

Potential feasibility studies for integration of solar thermal system in Spanish DH networks

Task 45

Barcelona, 4th-8th April 2011

Energy thinking days

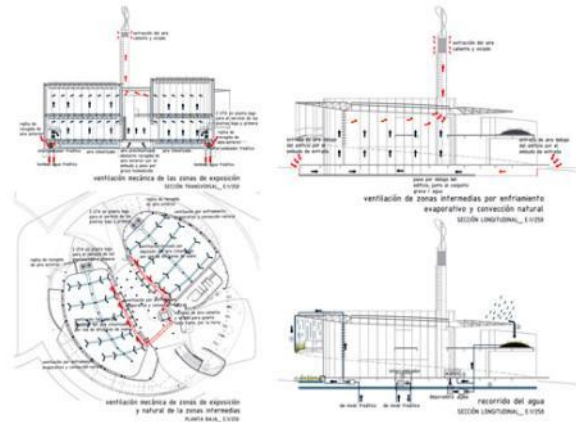
 Spring networking in barcelona

www.aiguasol.coop

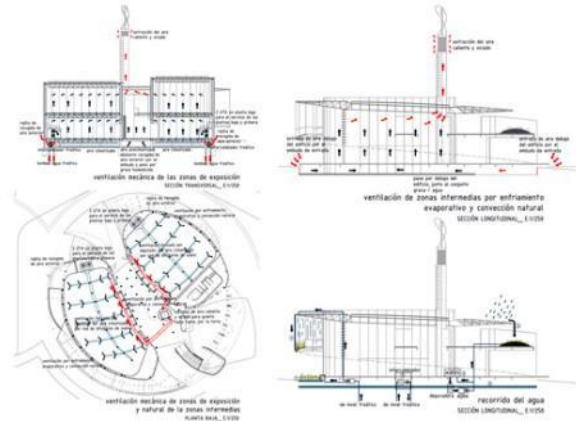
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Presentation



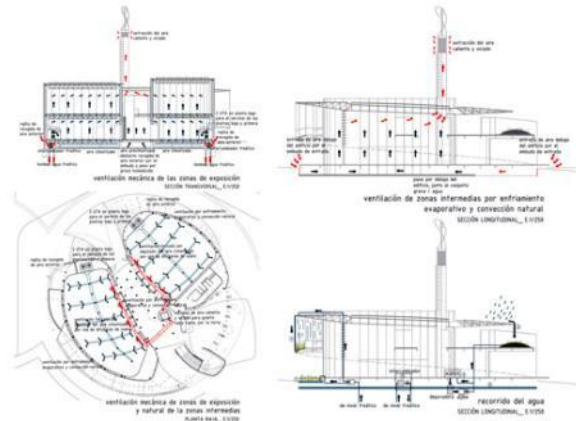
- Aiguasol was founded in 1.999 by two Doctors developing research in the Polytechnic University of Catalonia, Jaume Salom and Hans Schweiger.
- Today 17 persons integrate Aiguasol
- Aiguasol offers independent engineering services, consultancy and research, promoting innovative solutions to allow reduce the impact of energy consumption, since its foundation.
- Working mostly in Spain, but carrying out projects also in Portugal and Central America.



■ Our activity focuses in 4 branches:

- **Buildings (energy efficiency)**
- **Industry (Process optimization)**
- **Power Generation**
- **Software**
 - *Development (TRANSOL)*
 - *Customization (TRANSOL)*
 - *Distribution (TRNSYS)*

- **Research tasks in Aiguasol account for 30% of its turnover, mainly European projects and participation in International Energy Agency Tasks.**



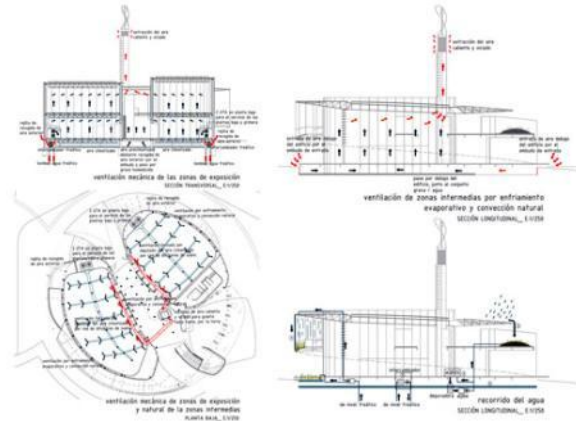
Aiguasol has been participating in several European Projects or IEA Tasks:

