



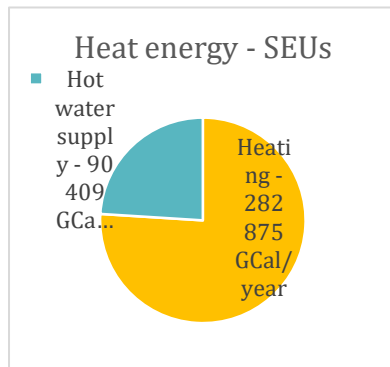
EnMS implementation by UNIDO methodology on SMEs in the city of Naberezhnye Chelny PKF Zhilkomservis, LLC

Zhilkomservis – is one of the largest managing companies in Naberezhnye Chelny city, which serves 334 residential buildings, or 1.6 mln. m² of housing stock. Along with management of apartment buildings, the company maintains housing stock, maintains and repairs constructions and engineering networks of buildings, conducts sanitary maintenance. In 2016, its staff consisted of 613 persons, and annual energy consumption was 62.6 GWh of electricity and 388 716.6 GCal of heat.

By the time of partnering with UNIDO, the company has already been actively involved in actions towards energy efficiency increase on its facilities in operation, and implemented various energy saving measures. PKF Zhilkomservis also participated in Lean Production programme together with Administration of Naberezhnye Chelny city and the Ministry of the Economy of the Republic of Tatarstan. Thus, EnMS implementation project became logical and very successful continuation of work in this direction.

Results of EnMS implementation	
Monetary savings	28 043 000 RUB ≈ USD 467 000
Energy savings	18 948 GCal (-6%)
Additional benefits	Productivity gains within company, stronger corporate image
Reduction in GHG emissions	13 222 tons of CO ₂ -eqv.
Total investments	1 125 000 RUB ≈ USD 18 750
Payback period	0.04 years

EnMS implementation



Defining EnMS scope and boundaries, identification of the SEUs

“Zhilkomservis” managing company uses two types of energy: electricity and heat. Only the latter was included in EnMS scope, which is due to specifics of company’s activities: Zhilkomservis can’t affect electricity consumption directly, as 90% of all electricity in apartment buildings is used directly by its’ residents.

Zhilkomservis working group identified all the SEUs for heat – the heating system and the hot water supply system. However, consumption of hot water can only be influenced indirectly – by awareness campaigns, as the residents use hot water in the volumes necessary for them.

Building the regression models, energy performance analysis

Maximum heat consumption falls on the heating season from October to April, this is time, when “Zhilkomservis” has a real opportunity to save energy.

In addition, it was decided to analyze consumption of each apartment house separately, because each house has its own unique heating system characteristics and various architectural and planning solutions.

Throughout EnMS implementation period in the heating season from October 2015 to April 2016, heat energy savings by all 334 residential buildings accounted for:

- **In physical terms – 18 948 GCal (6% of total consumption of 373 284 GCal in 2015);**
- **In monetary terms – 28 043 040 RUB.**

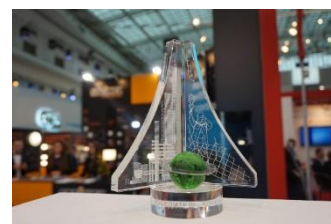
Examples of low-cost energy saving measures implemented at Zhilkomservis within EnMS:

- ⑩ Awareness campaign for the residents, conduction of trainings on energy saving for them;
- ⑩ Daily monitoring of heat energy use, comparison with expected indicators, analysis and execution of operational measures in case of actual consumption indicators exceeding the expected ones;
- ⑩ Development of software for partial automation of the described above daily monitoring process;
- ⑩ Forced shut-down of heating system during warming (when outdoor temperatures exceed the normative temperature requiring the system to be switched on);
- ⑩ Calculation of design heat load of the houses, comparison with the actual value and reduction of the heat energy consumption to nominal (design) values, without reducing the level of comfortable living;
- ⑩ Changing heat consumption by day zones, without reducing comfort living levels (for example, a slight decrease in temperature graphs at night);
- ⑩ Control over circulation flow of hot water supply (switching of hot water supply scheme to dead-end at night time by switching off pumps), etc.

Prior to EnMS implementation by UNIDO methodology, company's management prioritized medium- and high-cost energy saving measures, which they believed would ensure the highest effect. EnMS implementation and energy analysis shifted focus towards low-cost and zero-cost energy saving measures.

In result of EnMS implementation, Zhilkomservis gained as well various non-energy benefits:

- Developed and integrated software for DAILY analysis of heat consumption for each house allows to quickly identify breakdowns in equipment of the heating and hot water supply systems, including the automation system;
- Reduced labor costs for energy consumption analysis and improved the quality of this process;
- The personnel became more competent and skilled in the field of energy efficiency, as well became more computer literate in terms of Microsoft Excel use, which positively contributes to productivity gains in the company;
- Increased comfort levels in residential buildings due to higher quality maintenance of coolant parameters – elimination of overheating, etc.;
- Higher satisfaction rates from the residents due to lower monthly payments for energy;
- Higher public trust in Zhilkomservis services as a result of constant communication with residents and conducting energy saving trainings;
- Stronger corporate image: PKF Zhilkomservis won in nomination "Effective managing company in the area of energy saving" in the framework of ENES-2016 – the V International Forum on energy efficiency and energy development.



Upon successful implementation of actions in the framework of UNIDO programme, PKF Zhilkomservis successfully certified for ISO 50001:2011 (ГОСТ Р ИСО 50001-2012) and attained an Energy Management System Certificate, applicable to management of housing stock operations.