ENEFCOGEN GREEN

BUILDINGS & OFFICE SPACES

Combined production of Heat and Power

INDUSTRIAL SOLUTIONS

Waste Heat Recovery – Bottoming Cycle

The **ENEFCOGEN**$^{GREEN®}$ line of products is designed for applications of Combined Heat and Power.

enef tech
Generate your Heat & Power

Benefits of ENEFCOGEN*GREEN*

The economic advantage of reselling or consuming the electricity produced is not the only advantage of ENEFCOGEN products. The following points should be considered carefully :

Flexibility

Eneftech products have the unique ability to absorb a variation of about 70% of the input heat source. These products have been specially designed to meet the field needs and hence correspond to what is actually found in many plants. The ENEFCOGEN units can therefore adapt to a variable heat source to achieve up to 30% of the nominal power. The electricity and heat production will of course vary according to a similar ratio.

Modularity

ENEFCOGEN units can be paralleled and hence allow an insatllation to grow as required. For example, three ENEFCOGEN*GREEN* units of 25kWe paralleled, will deliver 75kWe (3x25kWe). This allows an installation to be dimensioned for a specific need and then, in case of an increase in energy requirements, to be adapted with additional units. In this case, the number of units functioning at a given moment must correspond to the energy requirements. In other words, all the units will adapt to the heat source, as individual units would do.

Low maintenance

The sealed design of ENEFCOGEN units, and a low number of moving parts have resulted in a low need for maintenance and increased lifetime.

Acoustic comfort

Due to their innovative and powerful technology, the ENEFCOGEN units are silent. This feature allows an eased implementation of Eneftech products, without the need for dedicated facilities.

Compact

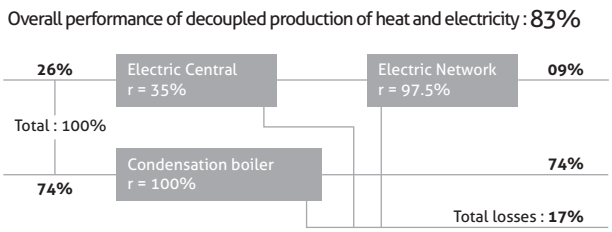
The ENEFCOGEN*GREEN* is very compact. It occupies 1 m² to 2 m² of floor space depending on the model.

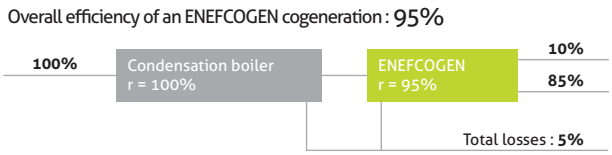
100% renewable cogeneration

The ENEFCOGEN unit can be coupled to a heat source whose energy comes from the sun or biomass. The electricity and heat produced are hence 100% renewable.

Improving the energy balance

Cogeneration allows distributed power production.
Using the powerful ENEFCOGEN units adapted to the consumer's needs, it is possible to optimize the production of electricity and heat (see diagram below).
The consequent reduction of CO2 allows to further improve the energy index of the building.