- **ROCOCO:** costs reduction in Solar Air Conditioning systems ('06-'08)
- **SOLAIR:** Solar Air Conditioning for small residential and tertiary applications ('07-'09)
- **HIGH-COMBI:** High solar fraction for air conditioning systems ('07-'10)
- **SAHC:** Solar Heating and Cooling process promotion in Industry ('07-'10)
- **Synergies SHC-IEA – Solar Air Conditioning**
 - **TASK 38** Solar Air-Conditioning and Refrigeration
 - **TASK 33** Solar heat for industrial processes
- **Ecoheat4EU:** District Heating and Cooling ('09-'11)
- **ST-ESCOs**

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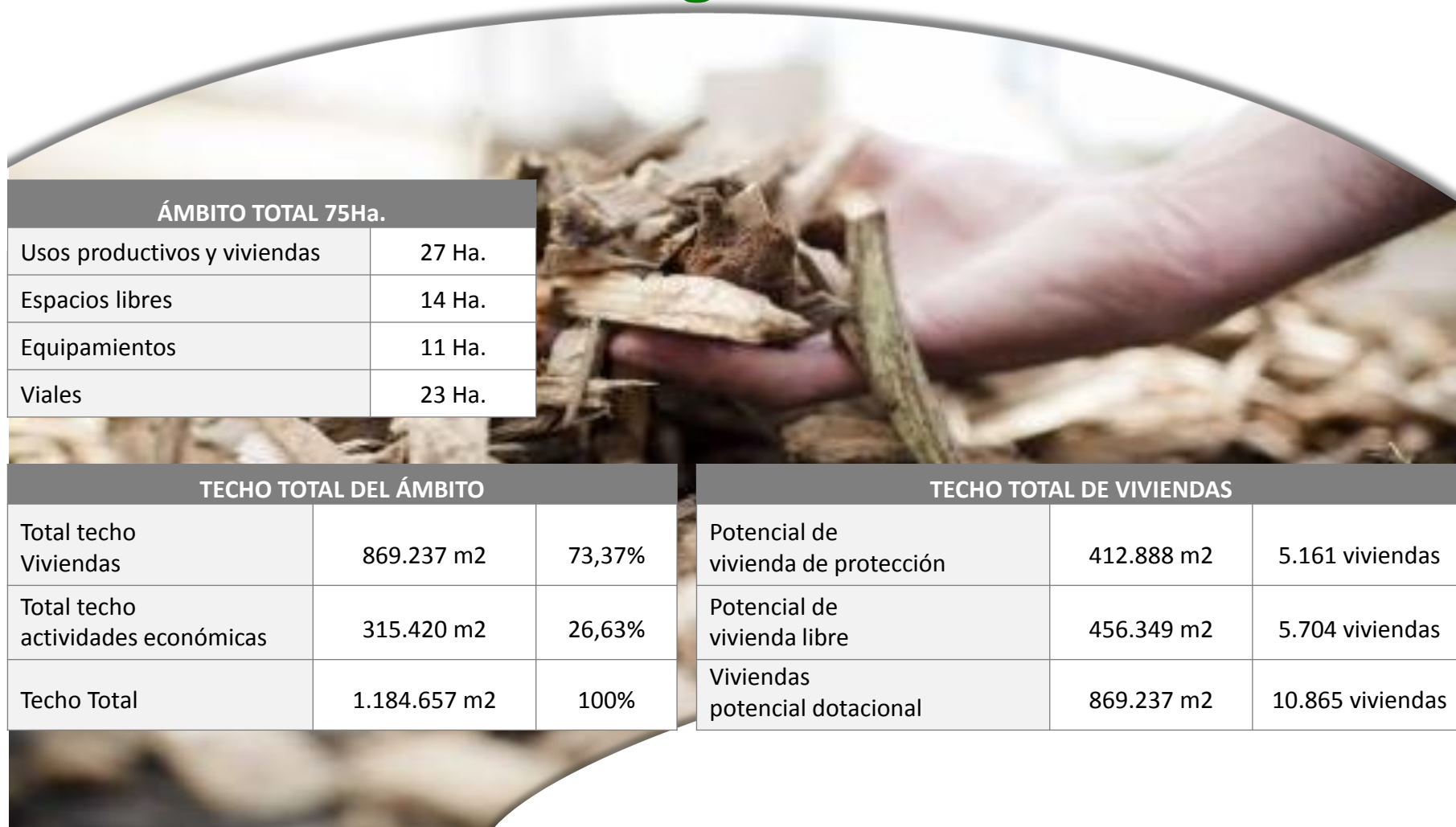
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Projects with potential input to Task 45

