



# Heating and cooling of the tallest buildings in Europe

## Federation Complex Towers, Moscow, Russia

In fierce competition, Alfa Laval Russia was selected to supply the heating and cooling equipment serving the two giant towers within the newly erected multifunctional Federation Complex Towers in Moscow. As can be expected, the challenges were both multiple and special. The final agreement within this enterprise was closed in 2008 and concerned equipment and installation within the giant (284 metres high) East Tower. At that time, Alfa Laval had already supplied the equipment for the West Tower (242 metres).

### A new landmark in Moscow

The Federation Complex Towers are located within the business center Moscow City. The project was initiated by Mirax City, a subsidiary of the Mirax Group. The latter is one of the biggest and most dynamic developing companies in Russia.

The two towers are positioned close to each other and are connected by a built-in shaft (called "needle" by the architects) comprising the elevator system and stairways. The project includes one of the first examples of district cooling in Russia, since the cooling machinery is located in the West Tower. From there, both towers will be supplied.

### Fierce competition and specific challenges

The starting-point for the Alfa Laval involvement in the project was an open invitation on the Mirax website urging the world's leading engineering companies to participate in the construction of the Federation Complex Towers.



### Fast facts:

#### Customer:

*End-customer:* Mirax Group – one of the leading developing companies in Russia.

*Buying customer Tower West:* ARMO Group – Russian company, subcontractor for mechanical systems.

*Buying customer Tower East:* Busi Impianti S.p.A., famous Italian contraction company.

**The scene:** Federation Towers, a multi-functional center including offices, luxury residences, entertainment and sports in Moscow, Russia.

**The task:** Delivery and installation of heating & cooling equipment for The Federation Complex Towers, two of the highest edifices in Europe.

**The challenge:** On-site mounting of PHEs, long-term warrants and very strict requirements concerning performance, reliability, service and economy.

**The result:** Reduced operational costs and very good technical solution for heating and cooling in high-rise buildings.

In spite of competitors offering favorably low prices, the Alfa Laval team finally won the contract within their area of equipment. This fact probably rests on a combination of benefits presented realistically to the customers. *Elizaveta Rakitina* is a sales engineer at Alfa Laval Russia and was part of the team during the sourcing process:

– The fact that we could offer long-term warrants for the equipment was probably a decisive factor – as was the fact that our heat exchangers were able to cope with the pressure necessary in buildings of this height. Our people also interacted extremely well with the Mirax experts.

Part of the challenge stemmed from the fact that some of the heat exchangers were too heavy to haul into place in the high buildings, and consequently had to be mounted on site. Alfa Laval was able to plan for this and to recruit people with the specific competences needed. In all, Alfa Laval has delivered and installed 57 plate heat exchangers, 33 of them used for heating while 24 serve the cooling system.

### Economy – a natural focal point

In installations like this one, the economical focus is frequently set upon energy saving. There are, however, also financial aspects of major importance. Says *Arthur Alexandrov*, who is vice president of MIRAX GROUP and head of the construction works with the Federation Complex Towers.

– We pay great attention to the financial efficiency of our decisions. The Alfa Laval overall solutions and the compactness of installed equipment have enabled us not only to successfully solve problems of heating and cooling in high-rise buildings, but also to reduce our capital engagement considerably.

When it comes to operational economy, the energy-saving aspects were naturally highlighted, another reason for the success of the Alfa Laval bid.

Due to the use of the plate heat exchangers as pressure breakers, low-pressure equipment could be used in a number of other functions. Reduction of pump heads considerably diminished the consumption of electrical power. Also, the use of the heat exchanger as a glycol saver made it possible to use water instead of glycol in parts of the system. Finally, the automatic and finely tuned adjustment of the interior temperature to the outdoor conditions meant efficient energy use and reduced need for transfer agents.

Elizaveta Rakitina also mentions the Federation Complex Tower project as a good example of intense teamwork providing excellent customer service all the way through the process.

### Plate heat exchangers:

#### Products delivered

- Tower West (2006): 33 PHEs were installed, 6xM30, 3xMX25, 18xM15, 6xM6.
- Tower East (2008-2010): 9xT20, 18xM15, etc. Some PHEs delivered in 2008.

#### Technical data

- Cooling: AISI 304, 10/16 Bar, 40% glycol or water, up to 5600 kW.
- Heating: AISI 316, 16/25 Bar, up to 150 °C, up to 7500 kW.



### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)