Recovery of Waste Heat

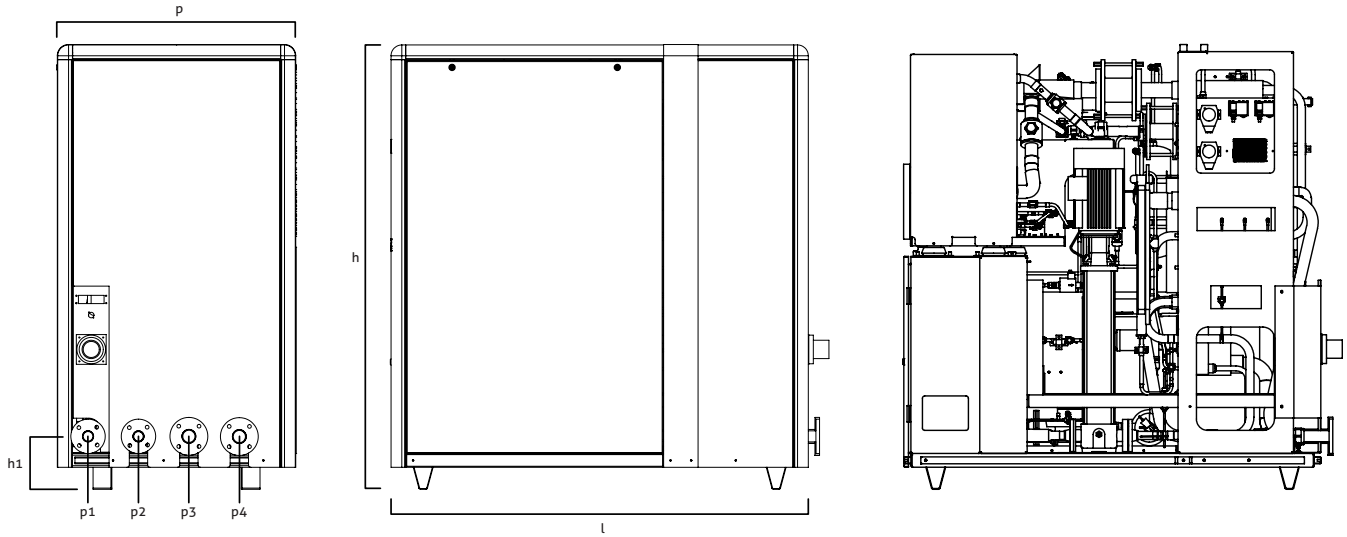
The thermal wastes are converted into electricty and the energy initially used to dissipate heat through aerotherms is saved.

Characteristics of ENEFCOGEN*GREEN* units

		10kWe		20kWe		30kWe	
Performances (Electricity Generation / Heat supplied)		010GRE-01		020GRE-01		030GRE-01	
Electrical power up to	kW	5	10	15	20	25	30
Cogeneration efficiency		95%	95%	95%	95%	95%	95%
Thermal power	kW	45	80	156	170	260	255
Inlet temperature	°C	20-30	20-30	20-30	20-30	20-30	20-30
Outlet temperature *	°C	30-40	30-40	30-40	30-40	30-40	30-40
Thermal power required (Heat Required)							
Thermal power	kW	53	95	180	200	300	300
Inlet temperature	°C	125-135	140-150	125-135	140-150	125-135	140-150
Outlet temperature	°C	105-115	115-130	105-115	115-130	105-115	115-130
Installation (Dimensions)							
Electrical connections (three-phase)		400V / 50Hz, 32A		400V / 50Hz, 100A		400V / 50Hz, 100A	
Weight	kg	600		1150		1300	
Dimensions h/w/d	mm	1700x1500x750		2000x1900x1040		2000x1900x1040	
h1	mm	231		231		231	
p1	mm	120		134		134	
p2	mm	280		354		354	
p3	mm	450		574		574	
p4	mm	630		794		794	
Flanges heat required		PN40/DN40		PN40/DN50		PN40/DN50	
Flanges heat supplied		PN16/DN32		PN16/DN40		PN16/DN40	

* Depending on the options, the temperatures output by the ENEFCOGEN can be selected in a range of 30°-65°C

Dimensions of ENEFCOGEN*GREEN* units



Solutions for buildings and office spaces

Cogeneration
An ENEFCOGEN unit allows the generation of electricity and heat from thermal energy supplied by a heat source (boiler or heating). The electricity produced can be consumed in the building or injected into the electrical grid while the heat is directly used for the heating and hot water in the building.

