

EMPOWERING customers to save energy by informative billing

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- **Intelligent Energy Europe**
 - Improve energy sustainability
 - EU 2020 targets
- **Budget**
 - 1.958.195,00€
 - 75% funding
- **Timing**
 - April 2013 – September 2015

*Make the energy market **more transparent** and enable consumers to **save energy** by empowering them: by involving and informing, helping take measures to save energy on the basis of the information they read on their meters or on their bills.*

Objectives

- achieving measureable energy savings
- increasing awareness and motivation of consumers with respect to energy efficiency
- increasing trust between consumers and energy suppliers

- **Billing information**
 - comparison with similar households
 - clear messages about performance
- **Online tools**
 - advanced energy browser (high resolution data)
 - load curve profile and daily data communication
- **Energy alerts service**
 - exploit smart meter capabilities for personalized and timely information
- **Integration with customer service**
 - provide a better customer profile
- **Insight engine**
 - provide the precise information required to inspire and motivate the customer at the right moment and with the right frequency

Partnership

- Spain
 - International Center for Numerical Methods in Engineering (project coordinator)
 - Grup El-Gas
 - GISCE-TI SL
- France
 - Hespul Association
 - Gas Electricity of Grenoble
 - Local Energy and Climate Agency of Grenoble Area
- Italy
 - Politecnico di Torino
 - Iren Energia Spa
 - SINERGIE Consortium Limited Company
 - Municipality of Reggio Emilia
- Denmark
 - Energimidt Infrastruktur A/S
- Belgium
 - Ghent University, Power-Link
- Austria
 - Linz AG

Target groups

- consumers (domestic sector)
- customer organisations
- local authorities
- energy agencies

- **Key actors**
 - utility companies
 - metering companies
 - energy service suppliers

