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special Newsletter

for exemplary  projects

VIS NOVA Nr. 11 2013



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VIS NOVA

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Exemplary Heating System Modernization in Szekszárd

In Hungary the EU-funded energy rationalization projects are often implemented in an awkward way; the ideal technological content is occasionally lost among the large number of conditions and provisions, as, for instance, the use of renewable energies is forced even where professionals would advise against it. This was not the case in Szekszárd: an optimal system was constructed on a limited amount of money, through excellent planning and implementation by smartly using the freedom provided by an invitation to tender containing lifelike conditions.

The Local Government of Szekszárd City with County Rights pictured an exemplary investment within the framework of the VIS NOVA project that could set a „good example” for the South-Transdanubian region or even for the whole of Hungary. As a result, the heat energy supply of the Szekszárd City Sports Centre underwent complete modernization. The details are the following.

The starting point

In the sports centre, which was built in 1998 and thus had an outdated structure and poor heat insulation, 4 gas boilers supplied the heating and sanitary hot water. *The arena of the sports hall was not and is not heated, as it could not be solved economically due to its size. Due to the good planning, the greenhouse effect, its exposure to sunlight and the animal heat produced by the athletes and spectators deal with this problem, so it is only necessary to heat the gyms, offices and other service areas, with a total value of about 200 kW.*

The heat emitters were old, uncontrollable sectioned radiators, and the hydraulic conditions were similar to the constructions of the periods of the „energy prosperity”: the radiators near the boilers were red-hot, but the hot water did not reach the farther ones, so the workers in those rooms were cold.





Thus, this outdated system consumed a lot of energy but did not provide appropriate comfort. The VIS NOVA project provided an opportunity for the modernisation of the heating centre, the installation of solar panels, the construction of a thermal pipeline between the sports centre and the neighbouring spa, and also for the construction of a sophisticated building integration system that enables remote controlling.

The VIS NOVA project is implemented through the CENTRAL EUROPE Programme co-financed by the ERDF. In order to increase energy efficiency and save energy the five regions Northern Saxony/Düben Heath (DE), Schwäbisch Hall (DE), Tulln (AT), Małopolska (PL) and South-Transdanubia (HU) came together to jointly implement the VIS NOVA project which aims at establishing and developing effective sustainable energy solutions in rural regions. The partners from five regions in four Central Europe countries are trying to accomplish these goals by exchanging knowledge and experiences and by motivating regional energy stakeholders to pioneer in intelligent energy solutions and combining various renewable energy sources.

Solar panels

80m² of solar panels of altogether 80kW performance were installed on the southern side of the Sports Hall, thus the sanitary hot water needs of the facility can be fulfilled with the use of solar energy throughout a large part of the year. (An evidence of the well-considered the planning is the fact that the solar panels shade the gyms that are located on this side, thus the summer heat load of these rooms has decreased significantly.) In the summer months the heat produced by the solar panel system is also suitable for partially providing the energy – in the amount exceeding the needs of the sports centre – to heat the water in the spa. Due to the twofold usage, the system can perform at maximum capacity all year round. Two boilers have been kept from the original heat generating devices, these supply the missing kilowatts. The complete system was designed for 4000 litres of SHW (sanitary hot water), so a 4 m³ buffer container and a 1500 litre-boiler was selected for this purpose and the solar panels and boilers also work to fulfil this demand. In addition to the SHW production, the panels can contribute to the complementary heating. An important and useful outcome of the project is the fact that with appropriate orientation and installation, flat panels can produce large amounts of hot water even in winter.



Building Integration System

The optimization of the heat energy production usage and controlling was also solved through the building integration system installed as part of the project. The PLC programme enables the intelligent controlling of the heating and hot water system, the most economical use of the different energy sources, the monitoring of the system on the internet and the performance of other steps, the coordination of the systems operating in the sports hall and the spa. This is especially important in a facility that is used so specifically, where the schedule of usage means that in summer it is not „visited” and in the other three seasons a large scale, simultaneous demand for hot water occurs in the afternoons, evenings and at weekends. The building integration system enables daily, weekly and monthly programming and scheduling and the optimization of operation.

Reduction of the costs

Due to the optimized operation the energy costs of the facilities have been reduced significantly. As the demands have decreased, the availability fees set out in the contract concluded with the gas supplier have also decreased significantly, thus the yearly fixed costs related to heating and production of hot water have dropped by 1,5 million HUF. Together with this, a 20-25% reduction is expected compared to the previous costs, that means a yearly amount of 2-2,5 million HUF and we must not forget that in addition to the financial advantages the sports hall has become more comfortable and liveable.

Acknowledgements

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The sports centre

1989
opened the sports centre for the first time

330
days/year opened

5000
hours/year opened

80.750
visitors/year

aprox. 150
events/year

4105
m² of useful area

10.624.000
HUF/year spend for gas in 2012

6.170.000
HUF/year spend for electricity in 2012

2.100.000
HUF/year spend for water in 2012