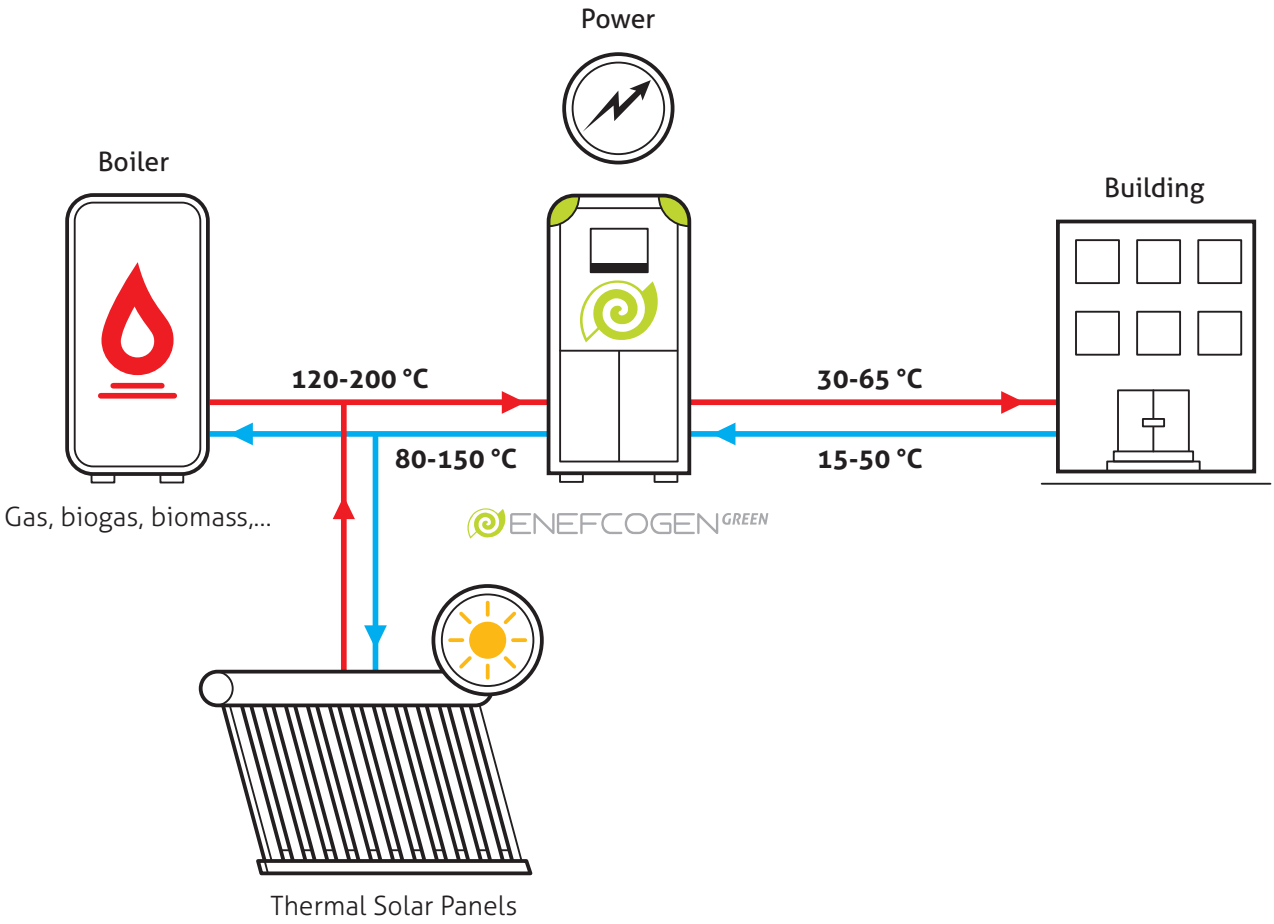
Heating and hot water
The low temperature heat produced by the ENEFCOGEN module can be used in the building through:
- Floor heating ;
- Low temperature radiators ;
- Fan coil units in heating mode ;
- A hot water tank.

District heating network
For an installation connected to an urban heating network, the ENEFCOGEN module can be an add-on or replace the heat exchanger to provide heat to the building while producing electricity.

