newheat
fournisseur de chaleur renouvelable

GDECA 2023

30. Send us a description of max. 5 pages including: *
A one page summary with key information, font Calibri 11, the only formats permitted are .pdf, .doc, .docx covering: Background information: System history, configuration of production units, distribution network, number or square footage of buildings/customer facilities served, average age of production and distribution system facilitie

1 SUMMARY

The heating network of Pons is about 1.5 km long and serves 11 subscribers for a total consumption of 5 000 MWh per year. To ensure the 5 000 MWh of annual consumption of the subscribers, the heating network of Pons is fed by :

- a 2.5 MW biomass boiler, which operates only during the heating season; The biomass boiler cannot be used at low power, otherwise its efficiency will be significantly degraded, so it only operates during the heating season
- a gas boiler room located, which operates occasionally as a backup during the heating season.

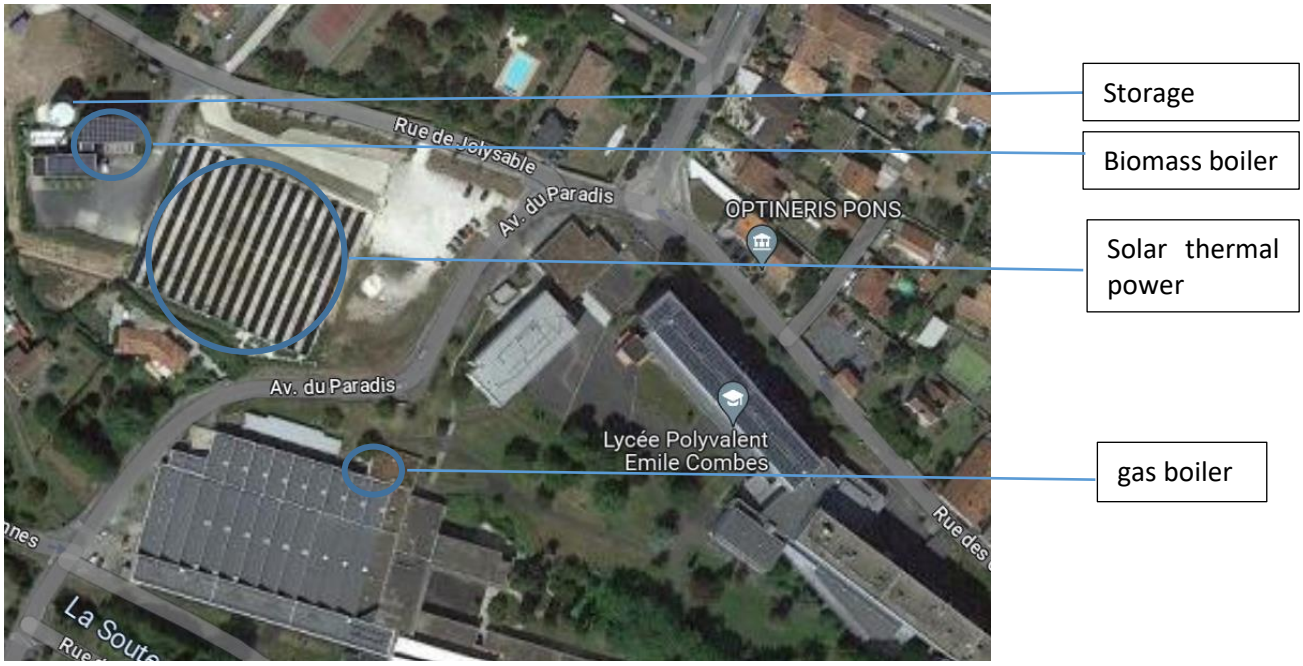
The project of the heating network of Pons consists in the **installation of a solar thermal power station with daily storage intended to supply in hot water the heating network of the city of Pons**.

Solar thermal power allows the annual production of about 1 000 MWh, 21% of the annual production of heating.

The operator of the system is Newheat since September 2021.Newheat produces and sells solar heat to the current delegate of the heating network (DALKIA).

