

DANFOSS DISTRICT ENERGY



Bordeaux St Jean Belcier project.

I - About the project - ZAC Belcier in Bordeaux

The Bordeaux-Euratlantic project was launched in 2014 and aims to develop the Bordeaux metropolis around a European position.

This development involves an extension of the residential (1 million m²) and non-residential (1 million m²) housing stock over a total area of 738 hectares.

In addition, the Bordeaux-Euratlantic project combines a major development of railway infrastructure which will transform Bordeaux into a crossroads of south-west Europe, including the extension of the high-speed train line: Paris-Bordeaux (2h10), as well as the construction of the line Bordeaux-Bilbao (1h50).

- Owner: Bordeaux city / Euratlantique
- Contractor: Mixener
- Consultant: EGIS Toulouse
- Installer: IDEX

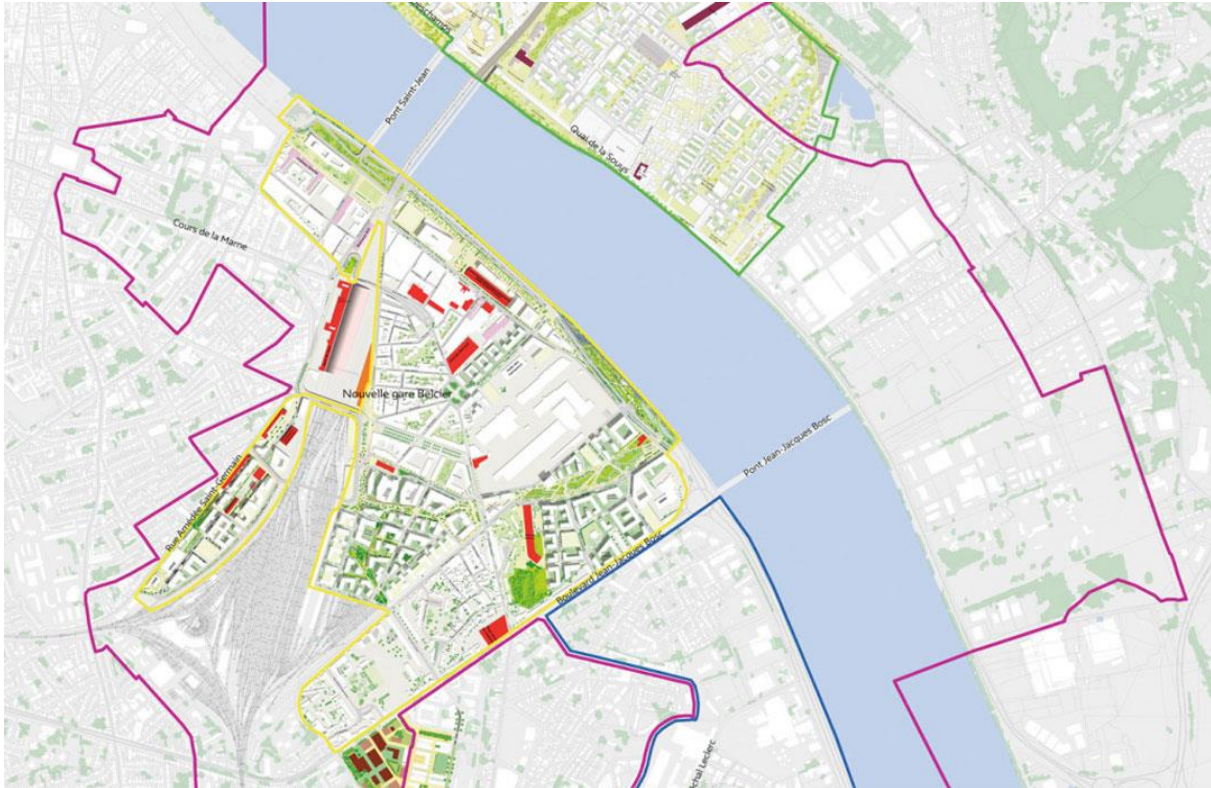
II- Bordeaux St Jean Belcier Presentation:



Bordeaux St Jean Belcier project is:

- A business center with a European vocation, a showcase for the tertiary sector in the heart of the metropolis.
- A cosmopolitan quarter of TGV station, place of exchanges, meetings and cultural, social and economic mixing.
- A cultural lung with the establishment of the “MECA”: home of the creative economy and culture in Aquitaine, close to the pole of higher artistic education, and the creation of a cluster around architecture.
- An attractive district, between structuring infrastructures of agglomeration and facilities of proximity, nature and leisure, and a new place of rendezvous with the river.
- A neighborhood inhabited by all with a diversified program of housing responding to new ways of living.

1 The project :



The team structured the urban project through a 3.6 km landscaped loop, called "the VIP". This soft mobility route structures the urban project and connects old and new districts, TGV station and business center, new housing and facilities, public squares and large landscaped spaces, from the park of the banks of the Garonne to the gardens of the Ars.

