



Polybutene
Piping Systems Association

Case Study

Public Housing Heating System, Edirne, TR



Thermafex | Flexalen



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The Turkish Ministry of National Defence operates public housing for the accommodation of its officials in the city of Edirne in Turkey, near the Greek and Bulgarian border. Working with PBPSA member Thermaflex, contractors replaced the heavily corroded steel pipe network that was originally installed as the heating system for the complex, with a long-lasting insulated Flexalen system made from Polybutene-1.



Heating System – Ministry of Defence Public Housing – Edirne, Turkey

Designing performance: Simplicity is key

Edirne, Turkey: Historically known as Adrianople, served as the third capital city of the Ottoman Empire. The city's population is now about 165,000 people. Because of its strategic location near the Greek and Bulgarian border, the Ministry of National Defence is domiciled there and the military provides public housing for the accommodation of its officials.

The Ministry leading the construction and renovation of these buildings, set high standards for replacing the previous heavily corroded steel pipe network. Thermaflex was awarded the project to replace the network with a long-lasting insulated Flexalen system made from Polybutene-1.

The project took place in the Kaleiçi district in the city centre. Here, the existing steel pipe energy infrastructure dating from several decades ago, had become a high-maintenance cost centre. As the pipes had become significantly corroded and the insulation disintegrated, the heat loss was very high.

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System breakdowns caused by extensive leakages were common. Considering the cold winters in Kaleici, when the temperature can drop down to -20°C , 'uncomfortable' would be quite an understatement to describe the experience of local residents. The Ministry was searching for a reliable and durable solution without any risks of breakdowns by corrosion or other related problems.

Details

The project combined multiple boilers, which were previously spread over various blocks, in one room from which the entire heat supply for all apartments would be generated.

With Thermaflex training support and close cooperation with the Ministry, the contractor and the installer, the new network design was greatly optimised: not only the lengths of the total pipe network were shortened, but also the diameters were significantly scaled down.

The project consisted of 3 heating zones with heat supplied from one boiler house. Liquefied natural gas was used as the heating source. A concrete trench was already in use for electrical cables and was therefore able to be used for the pre-insulated PB-1 Flexalen pipes as well.

Goals

The Ministry of National Defence was looking for a reliable and durable solution without any risks of breakdowns by corrosion or other reasons, to replace the existing corroded heating network for their public housing complexes. In order to minimise cost and disturbance to the existing environment, an effective use of the existing infrastructure was also a requirement.

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Statistics

- 34% savings on investment achieved with optimised network design to tackle uncomfortable low temperatures in winter
- 3 reliable heating zones installed in only 2 days
- 12% yearly total savings

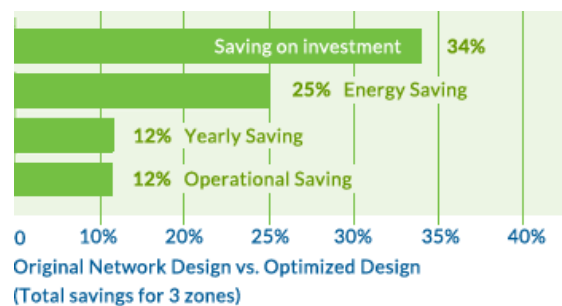
Results

When the contractor and installation company began the renovation of the heating network, they were unaware of the rapid speed and outstanding time they would reach to complete the project, which totalled only 2 days. This allowed adherence to tight time schedules and quick re-access for the local community.

Another key differentiator was the choice in pipe diameters. At first, oversized pipes were selected to anticipate further expansion. Though after several discussions, the Ministry was convinced to optimise pipe sizes and thereby maximise the efficiency of the distribution network.

The difference in between the original network design and the optimised network design for the 3 zones resulted in significant savings, as displayed in the graph below:

The project owner, the Ministry of National Defence, was convinced of the long-term integrity of the homogeneous on-site welding technology. The introduction of the Thermaflex Flexalen technology made from Polybutene-1 presented a perfect solution for the project challenges, with the rapid installation and effective use of existing concrete galleries for the installation of the new pipes.



This optimal outcome has further enhanced cooperation between the Ministry of National Defence and Thermaflex for future projects.



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1. Heat supplied from single boiler house to 3 zones
2. Flexalen insulated PB-1 pipe installed in access trench
3. Removing the original corroded metal piping system
4. Corroded metal pipes following removal from the site

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