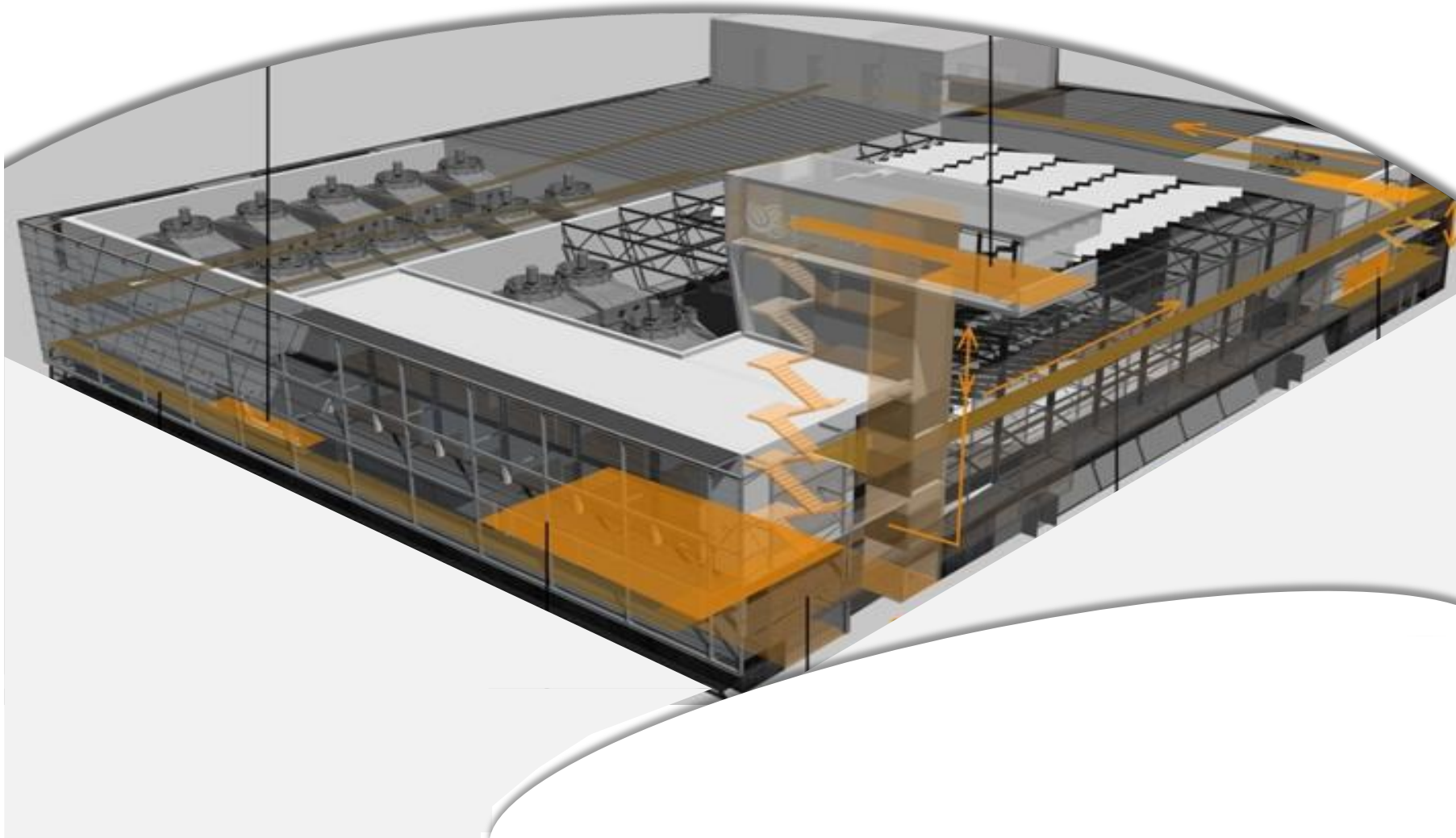


- Basically, after contact with Ambiente Italia, in the framework of Sunstore4, in which some of the present members of Task 45 are, Aguasol is evaluating the possibility to analyse the feasibility of integration of solar thermal systems into two district systems:
 - La Marina : district heating network in the area of the harbour in Barcelona, based on a biomass system feeding a water turbine, and conventional cooling systems (with regasification)
 - DUCH – Extension of La Castellana, the biggest real state investment in the following years in Spain (3.3 Mm2), from 2014 to 2030.