Program of the 145 ha of the ZAC:

740,000 m² of floor space:

- 296,000 m² of offices
- 296,000 m² of housing
- 74,000 m² of facilities (cultural, sports, school ...)
- 74,000 m² of hotels, shops and activities.

② The first operational phase:

It embodies the pluralistic spirit of Bordeaux Euratlantique by jointly developing the new station, the first headquarters, the creative and digital economy, culture and the great landscape, oeno-tourism, several housing programs, local amenities and a clinic.

Program Phase 1:

340,000 m² of diversified programs:

- 90,000 m² of office space, of which 50,000 m² is currently being assembled with identified users
- 4,000 m² of activities + 15,000 m² of hotels
- 105,000 m² of housing
- 10,000 m² of retail space + 20,000 m² of specialized residences
- 50,000 m² of equipment including 23,000 m² of health facilities and 12,000 m² for the MECA

③ Major infrastructures of the first phase in the service of mobility:

a- Emblematic equipment:



The MECA, the House of Creative Economy and Culture in Aquitaine, which will be built on the Paludate wharf in the immediate vicinity of the soon-transformed Debat Ponsan Hall, is already a remarkable architectural figure (BIG architect).

The project is carried out by the Regional Council of Aquitaine in partnership with the Regional Directorate of Cultural Affairs and will open its doors in 2016.

An identity, an envelope and a linear interior path for three autonomous institutions and a public esplanade that are linked together to form a "loop": FRAC (Preservation, Dissemination and Exhibition of its Collection of Contemporary Art), OARA Artistic Office of the Aquitaine Region) integrating a broadcasting room, ÉCLA (Writing, Cinema, Book, Audiovisual) and a vast public exhibition platform in direct connection with the public space of the quay and the park of the banks.

Its attractiveness will be reinforced by the presence of the higher artistic education center of the Sainte-Croix district and the future Digital City.

b- Accommodation for all and proximity facilities:

7,500 dwellings will be built in this first phase. They will be accompanied by the development of public and landscaped areas, a school group, a crèche, a leisure center and a swimming pool on the Paludate wharf. A clinic and a medical home will be located near the gardens of the Ars.

c- Offices, business services, hotels, shops:

In total, 90,000 m² of offices serving the tertiary sector and decision-making centers will be created between 2015 and 2020 in the Paludate, Armagnac, Amédée Saint-Germain and Brienne sectors. In the long term, 15,000 new employees will be welcomed in this territory.

III- Danfoss solutions proposed:

EGIS, office engineering in charge of the Euratlantic project, asked for an appointment to discuss the substation balancing solutions that Danfoss could offer in order to provide the right comfort to users.

Indeed, EGIS was interested in the quality of the independent pressure valves AV-QM and AF-QM that Danfoss offers.

Given the scope of the project, Frédéric Cherel Project Sales Danfoss, proposed to work differently. Thus, rather than mounting substations on the Bordeaux site, Danfoss proposed to deliver pre-assembled substations directly to the site.

The installation of these substations is carried out upstream in the Danfoss plant.

This ready-to-use substation option had not been considered initially because not known by EGIS.

Yet this "plug and play" solution is particularly efficient and economical.

Only one person is required for installation and commissioning, ie a total of ½ working day only.

The traditional option of mounting the in-situ substation would have required about 10 full-time days for a person.

Thus, Danfoss has brought real value selling.

Following this, EGIS has developed a complete specification including exchangers, valves, probes, control and all the other components necessary to realize a substation.

This new specification was submitted to the energy supplier: MIXENER.

This specification was then developed by Danfoss with the competences of its integrated office engineering and the project was then validated by EGIS and MIXENER.

Finally, the technical aspect was worked in partnership with the operator / installer, IDEX.

Another important criterion in the choice of Danfoss was the maintenance aspect.

Indeed, an exchanger becomes dirty and must be cleaned every 6 months, depending on the hardness of the water.

In order to clean them, it is necessary to detach and reassemble the joints of the heat exchangers. Danfoss heat exchangers, because of their design, are easy and quick to clean. Indeed, it is enough to de-clip and re-clip the plates.

On the other hand, the "Micro Plate™" technology was favored over the "Fish Bones" technology. Micro Plate™ advantages: 10% enhanced heat transfer | 35% lower pressure loss | Lower carbon footprint.

