawmills, green waste, rice straw, diesel generator replacement, etc.), and at the same time preserving a high boiler efficiency.

Our machines are compact and modular for an easy integration to existing heating networks. Enertime ORCs are designed for the energy sustainability of isolated sites or Ecodistricts, willing to use renewable and local resources.

The ORC technology is best suited for low and medium size biomass power plants and offers significant advantages over equivalent conventional steam cycles:

- Higher efficiency
- Fully automated operation
- Compact and modular design, without traditional steam cycles auxiliaries (tanks, water treatment, etc.)
- Adaptation to fluctuating sources or thermal needs, frequent in small and medium size networks.



ORCHID© cogen 550 kWe / 4800 kWth, SERM, Montpellier, France

Dense organic fluids ensure to our ORC a higher electrical efficiency than conventional steam cycles on small-scale applications and at partial load.

In addition to the standard range of machines presented overleaf, Enertime manufactures customized ORC modules, tailored to the specific needs and requirements of customers: Special heat requirements (steam, pressurized water) and integration in to a limited space or, to a space with specific accessibility constraints.

We collaborate with several reliable and high-quality biomass boiler manufacturers and EPC contactors, providing our clients with the cutting-edge technologies and know-how, to offer turnkey biomass plant solutions.

Enertime also offers a full range of services for the maintenance and remote monitoring and control of ORC machines.

ORC MODULES FOR BIOMASS POWER PLANTS

Enertime offers several machine ranges for biomass applications:

- **CORDIAL®**: Designed for thermal oil boiler (280°C to 310°C, for a maximal electrical output.
- **ORCHID®**: Designed for hot water or steam boilers. Solution with non-flammable fluids.

For both ranges, Enertime offers IGT (Integrally Geared Turbine) machines from 100 to 500 kWe specifically designed for small-scale plants.

Contact us for more details

COGENERATIONS (HEAT + POWER)

RANGE		ORCHID® cogen	CORDIAL® IGT cogen				CORDIAL® cogen			
Thermal carrier		Pressurized water	Thermal oil				Thermal oil			
Temperatures (In/out)	°C	200 / 130*	280* / 220*				280* / 220* + secondary 220* / 110* (option)			
Thermal power	kWth	650 to 16 000	610	1 200	1 800	2 400	3 300	5 400	7 400	9 500
NOMINAL POWER	kWe	100 to 1 800	100	200	300	400	600	1 000	1 400	1 800
Gross efficiency	%	10,0 to 12,0%	16,0 to 17,0%				18,0 to 19,0%			
Thermal Power	kWth	500 to 14 200	500	990	1 480	1 970	2 670	4 350	5 960	7 660
Temperature	°C	Example of cogeneration loop : 60/80								
STRUCTURE		size dependent	1 SKID				1 SKID		2 SKIDS	
Length (A)	m	size dependent	Standard 40' container				12	12	12	14
Width (B)	m		2,5	3	5	8				
Height (C)	m		4	4,5	5	6				
EXW Delivery	months	10 to 11	10				10	11	11	11

* Indicative temperatures

** Depending on the actual load of the plant at order

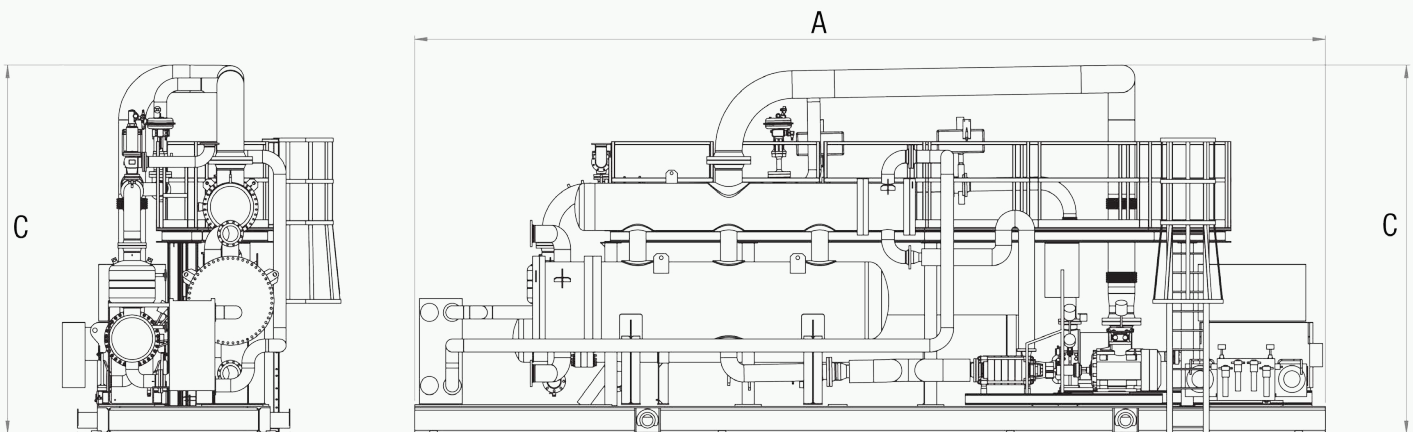
POWER-ONLY BIOMASS PLANTS

RANGE		ORCHID®	CORDIAL® IGT				CORDIAL®			
Thermal fluid		Pressurized water	Thermal oil				Thermal oil			
Temperatures (In/out)	°C	200 / 130*	280* / 220*				280* / 220* + secondary 220* / 110* (option)			
Thermal power	kWth	600 to 18 500	470	950	1 400	2 300	4 200	8 200	12 300	21 000
NOMINAL POWER	kWe	100 to 3 000	100	200	300	500	1 000	2 000	3 000	5 000
Gross efficiency	%	14,5 to 17,0%	21,0 to 22,0%				23,0 to 24,0%			
Cooling water	°C	25	25				25			
Structure		size dependent	1 SKID				1 SKID	2 SKIDS	on-site erection	
Length (A)	m	size dependent	Standard 40' container				12	12	14	18
Width (B)	m		3	6	8	10				
Height (C)	m		5	5	6	8				
EXW Delivery	months	10 to 11	10				10	11	11	11

OPTIONS:

- Thermal insulation
- Access platform
- Cooling loop
- Storage tank
- Synchronous generator
- Insular/isolated grid
- Warranty extension
- Maintenance contract
- Delivery
- On-site erection
- Mechanical and electrical connections

Additional options and tailor-made machines are also available to meet the specific requirements of your projects.



Typical layout: Dimensions (A, B, C) described in the table above