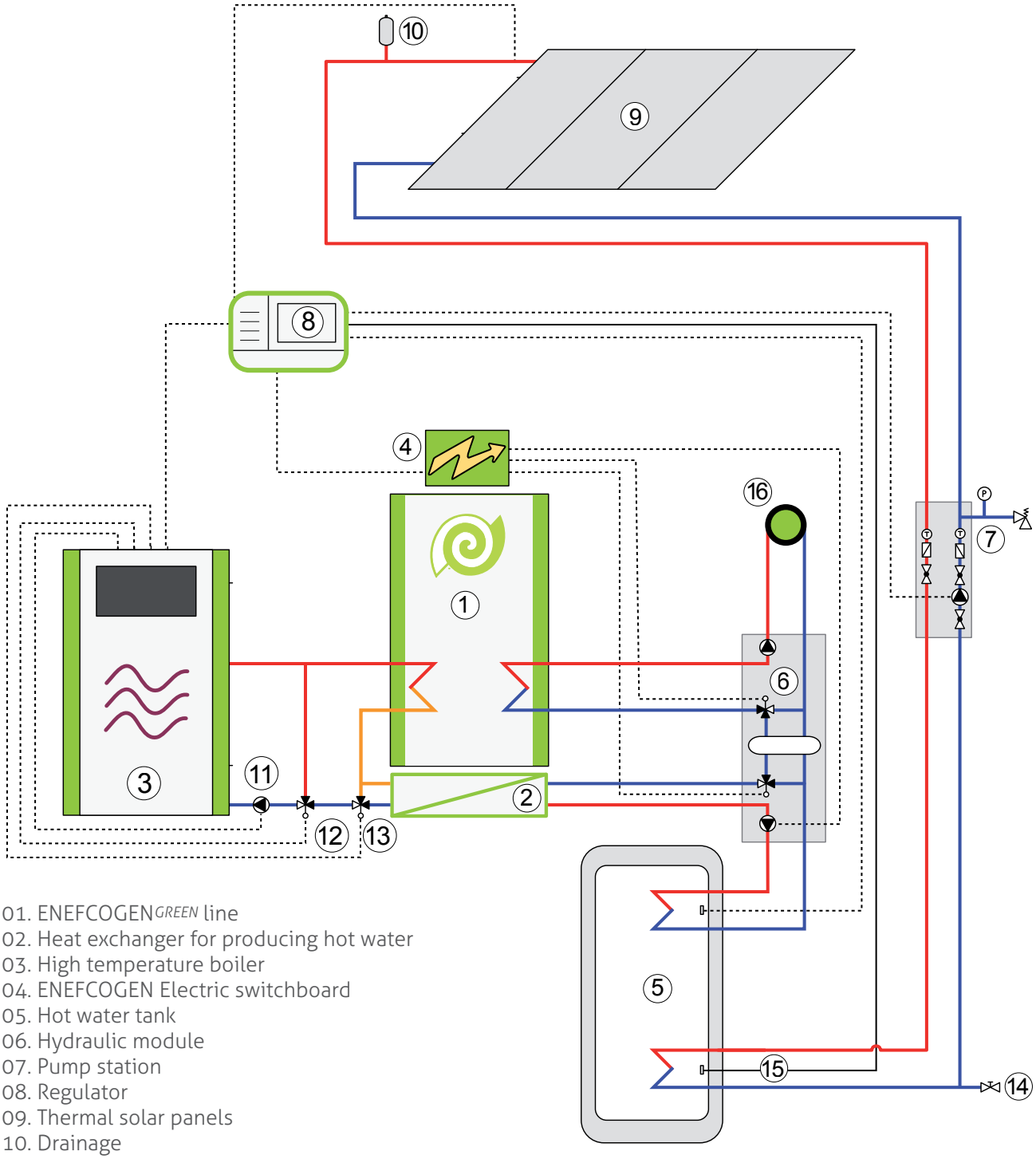
Boiler and thermal solar
In a new construction or during a renovation, the ENEFCOGEN module may be coupled with :
- A biomass boiler ;
- A gas or oil boiler ;
- Thermal Solar panels ;

in order to produce electricity and provide heat to the building.