The heating network of Pons project brings together the following actors:

- City of PONS : owner of the heating network of Pons and the first subscriber of the heating network ;
- NEWHEAT : producer of solar thermal energy, operator of the plant- investor, construction and operation of the plant and its integration ;
- SEMEMA (Energie Midi-Atlantique) : local semi-public company dedicated to the financing of energy projects, (investment of 49% of the project company's equity) ;
- DALKIA : delegate of the public heating distribution service in Pons and Customer for the sale of heat ; delegation ending in 2037



Area of energy production in Pons

2 Solar thermal power

The solar thermal power is composed of 112 single glazed thermal solar collectors. Technology used is flate plate collector (FPC). These collectors have a gross surface of about 16 m² each, the field has a total surface of 1800 m². the fluid use id glycogen to avoid the risk of frozen of collectors.

Solar field of Pons

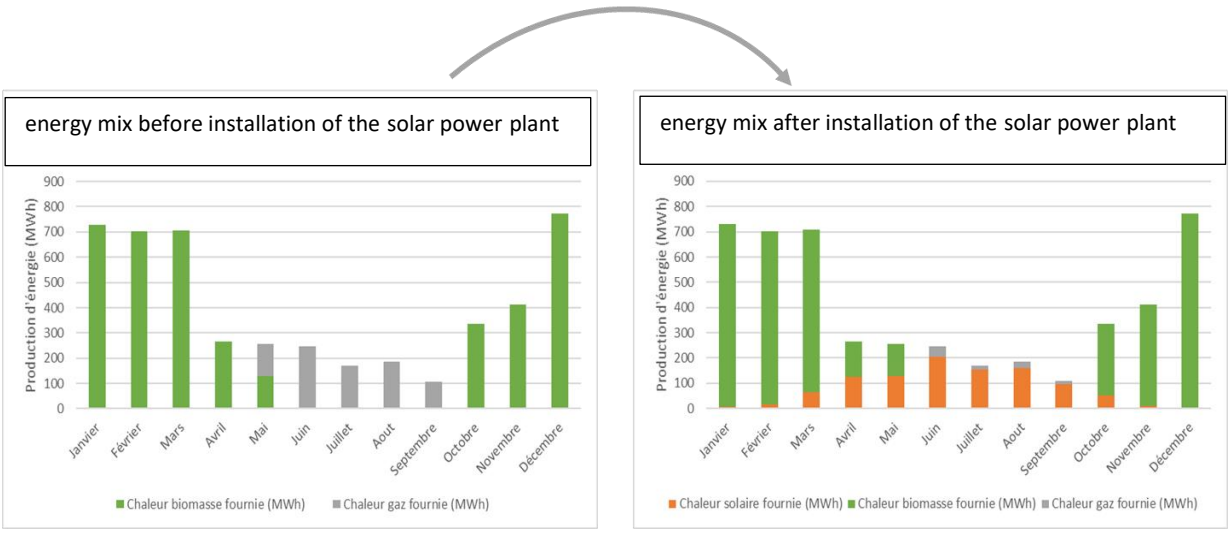
Solar thermal collectors are installed on tracking systems. It allows to follow the sun's movement.

A tank for daily storage of 500 m^3 is installed; dimensions of the tank are 6 m for diameter and 11 m of height. Storage is used by the solar thermal plant during the summer and by biomass boiler during winter. Storage allows to increase the consumption of renewable energy.

The solar thermal power allows the annual production of about 1000 MWh of hot water, which is more than 20% of the annual production of heating. With the implementation of the solar thermal plant, the target energy mix of is :

Biomass	**74%**
Solar	**21%**
Gas	**5%**

The supply of solar heat will represent about 21% of the overall energy production of the heating network and will reduce the consumption of natural gas; period of maximum solar heat production is in summer when the biomass boiler is at a standstill.