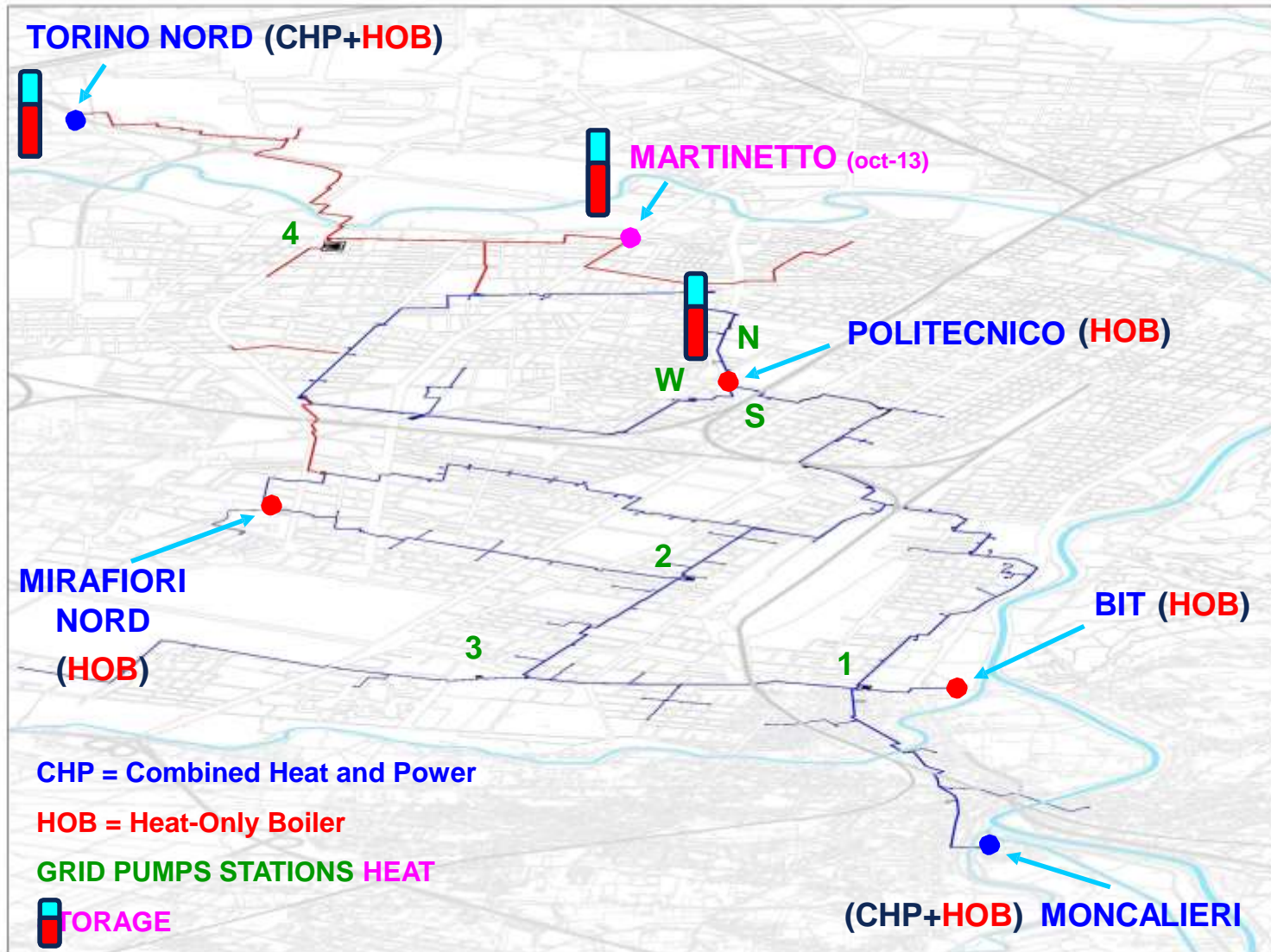
- **Test group**
 - 344.000 consumers

- **Status of the project**
 - Analysis of the different national Regulations on energy efficiency
 - Launch of on line survey
 - Definition of three groups of final users: control, experimental and testing
- **Next steps**
 - Collection of the data from the survey
 - Developing of the on-line tools based on the survey results
 - Testing of the on-line tools with the support of the test group

- **Iren** is the first Italian operator in district heating considering the installed volume
- **Torino** is the Italian city with the highest number of district heating users: 5500 buildings
- Every year the district heating produces **environmental advantages**:
 - 1300 t nitrogen hoxides emissions saved
 - 2300 t sulphur hoxides emissions savedand **economical advantages**:
 - 300000 Tep primary energy saved (equal to 10200 tankers)



