“A consolidated DHC”
A smart solution for a sustainable environment
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Geographical location
A little history: the rise to the opportunity

1860-1960: “Catalonian Manchester”
A little history: the rise to the opportunity

1960-1986: crisis and degradation
A little history: the rise to the opportunity

1986-1992: recovery of the coast and infrastructure development
A little history: the rise to the opportunity

1996-1999: Diagonal Avenue opens to the sea

April 1995

June 1999
A little history: the rise to the opportunity

Cities must evolve and transform themselves to be alive. Reasons that have to look for opportunities.

In the case of Barcelona, the first catalyst of change was the celebration of the Barcelona'92 Olympic Games, which allowed to undertake a thorough urban transformation of the coastline.

The second opportunity came with the celebration of the Forum of Cultures 2004, a controversial event but which allowed to transform the east of the city.

With the 22@ project a long-term urban, economic and social transformation of more than 200 Ha is undertaken, attracting “20th century industries” that should replace the old factories of the 19th century.
Fòrum / 22@ DHC Network
Main figures of the project

Districlima, S.A. develops since 2004 the heating and cooling urban distribution network in Barcelona, in the Forum and 22@ districts. Districlima has one production plant in the Forum area - that uses steam coming from a urban waste to energy plant and refrigerates the equipments with sea water- and a second production plant in the 22@ district.

The **key figures** currently are:

- **Number of clients**: 109
- **Climatized roof surface (m²)**: \(\approx 1,100,000\)
- **Contracted heating power (MW)**: 74
- **Contracted cooling power (MW)**: 107
- **Network (km)**: 19,5
- **Installed cooling power (MW)**: \(45,4 + 40\) MWh water storage tank + 120 MWh ice storage tank
- **Installed heating power (MW)**: 46,8
- **Total investments (M€)**: 67
- **CO₂ emission savings (Tn)**: 22,965
- **Fossil fuel consumption reduction**: ↓ 73%

*As off December 2018*
Fòrum / 22@ DHC Network
The power distribution network

Distribution Network buried in the Public Thoroughfare

Distribution Network in a service gallery
The Plant has the following equipment:

**Cooling production:**
- 2 absorption equipments - Broad - of 4.5 MW each one
- 1 cold water storage tank of 5,000 m³ (5,000,000 liters)
- 2 electric chillers - Mc Quay - of 4 MW each one
- 2 electric chillers - Johnson Controls - of 7 MW each one

**Refrigeration system:**
- 3 exchangers of seawater / cooling water, machines of 12.5 MW each
- 1 seawater collection station of 5,000 m³/h

**Heat production:**
- 4 steam / water exchangers of 5 MW each one
- 1 gas boiler of 20 MW (backup)
Fòrum / 22@ DHC Network

Fòrum Plant
Initially conceived as a peak plant, its goal is to guarantee the energy supply in periods of high demand or in case of any contingency.

It has an advanced ice storage system that allows producing energy in periods of low demand and store it until it’s needed, in periods of higher demand.

The combustion gas from the boilers is exhausted by the historical chimney of the ancient textile factory “Ca l’Aranyó” (1872).

The start up took place in April 2012 and, in a first phase, it has the following equipment:

**Production of cold:**

- 1 compression chiller of 6.7 MW - production of glycoled water
- 1 compression chiller of 6.7 MW - production of glycoled water

**Production of heat:**

- 2 gas boilers of 13.4 MW each one - production of hot water

In a second phase the following additional equipment will be installed:

**Production of cold:**

- 1 compression chiller of 6.7 MW - production of glycoled water
- 1 compression chiller of 6.7 MW - production of cold water

**Production of heat:**

- 1 natural gas boiler of 13.4 MW - production of hot water
Fòrum / 22@ DHC Network
Tanger Plant
Fòrum / 22@ DHC Network
Over 100 large buildings connected

- Education Centers
  - UPF
- Malls
  - C.C. Glòries
- Hotels
  - Diagonal Zero
- Hospitals
  - Centre Forum
- Residential
  - Regesa
- Convention Centers
  - CCIB
Fòrum / 22@ DHC Network
Over 100 large buildings connected

- Hotels
  - Diagonal 197
- Business Park
  - Metrovacesa 22@
- Offices
  - Media-Tic
- T.V. Production
  - Mediacomplex
- Hotels
  - Hotel AC
- Student’s hostel
  - Melon District
Fòrum / 22@ DHC Network
More future than past
Fòrum / 22@ DHC Network
More future than past

2016 new Concession: Hospital del Mar

Contracted power:
- Phase 1: 6,4 MW\textsubscript{c} / 6 MW\textsubscript{h}
- Phases 2+3: ~ 12 MW\textsubscript{c} / ~ 12 MW\textsubscript{h}

Estimated annual consumption:
- Phase 1: 14,2 GWh\textsubscript{c} / 9 GWh\textsubscript{h}
- Phases 2+3: 26,6 GWh\textsubscript{c} / 18,1 GWh\textsubscript{h}
- Network extension: 1.820 m
Fòrum / 22@ DHC Network
A growing project


