



Urban Energy Management Concepts and implementation:  
Experience from Italian POLYCITY project

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## What i-CEMS was designed for?



- Energy flows and plants status Monitoring



- Long term production Scheduling



- Real time production Tuning

# Energy flows and plants status Monitoring



One of the tasks of the I-CEMS is to act as an interface capable of providing energy flows and plants status monitoring.

Main quantities measured are:

- **power production** (from CHP and PV);
- **power consumption** (within Arquata district);
- **power consumed** from/delivered to **the main power grid**;
- **heat/cool production** (from CHP, Boilers and ABS cycle);
- **heat/cool consumption**
- **subsystems operating status**

**260** monitored points - **10** electrical meters - **25** PV inverter - **35.000** daily data  
Implemented on **10** buildings (150 dwellings and 500 inhabitants)

These information are both available at a desired time resolution (every 15 min) for **real time operation** and **stored** for future usage and **analysis**.



# Long term production Scheduling



Long term production scheduling is based on inputs such as :

- forecasted loads
- pollutant emissions
- weather data
- energy prices

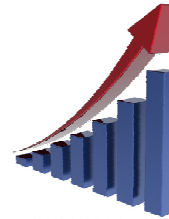


Plant Settings



- Historical consumption data
- Historical weather data

# Real time production Tuning



This function acts in **real time** during plants operation



## Plant Settings

From long term  
production scheduling



Real Time  
Algorithms



## New Plant Settings

More accurate  
well suited for actual  
conditions

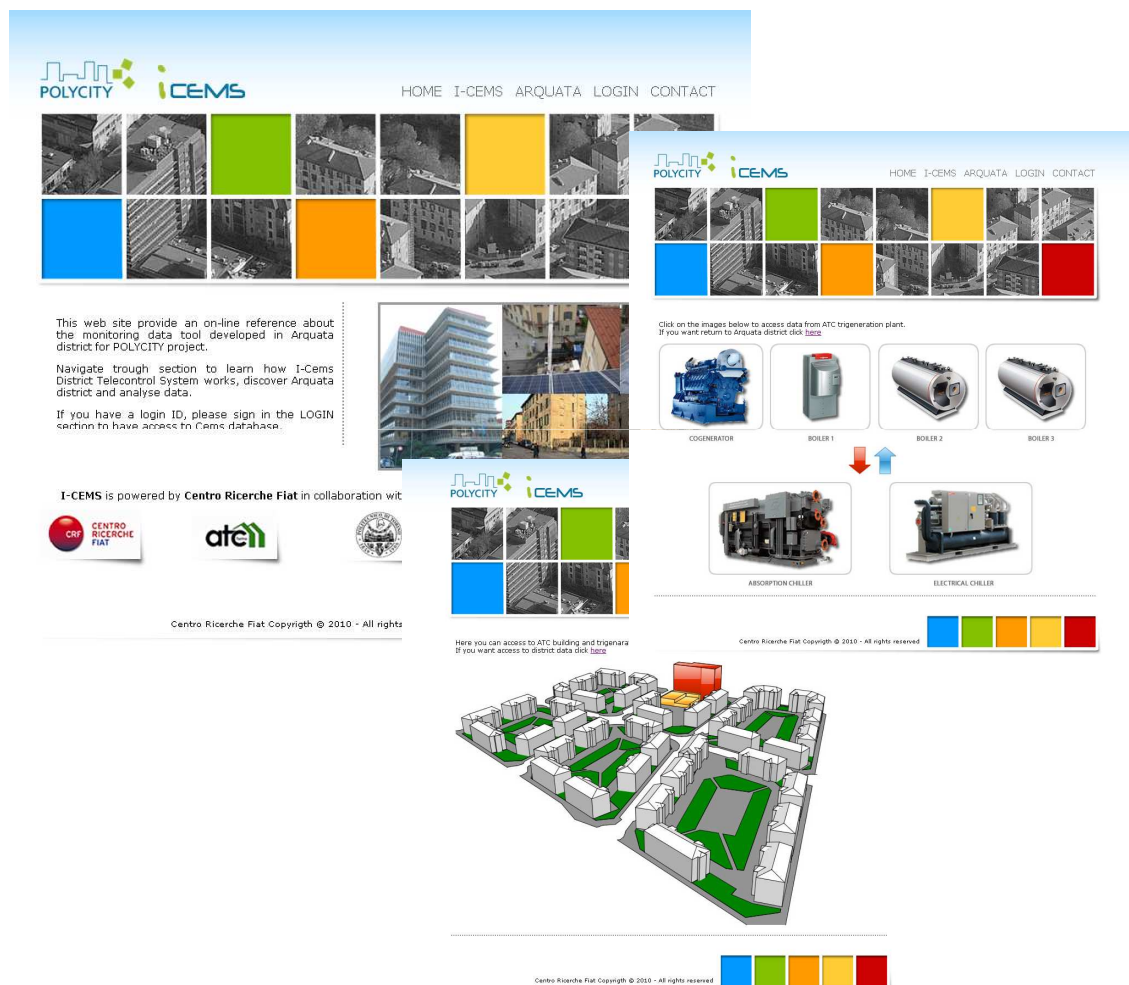


- **Real time consumption data**
- **Short-time loads forecast**
- **Real time weather data**

## How the i-CEMS was implemented?

- Integration of new architecture on existing Building Management System (ATC building)
- Installation of new meters in Arquata district
- The system convey all data to a Data Monitor and Collector (DMC)
- Trough a Web service data are available on remote computers

# The i-CEMS public web-site?



## I-CEMS WEB SITE FEATURES

### HOME PAGE

- Description of POLYCITY project
- Partners of the Project

### I-CEMS

- System description and functionalities

### DISCOVER ARQUATA

- Arquata history
- 3 D interactive view
- Access to basic and advanced monitored output (user permissions based)
- District FV and plans description
- ATC plans description

### I-CEMS DATABASE

- Access to monitoring system
- Data analysis and download
- Permissions based access



## Demo

