



Consorci Urbanístic  
del Centre Direccional de  
Cerdanyola del Vallès

## THE CATALAN POLYCITY PROJECT

### EFFICIENT ENERGY SUPPLY SYSTEM CENTRE DIRECCIONAL DE CERDANYOLA DEL VALLES

POLYCITY Workshop on Biomass in Urban Communities – Gdansk - 26/10/06



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## THE CATALAN POLYCITY PROJECT CENTRE DIRECCIONAL DE CERDANYOLA THE PARTNERS

Nowadays the partners involved are:

- **DMAH** – Environment Department of the Generalitat de Catalunya.
- **ConsCd** - Consorci Urbanístic del Centre Direccional de Cerdanyola del Vallès.
- **CREVER/URV**- University Rovira i Virgili of Tarragona.
- **IC** – Institut Cerdà.

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- **ConsCd** is a public agency formed by the municipality of Cerdanyola del Vallès and the INCASOL (Catalan Institute for the Land). ConsCd is in charge of executing the development of the Urban Plan the Centre Direccional de Cerdanyola.  
In the Polycity project is one of the main investors with 1.813.000€ as a contribution.
- **DMAH** is the department of the local government of Catalonia, in charge of executing environmental policies and plans.  
In the Polycity project is the other of the main investors with 1.152.000€ as a contribution.

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- **CREVER/URV** is the Center of Technological Innovation on Heat Pumping and Refrigeration, and is part of the University Rovira I Virgili of Tarragona.  
In the Polycity project it is the research and scientific partner.
- **IC** – Institut Cerdà is an independent and non-profit making private foundation.  
In the Polycity project works in tasks related to the demand site, and will be involved in the development of the performance assessment, in the socio-economic analysis and in training activities

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## THE URBAN PLAN

- Total urban plan area: 3.400.000m<sup>2</sup>
- Green areas: 1.652.000m<sup>2</sup>
- Public equipment: 185.000m<sup>2</sup>
- Scientific and Technological Park: 1.459.000m<sup>2</sup>builted  
SYNCHROTRON
- Houses: 430.000m<sup>2</sup>builted
  - Public housing: 1.300Ut
  - Private housing: 2.100Ut

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## ENERGY DEMAND

<b>Synchrotron</b>	Electric	44.600MWh/year
	Heating	3.800MWh/year
	Cooling	30.200MWh/year
<b>Scientific and technologic park - first phase</b>	Electric	40.400MWh/year
	Heating	25.200MWh/year
	Cooling	42.800MWh/year
<b>Scientific and technologic park - final demand</b>	Electric	203.400MWh/year
	Heating	90.200MWh/year
	Cooling	167.800MWh/year

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## EFFICIENT ENERGY SUPPLY SYSTEM SCOPE OF THE PROJECT

- Four cogeneration heat and electrical power plants.  
Thermal cooling production.  
Primary energy natural gas.
- |             |                     |         |
|-------------|---------------------|---------|
| Plant ST 02 | Electrical power    | 11,00MW |
|             | Absorption capacity | 7,00MW  |
| Plant ST 03 | Electrical power    | 11,00MW |
|             | Absorption capacity | 8,00MW  |
| Plant ST 04 | Electrical power    | 16,00MW |
|             | Absorption capacity | 12,00MW |
| Plant ST 05 | Electrical power    | 8,00MW  |
|             | Absorption capacity | 5,00MW  |

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## EFFICIENT ENERGY SUPPLY SYSTEM SCOPE OF THE PROJECT

- District heating and cooling network to distribute heat and cold to the Parc de la Ciència i Tecnologia buildings, commercial areas and social equipments .  
Residencial buildings are not integrated in the DHC network because the local climatologic conditions and the profile of the energetic demand, did not justified the economical investment.
- Electrical, cooling and heating supply to the Synchrotron.
- Integration of the renewable energy sources in the electric and thermal generation system.
- Storage system for cooling and heating, used to balance the demand peaks.
- Advanced control, monitoring and management system of the energy supply with integration functions of the supply and demand.

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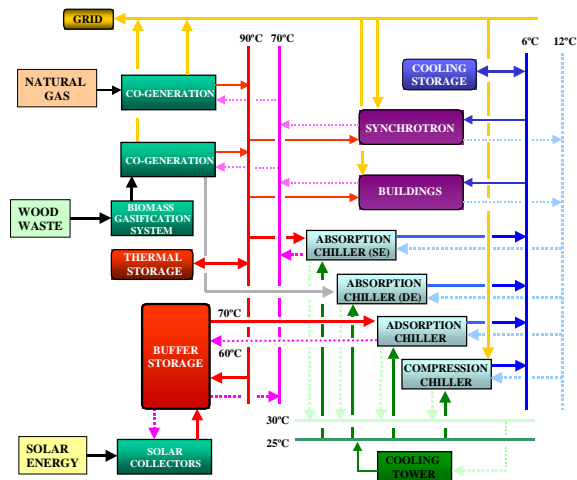


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## DIAGRAM OF THE ENERGY SUPPLY SYSTEM





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## IMPLEMENTATION STRATEGY OF THE PROJECT

- To establish a Company participated by private technological and investment partner and by public partners, the Consorci del Centre Direccional de Cerdanyola and the Consorci Cells responsible for the construction and operation of the Synchrotron.
- The Company will be responsible for the engineering and implementation and also for the management and operation of the energy supply system.
- The technological and investment partner will be selected by a public tender.
- The participants must present their own technological solution and a business plan.

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## IMPLEMENTATION STRATEGY OF THE PROJECT

- The selected technological solution will be developed in the detailed engineering and approved by the Consorci del Centre Direccional.
- The scope of the tender is the total energy supply system for the whole Urban Plan, but the implementation will be developed in several phases.
- In the first phase will be developed the ST 04 cogeneration plant and the associated DHC network.
- The call for tenders was published in the early August, and the deadline to present proposals was 31th October 2006.
- Last week the deadline to present proposals has been delayed up to 27th November 2006, as requested by some bidders.

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## PLANNIG

- Deadline to present proposals 2006 November
- Tender award 2007 February
- Detailed engineering approval 2007 July
- Plant ST 04 ready to work 2009 January
- Synchrotron DHC network ready to work 2009 January
- Buildings DHC network ready to work 2009 November
- The implementation of the other plants and associated DHC networks depends of the urban development advance.

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## STATE OF THE ART ON POLYCITY IMPLEMENTATION ACTIONS

- In WP.DE2B the technical and economical feasibility of a biomass gasification plant is being analyzed.  
The raw material used as fuel is wood waste from furniture industry.
- According to the first results of the feasibility study, it is considered suitable to implement 1 MWe biomass gasification plant.
- In WP.DE2 solar collector technologies and solar cooling alternatives were analyzed by CREVER.

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- The results of this analysis suggest that the best option is a system formed by a selective FPC collectors field and an adsorption chiller working at 65°C as operation temperature.
- This demonstration actions have being incorporated in the technical requirements for the call for tenders, as renewable energies contribution.
- The acceptance of this actions and its inclusion in the proposal by the bidders will confirm the real economic feasibility.
- Alternative actions can be proposed if there are some not feasible actions.
- According to Centre Direccional Urban Plan planning, the Polycity actions will be implemented in the first phase, integrated in the ST04 plant and the associated

DHC network. Workshop on Biomass in Urban Communities – Gdansk - 26/10/06



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- Experiences obtained from Polycity results in this first phase, will be replicated in the following phases of the Urban Plan, so that the final expected results will be higher than the estimated in the Polycity period.

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**THANK YOU VERY MUCH**

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