COOLING POWER: 0 MW
HEATING POWER: 0 MW
BUILDINGS: 0
KM NETWORK: 3,3

CLIENTS IN SERVICE
- HOTELS
- OFFICES
- HOUSING
- BUSINESS
- EDUCATION CENTRES
- OTHERS
Fòrum / 22@ DHC Network

A growing project

- Cooling Power: 19.2 MW
- Heating Power: 13.4 MW
- Buildings: 10
- Km Network: 4.4

Clients in Service:
- Hotels
- Offices
- Housing
- Business
- Education Centres
- Others

Years:
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
Fòrum / 22@ DHC Network
A growing project

COOLING POWER: 19,2 MW
HEATING POWER : 13,4 MW
BUILDINGS: 11
KM NETWORK: 4,7
Fòrum / 22@ DHC Network

A growing project

Cooling power: 26.1 MW
Heating power: 16.9 MW
Buildings: 21
KM network: 6.7

Fòrum / 22@ DHC Network

A growing project

COOLING POWER: 26,9 MW
HEATING POWER: 18,9 MW
BUILDINGS: 23
KM NETWORK: 8,9
Fòrum / 22@ DHC Network
A growing project

COOLING POWER: 45 MW
HEATING POWER: 28.7 MW
BUILDINGS: 37
KM NETWORK: 10.8
Fòrum / 22@ DHC Network

A growing project

Cooling Power: 57.6 MW
Heating Power: 37.2 MW
Buildings: 50
KM Network: 12

Clients in service:
- Hotels
- Offices
- Housing
- Business
- Education Centres
- Others

Years:
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
A growing project

**Cooling Power:** 68.3 MW  
**Heating Power:** 44.5 MW  
**Buildings:** 59  
**KM Network:** 13.1

**Clients in Service:**
- Hotels
- Offices
- Housing
- Business
- Education Centres
- Others

Years:
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
Fòrum / 22@ DHC Network

A growing project

Cooling Power: 69.2 MW
Heating Power: 46.6 MW
Buildings: 67
KM Network: 13.4
Fòrum / 22@ DHC Network
A growing project


COOLING POWER: 73 MW
HEATING POWER: 51 MW
BUILDINGS: 78
KM NETWORK: 14.4

CLIENTS IN SERVICE
- HOTELS
- OFFICES
- HOUSING
- BUSINESS
- EDUCATION CENTRES
- OTHERS
Fòrum / 22@ DHC Network
A growing project

COOLING POWER: 74 MW
HEATING POWER: 52 MW
BUILDINGS: 81
KM NETWORK: 15
Fòrum / 22@ DHC Network
A growing project

Cooling power: 78 MW
Heating power: 55 MW
Buildings: 84
KM network: 15

Fòrum / 22@ DHC Network
A growing project


COOLING POWER: 79 MW
HEATING POWER: 54 MW
BUILDINGS: 89
KM NETWORK: 15,6
Fòrum / 22@ DHC Network
A growing project

COOLING POWER : 93 MW
HEATING POWER : 62 MW
BUILDINGS : 95
KM NETWORK : 16,8
Fòrum / 22@ DHC Network
A growing project

COOLING POWER: 104 MW
HEATING POWER: 74 MW
BUILDINGS: 102
KM NETWORK: 18.6

Fòrum / 22@ DHC Network
A growing project


COOLING POWER: 107 MW
HEATING POWER: 74 MW
BUILDINGS: 109
KM NETWORK: 19.5
The Forum & 22@ DHC Network
Committed to sustainability

2008

4,600 Tn CO₂
230,000 new planted trees

2009...
2010...
2011...
2012...
2013...
2014...
2015...
2016...
2017...

6.5 times the trees in Barcelona City
= CO₂ annual consumption of 2,700 families of 3 members

2018

20,965 Tn CO₂
1,014,000 new planted trees

= 5,000 planted trees
The Forum & 22@ DHC Network
Committed to sustainability

Conventional

Building energetic calibration
Indicator kgCO₂/m²

- Heating demand kWh/m²: 22.11 G
- Cooling demand kWh/m²: 59.17 D
- Heating emissions kg CO₂/m²: 23.93 G
- Cooling emissions kg CO₂/m²: 23.22 D
- ACS emissions kg CO₂/m²: 10.92 G
- Lightning emissions kg CO₂/m²: 34.43 C

G 22.11 kWh/m² Heating demand
D 59.17 kWh/m² Cooling demand
C 6.64 kg CO₂/m² Heating emissions
A 0.25 kg CO₂/m² Cooling emissions
A 0 kg CO₂/m² ACS emissions
C 34.43 kg CO₂/m² Lightning emissions

+ 4! + 3! + 6!!
More information:

www.redesurbanasclorofrio.com

www.districlima.com

& also in YouTube