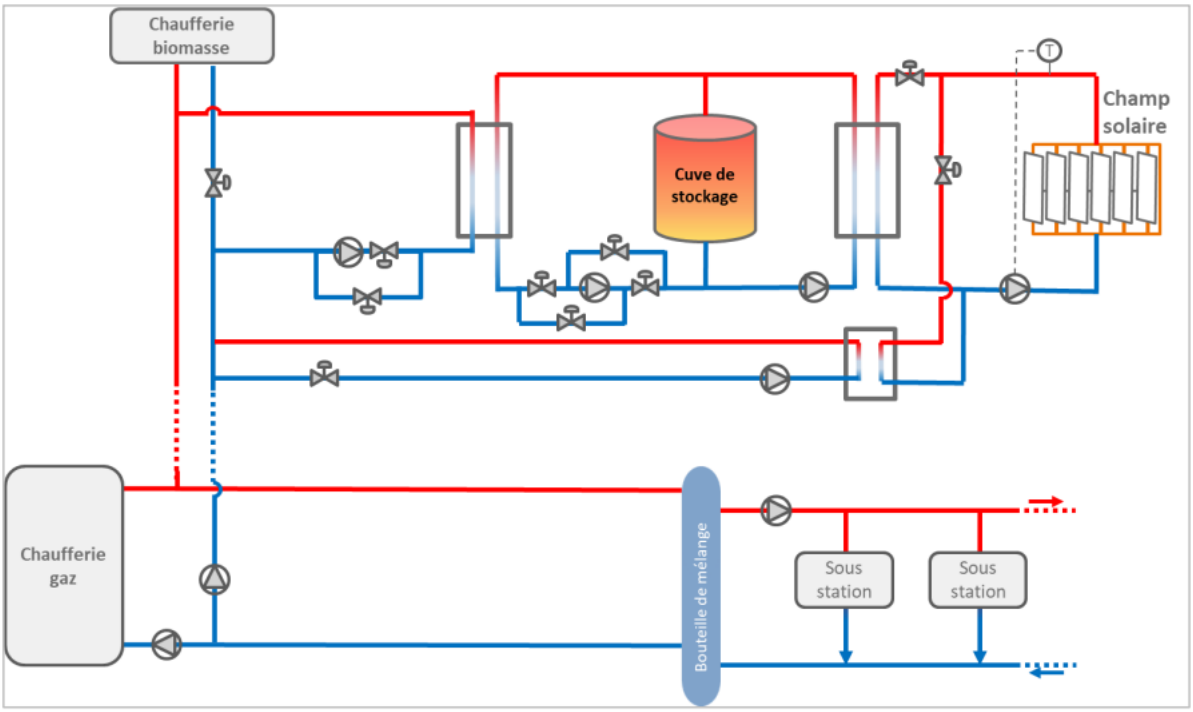
Several modes of solar heat delivery to the RCU are planned depending on the season in order to maximize the use of solar thermal energy

- during summer, the solar thermal power plant produces most of the energy required for the network to function properly. The storage tank is used exclusively by the solar power plant.
- during winter, solar thermal power is used for preheating of the cold returns of the biomass boiler; The storage tank is used by biomass boiler. it allows do optimize biomass production.