Ecoenergías(Dalkia) DHC network – Key figures



Ecoenergies(Dalkia) DHC network – Technical room



Ecoenergies(Dalkia) DHC network – Key figures

● POWER IN THE TECHNICAL ROOM

→ Conventional cooling: 35 MW

→ Residual cooling: 30 MW

→ Ice storage: 320 MWh

→ Negative cold: 12 MW

→ Conventional heating: 60 MW

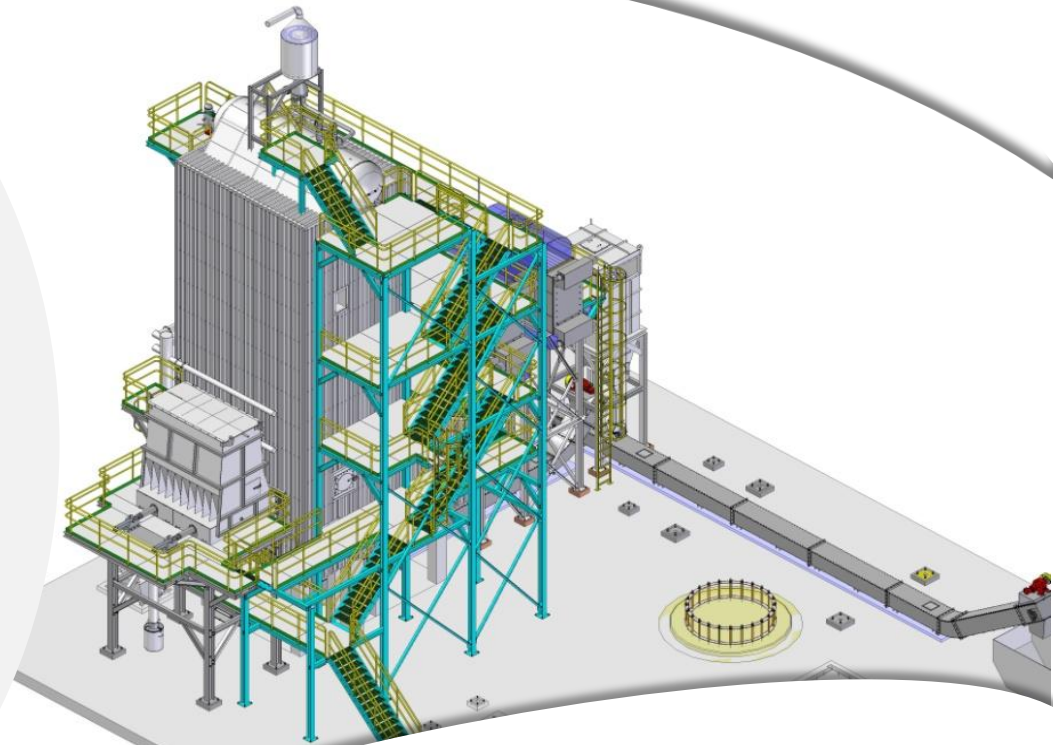
→ Heat from biomass: 10 MW

● FUEL : Biomass, gas and electricity

● GENERATION: With a steam turbine, 2 MW will be generated.



