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The integrated Ferrara plant (50% geothermal)

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Ferrara “District Heating Plant”, managed by HERA group, is one of the best applications in Italy and in Europe of “Integrated Energy System”, based on geothermal source: the geothermal resource was developed as the primary source for the urban heating system, but just from the beginning it was integrated with other resource: the “Waste-To-Energy” plant and back - up boilers.

The geothermal fluid is pumped to the surface from a depth of 1.000 m through two extraction wells (14 MW powered) and, after transferring the thermal energy to the network, it is re-introduced in the ground through an intake well, in order to ensure the geotechnical stability.

In the existing plant, the amount of energy from renewable sources is equal to 83%, compared to the total production of thermalm energy, and allows to heat about 5.400.000 mc of users.

As the system is now hydraulically saturated, and thanks to geo - structural and geothermal investigation that confirmed the presence of geothermal reservoirs, suitable for a district heating exploitation, it was decided to develop the existing scheme with a new plant (“Polo Energie Rinnovabili”), design that represent the first italian example of several new technologies applied to District Heating.

The development project, in addition to geothermal source (14 MW), shows other innovative solutions, such as a Solar thermal Plant (1Mw) and an ORC (Organic Rankine Cycle) turbine.

With “Polo Energie Rinnovabili” operating at full capacity, the amount of energy from renewable sources will be equal to 91%, and allows to heat about 8.500.000 mc of users.

At the present time, the applications of authorizations are in stand - by, in order to wait the definitive conclusions on the studies of International “Commission on Hidrocarbon Exploration And Seismicity in the Emilia Region” (ICHESE).

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Figure 1: F. BUSCAROLI

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