



FOUNDRY CASE STUDY: BRUZA HOLMS

Waste Heat Recovery at
Bruzaholms Foundry

June 2026



INTRODUCTION

Bruzaholms, located in Småland, is one of Sweden's oldest foundries, with roots dating back to the 1660s. Today, it is one of the world's leading manufacturers of wear- and heat-resistant castings.

Foundry work and metal processing are energy-intensive activities, but what many don't know is that approximately 25% of the total energy usage at a sand-casting foundry goes towards heating and ventilating the premises to maintain a good working environment.*

Although many processes within a foundry emit heat, recovering this energy has traditionally been difficult due to the presence of high levels of steam, particles, and binding agents in the air, which render conventional heat exchangers unusable as they quickly clog reducing air flow and increasing process times.

In February 2025, Bruzaholms decided to install the Swedish-developed heat exchanger, Lepido, in a hot airflow from the sand cooler. The objective was to determine whether this technology could reliably recover waste heat from their own process, thereby reducing energy use and fossil CO₂ emissions.

After 60 weeks of operation without cleaning, the heat exchanger continued to perform with virtually unchanged pressure drop. The project achieved a 3-year return on investment before any utility or other incentives were considered.

*Source: Sommarin and Arvidsson (2011), Thermal Storage for Energy-Intensive SMEs with a Focus on Swedish Foundries, Report No. 2011006, Swerea SWECAST.

The challenge

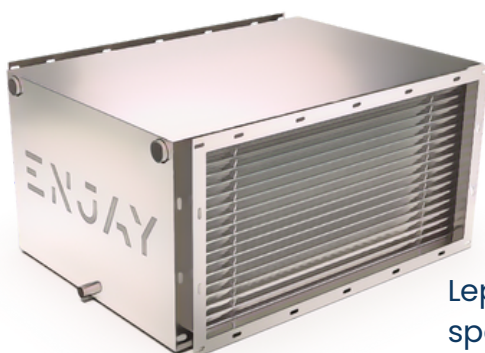
Various processes within the foundry generate hot airflows where energy could be used to preheat replacement air supplied to the facility. The challenge lies in the air's high content of particles, moisture, and binders. Bruzaholms has previously tested conventional heat exchangers in this environment, but was forced to cease them due to clogging and the need for weekly maintenance.



Previous fin-style heat recovery system is shown above left. It was dismantled due to recurring clogging, high pressure drop and an every seven days cleaning requirement.

Solution

Lepido is a Swedish-developed heat exchanger specifically designed for particulate-laden (dirty) exhaust air. It is used to recover waste heat from various thermal processes such as foundries, drying operations, food production, and industrial laundries. Lepido requires no pre-filtration and instead uses a patented coil-based design with no fins that allows particles to pass through the exchanger with minimal surface area adherence.



The recovered energy can be used to preheat air or liquids (water & glycol or water) for processes or building heating.

Lepido by Enjay – a heat exchanger specifically developed for particulate-laden exhaust air.

PROJECT DATA

03

In this project, Lepido was installed in a duct from the sand reclamation system, with an airflow of approximately 4 m³/s and a temperature of 30°C.

The heat recovered by Lepido reduces the system's power demand by 95 kW. In this project, that covers 85% of the building's total heating energy needs. Heating was previously provided by an oil-fired boiler, so every recovered kilowatt-hour reduces fossil CO₂ emissions by 750 grams.*

The annual heat recovery obtained from this heat recovery project is 150,000 kWh per year, resulting in a reduction of fossil CO₂ emissions of 112.5 metric tons annually.



Lepido technology installed on-site in Bruzaholms sand cooler exhaust.

* Comparing CO₂ emissions from different energy sources (2025)

OPERATIONS

04

The key question was reliability. Bruzaholms operates five days per week, 16 hours per day, and its previous heat recovery system required cleaning every seven days.

After 60 weeks (February 2025 – April 2026) of operation and inspections every four weeks, the Lepido heat exchanger required no cleaning or other maintenance. There were no instances of the heat recovery system causing production downtime.

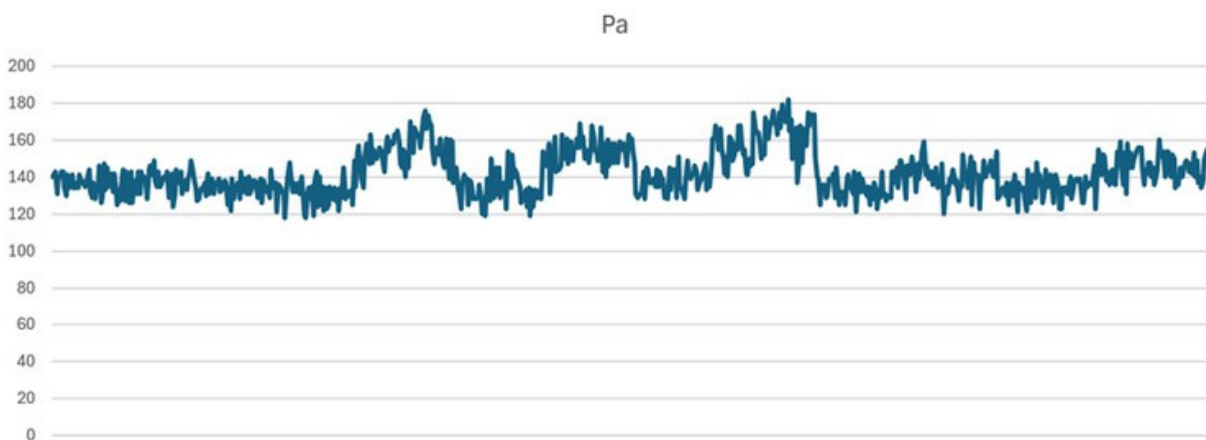
This is further supported by virtually unchanged pressure drop across the system throughout the 60-week period.



Photos of the Lepido heat exchanger at 4 weeks, 12 weeks and 60 weeks. In the 60-week close-up, the maintenance team ran a finger across an outer coil to demonstrate the minimal depth of surface accumulation.

As foundry environments had not previously been tested with Enjay's heat recovery technology, it was unclear what maintenance interval would be required to maintain the heat exchanger's performance.

After 14 months of operation without cleaning or any meaningful reduction in heat recovery performance, Bruzaholms determined that an annual cleaning interval would be sufficient.



Data points showing consistent pressure drop over time (60 weeks of data).

“

The Lepido heat exchanger delivered strong performance throughout the winter. When we inspected it after 14 months of operation without cleaning, it was still performing well. An annual cleaning schedule is a very manageable level of maintenance for us.

Mats Ekegren, Technical Director, Bruzaholms

”

CONCLUSION

06

After 60 weeks without cleaning, maintenance or heat-exchanger-related downtime, and with a stable pressure drop operating range, Bruzaholms demonstrated reliable waste heat recovery from a challenging foundry exhaust stream.'

The sand cooler heat recovery project recovers approximately 150,000 kWh annually, provides 85% of the building's heating energy needs and reduces fossil CO₂ emissions by approximately 112.5 metric tons per year. With a 3-year return on investment, the installation demonstrates both the operational reliability and economic value of recovering waste heat in a high-particulate foundry environment.

Bruzaholms is now evaluating additional applications across its operations.

Questions or requests



30 N Gould St, Suite R, Sheridan, WY 82801



1-833-667-7359



www.thermstar.com



info@thermstar.com



Book Intro Call