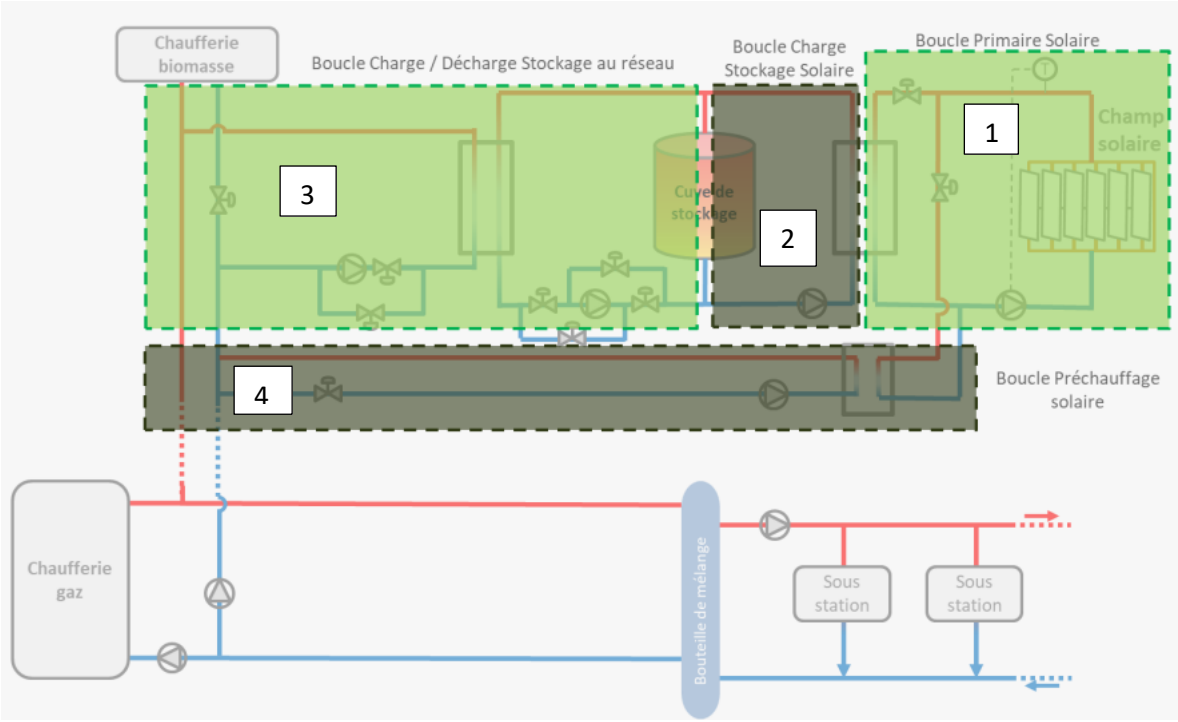
The following schematic diagrams show the operation of the system and the different loops of the loops of the plant:

- Primary Solar hydraulic system (1)
- Solar Charge/Storage hydraulic system (2)
- charge hydraulic system (3)
- Solar Preheating hydraulic system (4)

-



Schematic diagram of system



Hydraulic system

3 Technology description

1) General operating principle

A solar thermal power plant converts solar radiation into heat using solar thermal collectors. This heat is then transported and stored by means of hydraulic equipment. It's finally delivered to the heat consumers by means of one or more heat exchangers. The main equipments of a solar thermal power plant are the following:

- solar thermal collectors,
- supporting structure of the collectors (fixed or with sun tracking system),
- hydraulic equipment (piping and its supports, valves, pumps) to transport the heat transfer fluid to the consumers,
- thermal storage "buffer" type water tank,
- heat exchanger(s),
- control and instrumentation system (temperatures, flows, pressures).

An optimal integration coupled with a regulation and a thermal storage system allow to optimize the use of the solar heat while guaranteeing a total coverage of the heat needs on the network.

The utilities required for the operation of the plant are as follows

- electricity (mainly circulation / distribution pumps),
- water (filling of the networks at start-up, closed loop operation).
- Thermal storage system

To smooth out the variability of solar production and variations in heat demand type storage tank with a volume of 500 m^3 is implemented.

2) Technology used

- Solar thermal technologies

Newheat uses non-concentrating technologies of the flat plate collector (FPC) type, of approximately 14 to 16 m². These technologies capture all the solar radiation and use a mixture of water and propylene glycol as a heat transfer fluid (chosen to avoid any risk of freezing in the solar piping and the collectors).
Each collector consists of the following elements, illustrated in the figure below

- a frame (galvanized steel or aluminum),
- an anti-reflection glass,
- a heat absorber (coated aluminum or copper),
- a heat exchanger (copper) where the heat transfer fluid circulates,
- a layer of insulation on the back and sides of the absorber.

flat plate collector (FPC)

- Hydraulic equipment

The solar thermal power plant contains hydraulic elements necessary for its good functioning. These equipments, listed below, allow to realize the hydraulic management of the plant and to manage the supply of the solar heat transfer fluid to the exchanger with the process.

- Heat exchangers and metering point

three heat exchangers are installed:

- a plate heat exchanger between the solar circuit and the tank circuit,
- a plate heat exchanger for the preheating of the returns between the heat network and the storage. It allows to decouple the heat network from the solar plant while allowing a heat transfer.
- A plate heat exanger between the solar circuit and the

.