

GEOHERMAL SMARTGRID LOW TEMPERATURE AND LOW PRESSURE

Less expensive to install than a conventional heat network and much cheaper to operate. It is an alternative to the heat (or freshness) needs of a community.

THERMAL SMARTGRID, THE INTELLIGENT HEAT NETWORK

What is a thermal smartgrid?

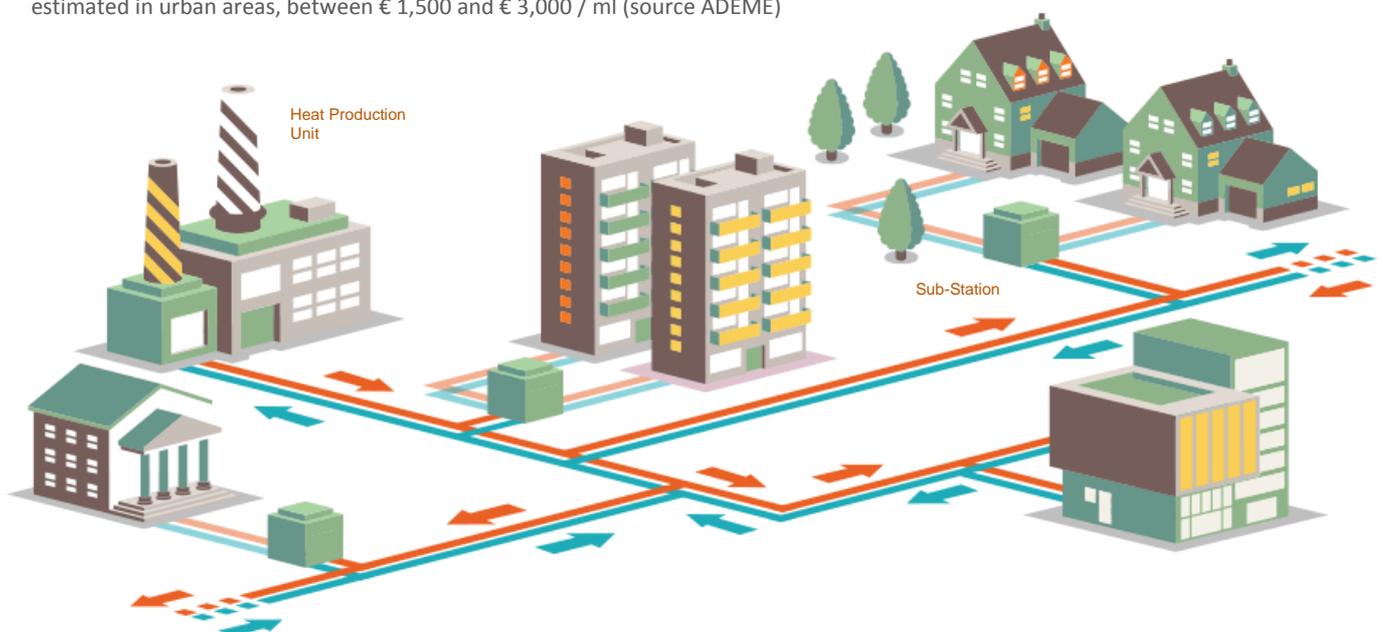
The term smartgrid has been extrapolated from power grids. It refers to a set of interconnected equipment capable of interacting with each other to optimize flow management (electrical, thermal, communications, etc.). By making networks smart, we improve the management of energy and communication flows while optimizing the budgets of equipment and infrastructure.

Conventional district heating networks

Conventional district heating networks are organized around a heat production plant. Most often, water in liquid or gaseous form is used to transport heat at high temperatures. This is channeled through networks and fed to substations responsible for distribution to subscribers.

These networks meet massive heat requirements for large agglomerations or urban centers. Thermal losses are important and the production of cold is not possible.

The cost of such a network varies according to its size, its power and also the fuel that is used to create heat. This cost is generally estimated in urban areas, between € 1,500 and € 3,000 / ml (source ADEME)



GEOHERMAL SMARTGRID AND CIRCULAR ECONOMY

How does a low temperature geothermal loop work?

The soil, at a shallow depth (between 1 and 5 m), retains in an off-set way the heat stored during the hot period or the cold stored during the cold period. By exploiting the natural ability of water to conduct heat and to conserve it, it is possible to recover the heat of the ground or to bring it to refresh on the surface.

Installed at a depth of 1.5 m, the water contained in the geothermal loop will thus draw the calories naturally contained in the soil. Water serves both as heat transfer liquid, but also buffer storage means.



How loops form a network?

The loops are interconnected by means of plate heat exchangers. These housings allow the exchange of heat from one loop to the other (from the hottest to the coldest) with minimal loss of calories.

The heat exchangers thus assemble the loops with each other (without hydraulic connection) in order to constitute a network of geothermal loops making it possible to cover large urban areas (neighborhoods, housing estates, hotel zone, industrial zone, hospital center, etc.)



How are heat flows managed?

Each subscriber has a control and monitoring unit (WATeBOX) to monitor in real time the different heat sources available on the network and compare them to the setpoint parameters.

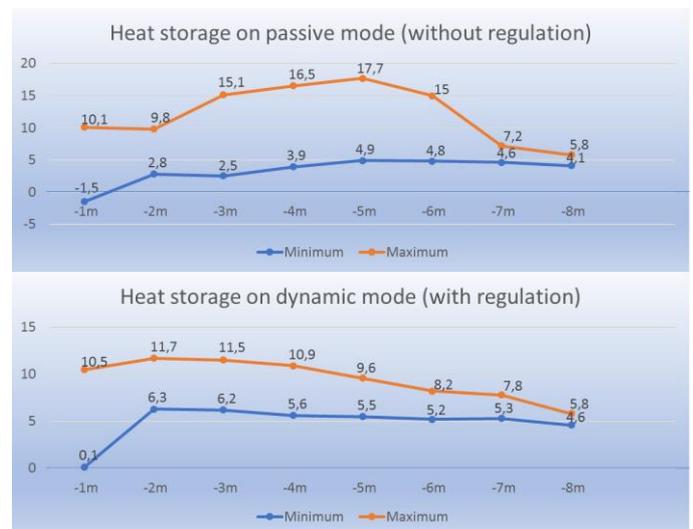
In case of need for additional heat, an alert is automatically launched on the network in order to bring (via the geothermal loop) the expected degrees. The operation is identical (but inverted) for a request for freshness.



Is it really effective?

When temperature readings are analyzed at the depth of the loop (1.5 m) and the geothermal bins associated with it (4 to 5 m), we note the interest of regulation.

Indeed, by regulating the exchanges, the temperature of the loop is maintained between 5 ° C and 10 ° C, thus allowing to remain in the temperature range corresponding to the maximum level of performance of the heat pump (COP) than reducing, thus, the consumption of electrical energy..



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