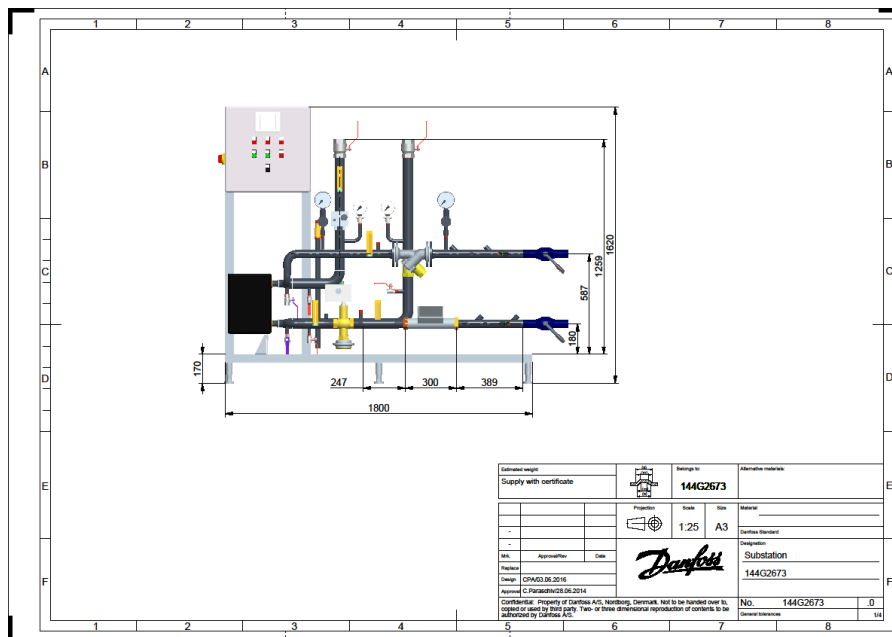
Another important criterion was the quality of the Danfoss actuators / motors as well as the independent valves: AV-QM and AF-QM.

Indeed, this technology makes it possible to realize between 15 and 20% of energy savings.

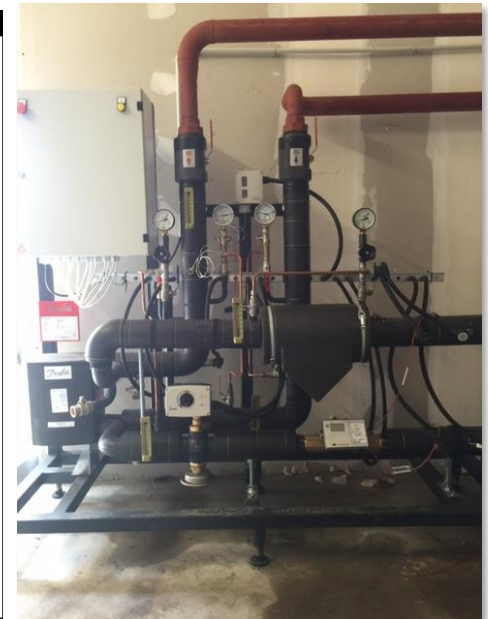
On the other hand, Danfoss offered the IDEX installer a support during the installation in order to control and adjust the valve setting.

Lastly, the Danfoss brand made it possible to reassure the BE Egis.

Indeed, Danfoss is recognized on the market for the quality, the reliability in time of its products It is these attributes that have enabled the brand to develop its notoriety.



Danfoss Substation plan



Danfoss Substation "ready to plug"

High performance and flexibility

Compared to traditional heat exchangers, Micro Plate™ technology delivers exceptional performance, efficiency and flexibility.

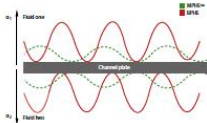
For the first time, you can now create a system individually suited to your network. By varying the number, size and placement of dimples, Micro Plates can be adapted for optimal heat transfer and minimal pressure drop – so you decide what's best for your district heating and cooling applications.

Micro Plate™ advantages:

10% enhanced heat transfer



By allowing water to flow more evenly, the Micro Plates™ make better use of their surface area to generate maximum turbulence to improve overall system efficiency. Between the fastest and slowest flowing areas, the difference is only x 3, as opposed to x 10 in older heat exchanger models, which distributes and mixes fluid better to maximise heat transfer.



35% lower pressure loss

The improved water flow also means pressure loss is kept to a minimum. With less energy required to pump water around the system, running costs are significantly reduced with less wear and tear on your network.

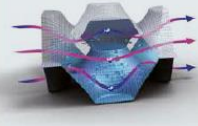


Lower carbon footprint

By increasing the system's efficiency, less energy is required for the same result. The application can therefore be housed in a more compact design with fewer plates, so construction materials are kept to a minimum. Better operational efficiency and a longer lifespan also help to reduce waste, all of which results in significant savings and a lower carbon footprint.



Micro Plate™ heat exchangers have a broad, flat brazing surface which adds stability to their construction.



Danfoss Micro Plate™ Heat Exchanger

Our dedicated engineering makes a difference

Easy-to-use setting handle with setting indicator

The easy-set mechanism integrated in the ergonomic controller's handle ensures intuitive and trouble-free commissioning of the heating/cooling network. Setting can be achieved without tools and the system can easily be adapted or recommissioned to suit different conditions at a later date. The integrated visible setting indicator and different spring colors clearly indicate setting and setting range.

One product. More functions. Multiple applications.

The perfect choice for efficient temperature control and automatic hydraulic balancing of the network using just one product. Multifunctional controllers are compact and perfectly suited for the demands of standard district heating systems. Besides pressure-independent control valves, which were invented by Danfoss, multifunctional self-acting controllers for pressure, flow and temperature control are available as compact all-in-one products.

Danfoss controllers: AHQM, AVQM, AFQM, AVPO, AFPO, V/Q, AVQT, AVQMT, AVQOT, IHPT



Danfoss independent valves: AV-QM and AF-QM