Ecoenergies(Dalkia) DHC network



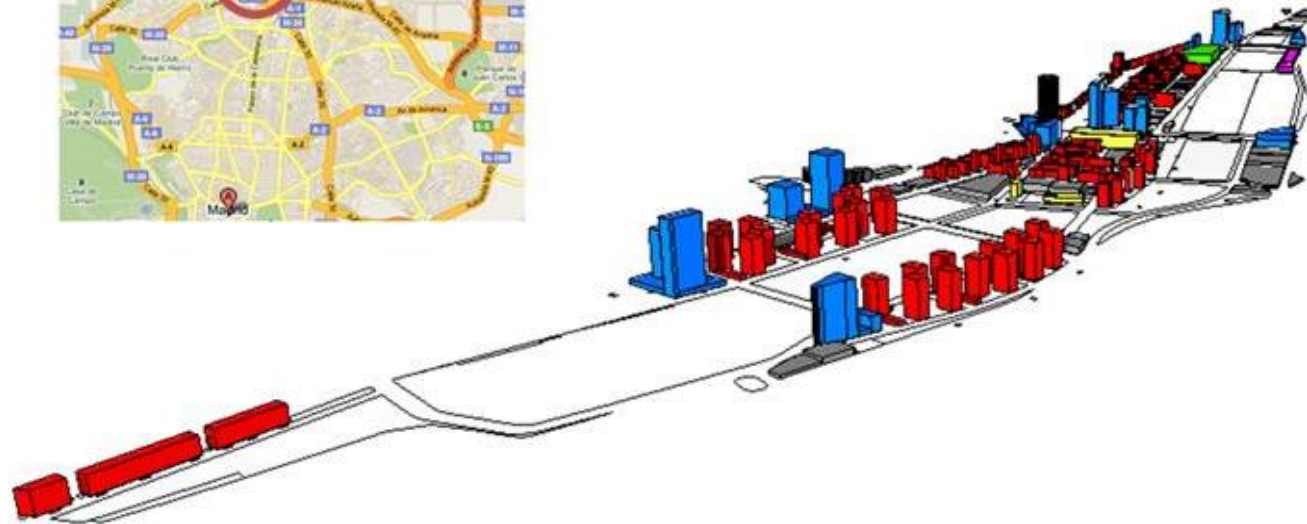
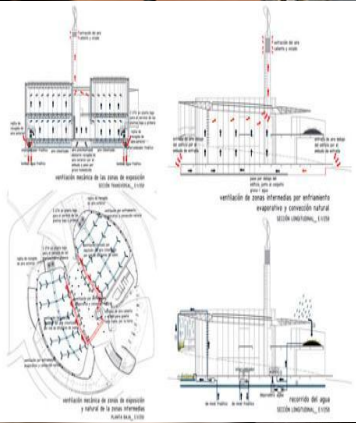
- Currently, biomass from the council of Barcelona gardening team will be used.

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DHC Chamartin network

- The present project, placed in the North of Madrid, will be the biggest real state development in the next years in Europe. It will take place between 2014 and 2030.



Blue : offices. Red: residential. Green and yellow: schools, libraries and social uses

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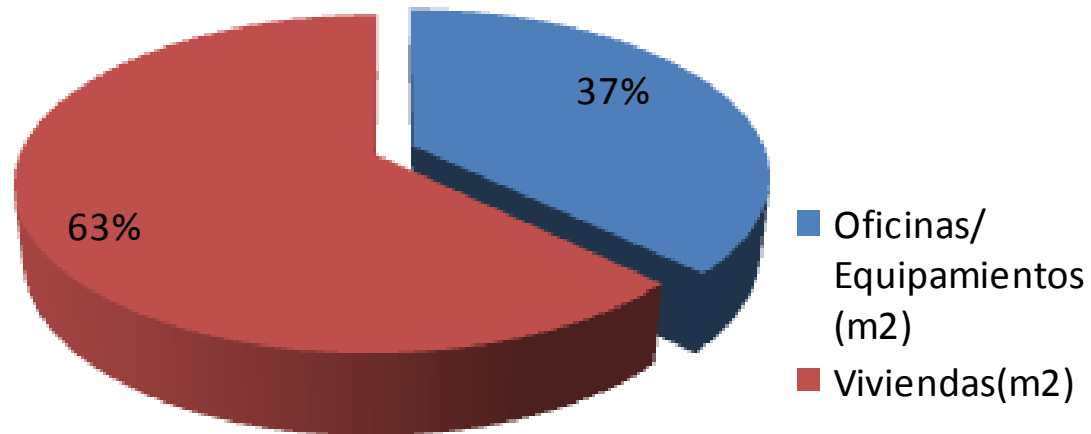
DHC Chamartin network

	Período de ejecución	Superficie edificable	Número de edificios
Fase 1A	2013-2015	415,848.00	25
Fase 1B	2015-2018	791,136.00	23
Fase 2	2017-2020	1,185,906.00	54
Fase 3	2019-2022	512,064.00	44
Fase 4	2025-2030	398,434.00	27
TOTAL		3,303,388.00	173



DHC Chamartin network

Superfície construida



Thanks for your attention !!!

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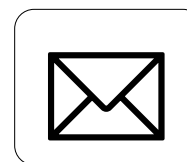


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