District heating in Torino



District heating in Torino

Torino Nord CHP:
400 MW Power Plant

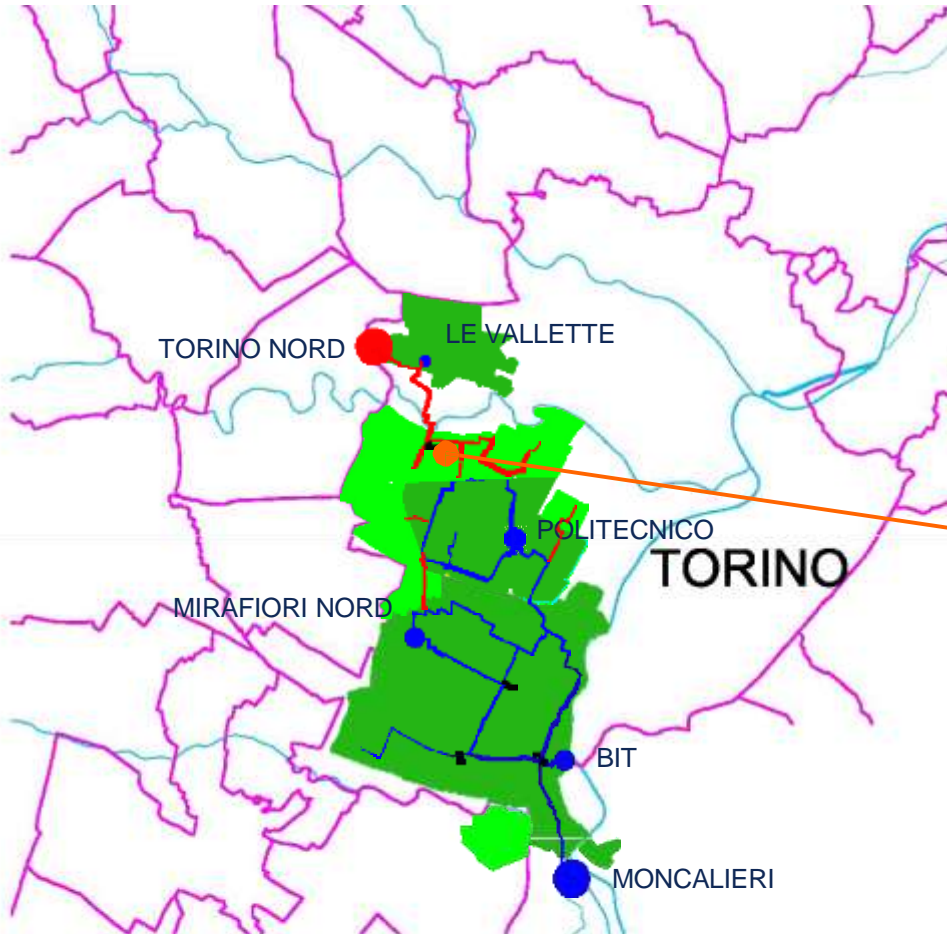


Moncalieri Nord CHP:
800 MW Power Plant



Politecnico HOB Plant





HEATED VOLUME

EXISTING GRID:	40 Mm³
TORINO NORD project:	15 Mm³
TOTAL:	55 Mm³

Main Features

	HEATED VOLUME	INHABITANTS	THERMAL PEAK	HEAT	PIPING	BUILDINGS or UNITS
	Mm ³	num	MW	GWh/y	km	num
TORINO SUD-CENTRO	39	390.000	960	1.705	345	3.050
NICHELINO	1	10.000	50	80	20	400
TORINO NORD	15	150.000	375	620	150	1.550
TOTAL	55	550.000	1.385	2.405	515	5.000

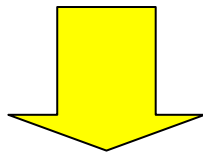
TRADITIONAL STEAM CYCLE

(with REHEATER and FEEDER WATER STEAM PREHETER)

$$\eta = 38 - 40 \%$$

Gas Turbine UNIT (OPEN CYCLE)

$$\eta = 33 - 39 \%$$



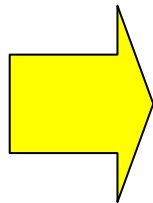
Gas Turbine Combined Cycle

(with 3 levels of pressure and REHEATER)

...CHP GTCC (with 3 levels of pressure and REHEATER)

$$\eta = 56 - 58 \%$$

$$\text{Global Eff.} = 85 - 90 \%$$



better use of primary sources

less pollution and greenhouse gas emission

**Energy
saving**

Building structure:

Shape
Materials
Ventilation
Place (exposure,
local climate condition)

Plants:

Fuel
Plant type
Plant size
Control
Operation

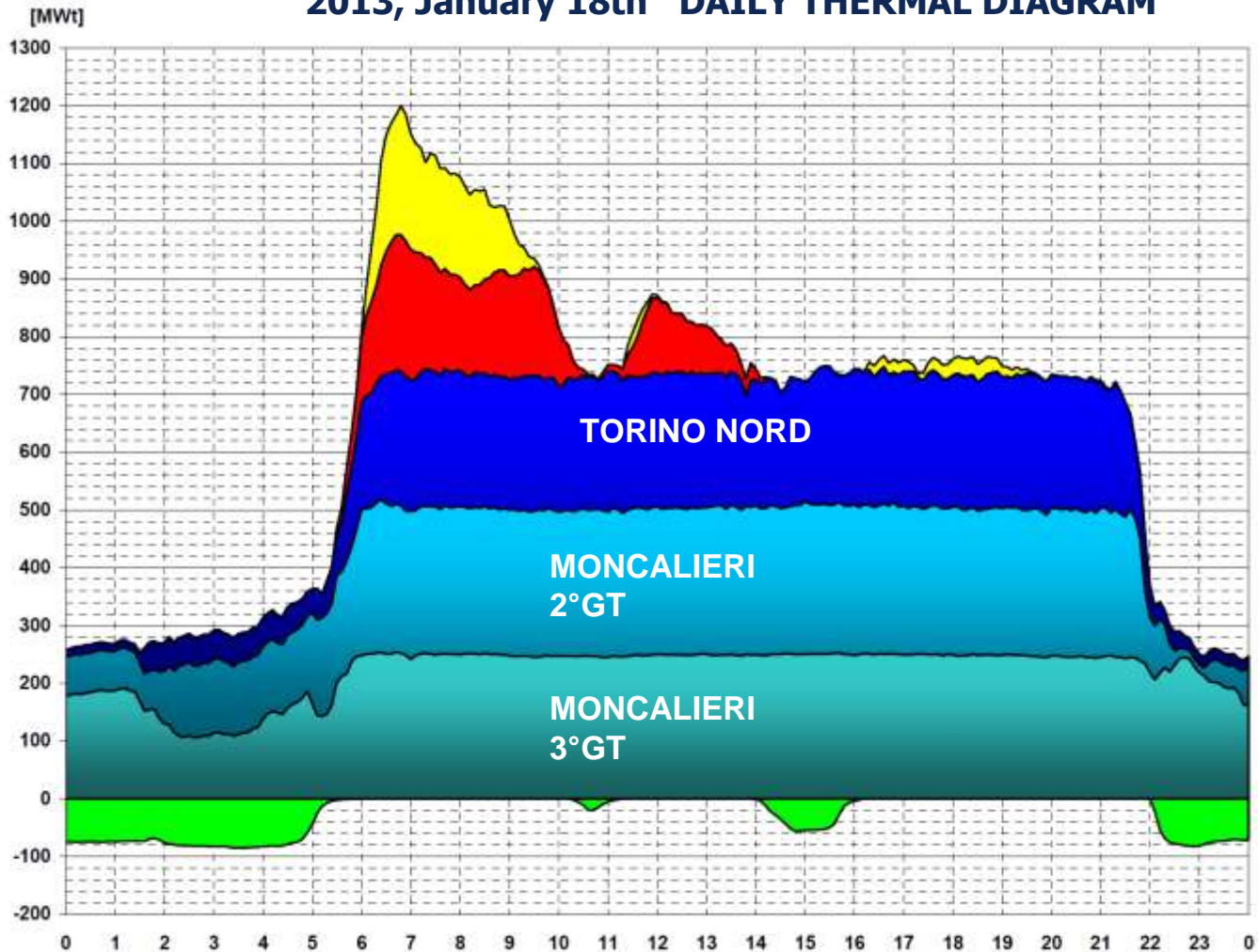
**Energy
efficiency**

Users:

Comfort needs
Time spent at home
Scolastic level
Job occupancy

- Empowering on final user of DH (private customer)
 - By changing the routine related to the time of switch on and switch off
 - By accepting a lower level on indoor temperature
 - By setting in an appropriate way the indoor thermal comfort (correct set of the single valves installed on the radiators)
 - By a proper information on the energy savings (money where possible and reduction of GHG)
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2013, January 18th DAILY THERMAL DIAGRAM



