



## A2A Milano - Famagosta – 1 Unitop 50 FY ground water heat pump

### Client

A2A S.p.A.  
IT-25100 BRESCIA

### Plant location

A2A S.p.A.  
IT-20142 Milano-Famagosta / Italy

### Heat pumps against air pollution and rising water table

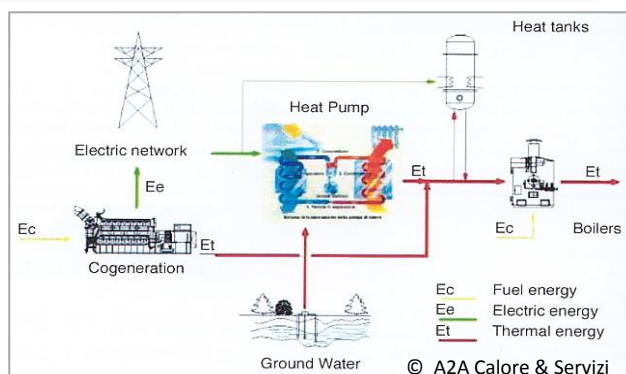
Milan is one of the Continent's most polluted cities, threatened by air pollution, especially during the cold season and under inverse conditions, when the cold and heavy air close to the ground will have no upward thrust. In such a situation, air pollution will accumulate and concentrations of poisons increase alarmingly. Further, the Milan area has been affected by a raising water table since the early 90s, causing serious damage to underground structures and threatening buildings. The main cause is due to the significant reduction of water drawn from wells by the industry.

These two factors were the main reasons that A2A together with the City authorities decided to develop various district heating networks and finally to use groundwater alimeted heat pumps for heat production, thus taking action against the growing deficit of the hydrogeological balance and against air pollution.

### The Famagosta cogeneration plant

The cogeneration plant consists of six groups of gas engines, with a total of 20 MWe and 20 MWt, and four boilers with a total heating capacity of 15 MWt each, fuelled by natural gas. The cogeneration plant produces electricity at medium voltage (23 kV) fed into the public grid. Together with the capacity of the heat pump, the total thermal power supplied from the plant is approx. 95 MWt.

The district heating network is supplied with superheated water of 125 °C. The heating energy derives from heat recovered from the intercooler circuit, the cooling circuits of the 6 gas engines, the exhaust gas of the cogeneration units, and from heat generated by the Unitop 50 FY heat pump and the 4 boilers.



### 1 Unitop 50 FY heat pump from Friotherm

The Unitop 50 FY heat pump consists of a heavy duty industrial type centrifugal compressor at its heart. Together with the heat exchangers and the control system it is especially adapted to comply to 100% with the client requirements regarding flexibility of operation modes, high efficiency and operational reliability. The service friendly design allows limiting service and maintenance work to a minimum while the units are operational for decades.

### Main technical data

Operating Seasons:	Autumn - Winter
Heating capacity:	15'500 kW
Cooling Capacity:	11'800 kW
Hot water in/out:	65 °C / 90 °C
Cold water in/out:	15 °C / 7,6 °C
COP:	2,7

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