37th Euroheat & Power Congress
27-28 April 2015, Tallinn, Estonia

Making Genoa Smarter with District Energy

The CELSIUS EU Project
Gloria Piaggio, City of Genoa
600,000 people
243 km²
Causing killer floods from hidden rivers and difficult mobility.
Port & Sea

moving Goods & People

Limit growth

Pleasure & leisure

Sea energy
Chronical de-industrialization

Unemployment and Brain Drain
Ancient Town

Beautiful Palaces

complex Safety & Security
Raised awareness on environmental topics led Genoa to enter the Covenant of Mayors. But we soon realized a Smart City goes beyond just energy.
Starting from data and knowledge, develop a Transformation Agenda, a decision support tool and a Transform City Handbook.

Amsterdam
Copenhagen
Hamburg
Lyon
Vienna
Genoa

734,000€

Accenture
Enel Distribuzione
ERDF
Hamburg Energie
Hespul
HOFOR
OVE Arup
Siemens

http://urbantransform.eu
District renovation projects for achieving nearly zero energy cities retrofitting existing buildings

- Genova
- Kartal
- Valladolid

- Acciona
- ABB
- D’Appolonia
- Ezinc
- Onyx
- Steinbeis
- Viva
- Youris

2,486,000€

Cartif
Genoa University
Istanbul University

http://r2cities.eu
Smart district heating and cooling, capturing wasted energy generated within cities every day

2.425.000€

Göteborg
Cologne
Genova
London
Rotterdam

http://www.celsiuscity.eu

D’Appolonia
Genova Reti Gas
Göteborg Energi
IMCG Sweden
N.V. Nuon Energy
RheinEnergie
UK Power Networks
Warmtebedrijf Infra

Fachhochschule Köln
Imperial College London
London School of Economics
SP
The Interactive Institute
Technische Universiteit Delft
Università di Genova
There is enough waste heat produced in the EU to heat its entire building stock…

...there is just no distribution network available to transport it from where it is produced to where it is needed and can be used.
Demonstrators

Gothenburg
DH to STENA ferry
DH white goods
Short-term weather forecast linked storage in buildings

Cologne
DH schools from sewage

Genoa
100%

Long Island
Integrated
DH from underground waste heat
Thermal storage
Extension of Bunhill “Seed” heat network

Genoa
Turbo exporsor recovering energy in pressure leap from gas-duct to network

Rotterdam
Heat storage, heat hub
Industrial ecology – increased energy efficiency, IT solutions
D6.1 Regulatory frameworks affecting District Heating and Cooling: a Review and Analysis
Barriers

- Cost of infrastructure?
- Good weather = long payback period
- Business case for energy companies?
- Pulverized ownership
- Single boilers
- Old Lady in the Fifth floor
Replication
50 Celsius Cities
Support to new CELSIUS Cities

- Technical toolbox
- Road map
- Social toolbox
- Demonstrators

Celsius toolbox

Celsius City
Social Toolbox

- Business models
- Stakeholder acceptance
CELSIUS Technical Toolbox

Technical Toolbox
upscaling technologies and concepts

- End user demands
- Peak shaving and storage
- System temperature levels
- Waste heat and free cooling
- ICT and smart control
- Efficiency and sustainability
CELSIUS Roadmap

building blocks to become a CELSIUS city

- ICT and control systems
- Smart DH/DC grids
- Heat storage
- Waste heat utilization
- Economic evaluation
- DH planning
- Macro economic rational for DH/DC
CELSIUS Demonstrators

Demonstrators
Replicable examples

- System integration
- Sustainable production
- Storage
- End-user
- Infrastructure
New CELSIUS Cities

WE WANT YOU!

1. Early communication
   - engaging with potential CELSIUS Cities

2. Status of the city
   - fill out New CELSIUS city questionnaire

3. Support need identification
   - discussion between project and city

4. Letter of Commitment
   - the city commits to become a CELSIUS City

5. Offerings
   - demonstrators, toolboxes, workshops and expert group
Thank You