COGENERATION

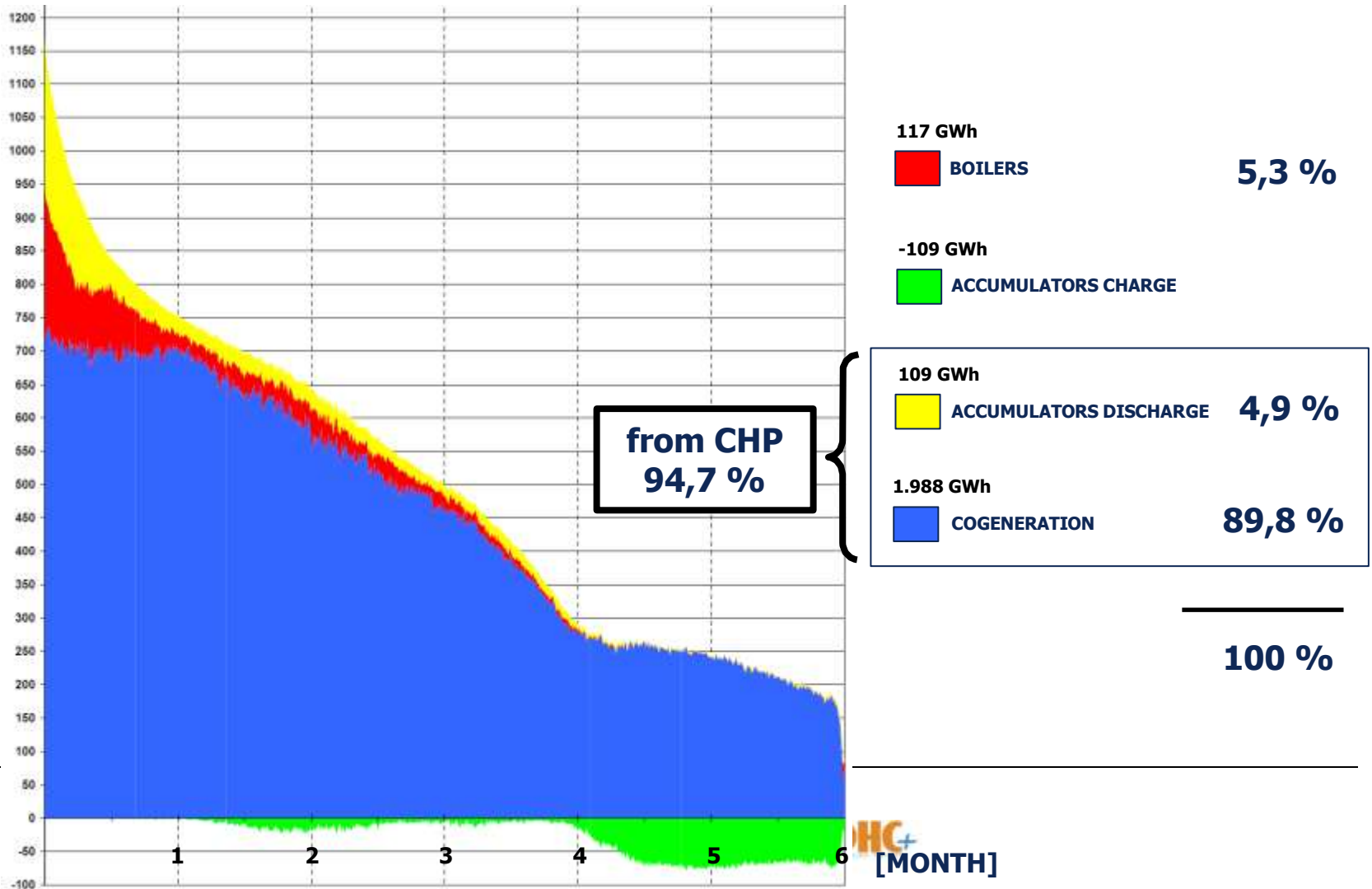
BOILERS

ACCUMULATORS DISCHARGE

ACCUMULATORS CHARGE

[MW]

THERMAL SEASON 2012/2013 (Oct15th-Apr15th)



Torino DH Heat Producers

	CHP	OHB	STORAGE
MONCALIERI	520 MWt	140 MWt	-
BIT	-	255 MWt	-
POLITECNICO	-	255 MWt	2.500 m ³
MIRAFIORI NORD	-	35 MWt	-
TORINO NORD	240 MWt	340 MWt	5.000 m ³
MARTINETTO (from oct-13)	-	-	5.000 m ³
TOTAL	760 MWt	1.025 MWt	12.500 m³



Project partners



POLITECNICO
DI TORINO



LINZ AG