Application example



Solutions for buildings and office spaces: Implementation diagram



01. ENEFCOGEN*GREEN* line
02. Heat exchanger for producing hot water
03. High temperature boiler
04. ENEFCOGEN Electric switchboard
05. Hot water tank
06. Hydraulic module
07. Pump station
08. Regulator
09. Thermal solar panels
10. Drainage
11. Circulation pump
12. 3 way valve
13. 3 way valve
14. Draining and filling tap
15. Hot water tank probes and solar regulation
16. Heat sent towards the radiators, underfloor heating or hot water tank.

Industrial Solution

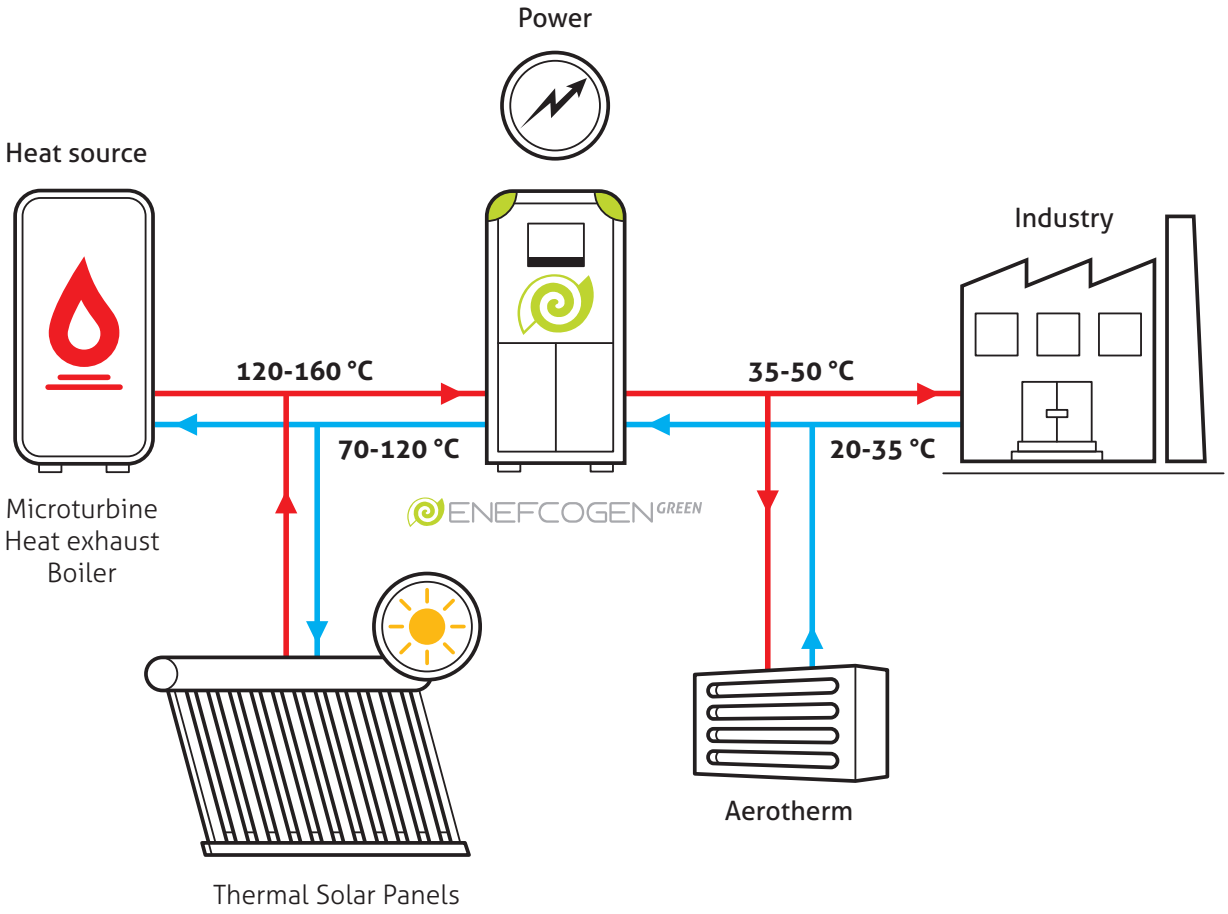
Cogeneration
The ENEFCOGEN GREEN products allow the recovery waste heat. They convert low quality thermal energy into power energy of high value. The electricity produced can be consumed at the industrial site or injected into the electrical grid. Depending on the configuration of the site, the output thermal power can also be used for heating.

