

LAC PROJECTS IN THE SUPPLY OF ENERGY-EFFICIENT FURNACES AND THE REDUCTION OF EMISSIONS

VÍTKOVICKÉ SLÉVÁRNY, SPOL. S R.O. – SAVE ENERGY BY REPLACING AN OUTDOOR ANNEALING FURNACE WITH A VKNC 7200 ELECTRIC ANNEALING FURNACE

COMPANY PROFILE

The history of Vítkovice began as early as 1828, when the first ironworks were established here and metallurgical production began. In 1843, the ironworks were bought by Viennese banker Salomon Mayer Rothschild. In 1997, the „Roller Foundry” unit was separated from the organisational structure of VÍTKOVICE, a.s., and Vítkovické slévárny, spol. s r.o. was established. In 2003, the coloured metal foundry acquired 99 % of the business share in Vítkovické slévárny, spol. s r.o. and since then it has been writing its own history. Traditionally, the production of steel cylinders has been a key part of the company's production for more than 100 years. Today, Vítkovické slévárny, spol. s r.o. produces double-layer working cylinders with diameters from 550 to 950 mm using a unique centrifugal casting method with the use of licenced Gontermann-Peipers technology. The second product group is shaped castings made of steel and cast iron. The production portfolio also includes castings made of non-ferrous metals such as bronze, brass, and aluminium.



um. In the field of castings production, the company's largest orders are completed for the industrial sector and the shipping industry, e.g. the supply of gearboxes for oil platforms or the production of turbine and compressor parts. In the case of centrifugally cast cylinders, annual and multi-year contracts are concluded. Although foundry production is perceived as environmentally demanding, the company manages to be very environmentally friendly through massive investments in green projects. In the last 3 years alone, investments in environmental projects have amounted to CZK 80 million in the form of the introduction of new technologies for dedusting and filtration, casting, machining, and heat treatment.

PROJECT DESCRIPTION

A new VKNC 7200 bogie-hearth annealing furnace was installed, including monitoring of electricity usage, replacing the outdoor heating oil annealing furnace. The supplier of the electric annealing furnace is LAC, s.r.o.

Basic technical parameters of the electric annealing furnace:

- Power supply output of 170 kW
- Max. load-bearing capacity of the bogie-hearth: 6,000 kg
- annealing to a temperature of 850 °C
- optimisation of the temperature field ΔT_{10} according to DIN 17052 T=800 °C
- monitoring electricity usage

The installation of a new electric annealing furnace is primarily aimed at **modernising and simplifying the annealing cycle**, but also at **reducing emissions**. By removing light fuel oil and switching to electric heating, **annual emissions of particulate matter will be reduced by 177 kg, NOx by 570 kg, CO₂ by 88.70 tonnes.**



Electric annealing furnace VKNC 7200 in Vítkovické slévárny, spol. s r.o.

Tests were carried out to verify that the technical specification was met, including measurement of the declared power consumption. The tests were successful and the annealing furnace was handed over for use.

WHAT'S GREAT ABOUT THIS FACILITY:

The VKNC 7200 furnace shell has been supplemented with an innovative thermal insulation material with a very low thermal conductivity coefficient. Through this, it reduces chimney losses and thus reduces the furnace's consumption.

Answering our questions about the results of this project was Jiří Moravčík, chief energy engineer of Vítkovické slévárny, spol. s r.o.:

Why did you decide to implement the project?

There were multiple factors. Firstly, the energy consumption – we replaced the annealing furnace with a light fuel oil (LTO) furnace and the consumption per 1 tonne of annealed material increased over time to almost 2 MWh/t. Furthermore, the failure rate of the equipment was already past its useful life. And the main factor was ecology – with the energy auditor we calculated that even though the production of 1 MWh of electricity generates almost 4 times more CO₂ than LTO, with about 7 times lower consumption, the CO₂ will decrease.

How was the project implemented?

The basic timeline – idea, investment approval, preparation, procurement and implementation – took about 1.5 years in this case. The most time-consuming part

of the process is the energy assessment and building permit (for the OPIK – Energy Savings subsidy we are applying for, the energy assessment must be accompanied by a statement from the building authority), the statement from the fire department, the electrical documentation, etc. It will take additional time for approval. By law, we carry out an energy audit every four years. After that, the implementation itself is quick.

What contribution did the project make?

Six months after implementation, I can declare that the Energy Assessment's target for CO₂ is met.

Are you discussing the subject of your company's carbon footprint?

Vítkovické slévárny, spol. s r.o. is sensitive to the issue of the greenhouse effect and the impact of industrial production on it. By introducing new technologies, we are committed to substantially eliminating our carbon footprint and meeting the goals of the 2016 Paris Agreement.



Supplier of the VKNC 7200 electric annealing furnace.



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