Waste Heat
The waste heat to be recovered can come from industrial processes, motors (heat dissipation or heat from exhaust gases), a heat-power couple or any other equipment that generates heat.

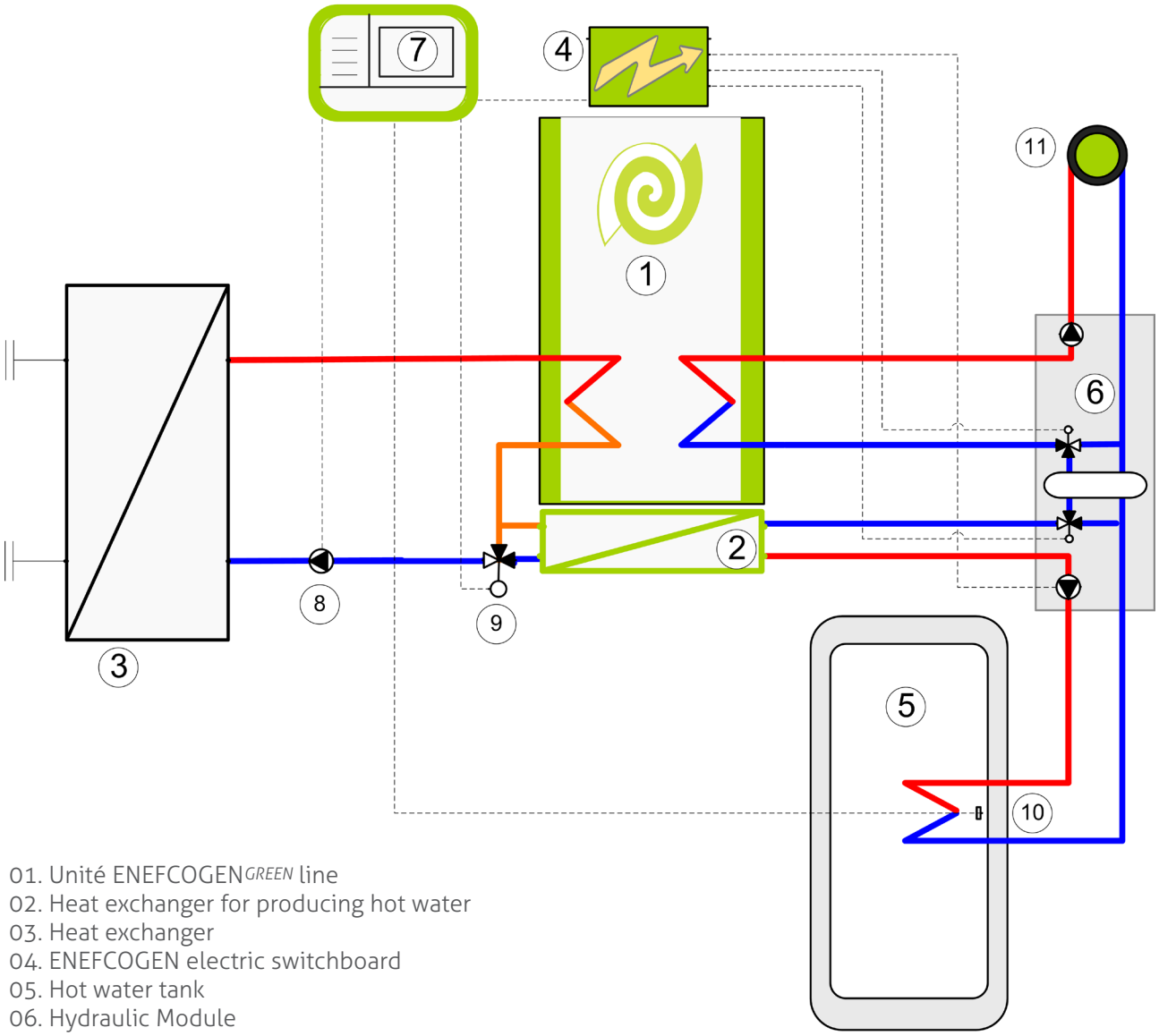
Saving energy
Heat rejected from industrial processes or motors is generally dissipated by aerotherms placed on the roof. The installation of an ENEFCOGEN unit allows the recovery of these thermal residues and also reduces the energy required for the heaters. The energy gain is hence double.

Use of wasted heat
The low temperature heat residue resulting from the use of an ENEFCOGEN unit can be used for space heating or, if necessary, destroyed with aerotherms.

Application example



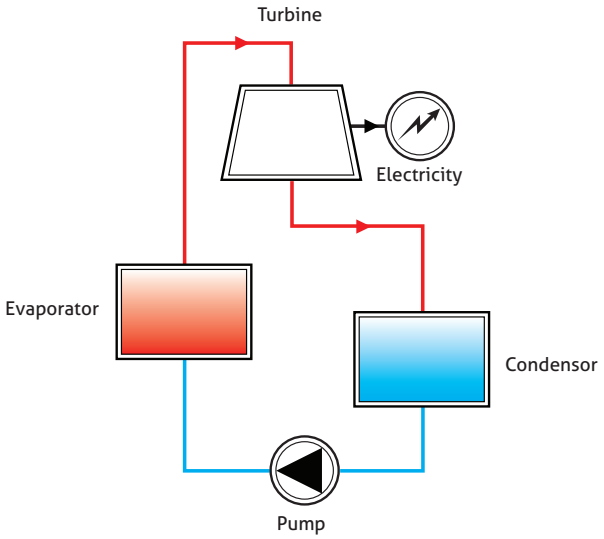
Industrial solutions: Implementation diagram



01. Unité ENEFCOGEN*GREEN* line
02. Heat exchanger for producing hot water
03. Heat exchanger
04. ENEFCOGEN electric switchboard
05. Hot water tank
06. Hydraulic Module
07. Regulator
08. Circulation pump
09. 3-way valve
10. Hot water tank probes and solar control
11. Heat sent towards the radiators, underfloor heating or hot water tank.

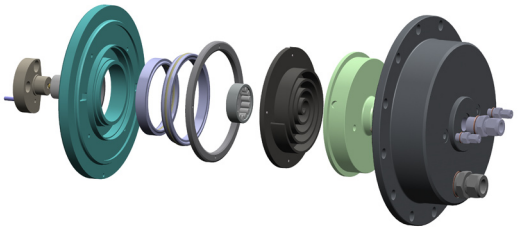
Organic Rankine Cycle (ORC)

The generation of electricity from thermal sources at low temperatures (below 300°C) is possible thanks to organic fluids (refrigerants). The main property of these fluids is that they evaporate at a low temperature. This allows efficient use of heat in low power applications (from an order of a few kW to several MW).
The thermodynamic cycle using these refrigerants is named after its inventor, William J. M. Rankine.



Modular Turbines scrolls

Compressor spirals (or scrolls) are recognized in the market for their efficiency and robustness. The concept is simple and was patented in 1905 by the French engineer Léon Creux. Offering a wide range of operational advantages with performances far exceeding those of conventional machines, the technological development of these compressors was quick and successful.
Eneftech developed the approach and expertise, allowing the use of these scroll compressors in turbines for the generation of electricity from low temperature heat sources (between 120 and 200°C).



eneftech
Generate your Heat & Power

Eneftech Innovation SA
Rue de Champ-Colin 2C
CH-1260 Nyon / Switzerland

Phone +41 22 994 04 20
Fax +41 22 566 27 43
info@eneftech.com

www.eneftech.com