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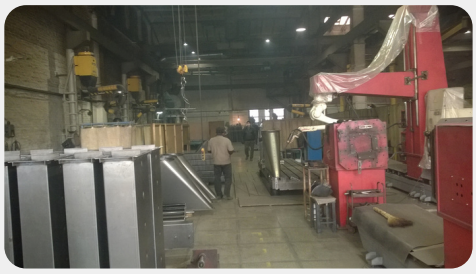
EU4Environment
Green Economy in Eastern Partner Countries

# Advancing resource efficient and cleaner production in Ukraine

## The RECP methodology

**Resource Efficient and Cleaner Production (RECP)** is the integrated and continuous application of preventive environmental strategies to **processes, products, and services** to increase efficiency and reduce risks to humans and the environment. RECP is all about producing with fewer resources while minimizing environmental impacts and increasing overall productivity. For **Small and Medium-Sized Enterprises (SMEs)**, the RECP methodology can effectively lower production costs whilst improving the SMEs' competitive advantage and applying environmentally friendly practices. RECP is also an effective tool to introduce and promote Circular Economy principles among SMEs.

## "KHOROLSKIY MECHANICAL PLANT" PJSC - MACHINE BUILDING



### Company overview

**Location:** Khorol, Poltava region
**Key products:** metal products
**No. of employees:** 200
**Main markets:** Ukraine
**Founding year:** 1940
**Certifications**: ISO 9001:2015

**"Khorolskiy Mechanical Plant", PJSC** is a manufacturer of metal-based goods. Established in 1940, the company specialises in the machine building industry, mainly within the feed, milling, and food sectors. It offers a wide range of products, such as: grain cleaning air separators (with capacities from 3 to 100 tonnes per hour), magnetic separators, a wide range of grain grinders, various pieces of equipment for the production of groats, bucket elevators, screw conveyors, air purification units to separators, upholstered horizontal machines for grain, cyclones COL, as well as pieces of equipment for the agro-processing industry. Motivated to analyse the efficiency of its own equipment, and to develop resource saving options and reduce operating costs, the company participated in the RECP Clubs programme under EU4Environment (2019-2024). This publication shows the company's experience reported after the monitoring exercise conducted in 2023.

## BENEFITS FROM IMPLEMENTING RECP OPTIONS

1. 4 RECP options focused on resource savings
2. Short payback period (less than two years, on average)
3. Reduction of electricity consumption by 20,800 kWh per year
4. Reduction of 21 tonnes of $CO_2$ -eq per year

Action implemented by:

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# The project's approach

With the support of the RECP self-assessment tool and the contribution of the RECP experts, the company developed its RECP Action plan with four RECP measures; the first three have been gradually implemented:

**RECP Option 1. Installation of a local compressor at the foundry shop:** This measure consisted of placing the compressor directly in the foundry shop to reduce the travel distance for high-compressed air and shorten the length of the old pipeline system that experienced leakages. Loses were also reduced from 32% to 15%.

**RECP Option 2. Reconstruction of the hot water supply and heat exchange systems:** This involved operating the boiler in the direct-flow mode for water heating during the unheated periods, and turning the boiler up to 60°C (only when the employees were taking showers). This significantly reduced the consumption of natural gas for heating water, and decreased energy loss due to the overheating of the boiler.

**RECP Option 3. Insulation of the heating system pipelines in the office building:** This measure revolved around the partial, thermal insulation of the heating pipes that run through the storage rooms. It significantly reduced heat losses to the environment and reduced electricity consumption.

**RECP Option 4. Reconstruction of the furnace used for quenching:** This measure proposed covering the furnace with a 50 mm expanded perlite lining to reduce heat loss through the furnace shell in both the operational and inactive periods.

## SAVING ACHIEVEMENTS

### Main RECP actions

| | |
|---|---|
| OPTION 1 | Installation of a local compressor at the foundry shop |
| OPTION 2 | Reconstruction of the hot water supply and heat exchange systems |
| OPTION 3 | Insulation of the heating system pipelines in the office building |
| OPTION 4 | Reconstruction of the furnace used for quenching |

### Economic key figures

| RECP OPTIONS | INVESTMENT (EUR) | SAVINGS (EUR/YR) | PAYBACK PERIOD (YR) |
|---|---|---|---|
| Option 1: | 500 | 573 | / |
| Option 2: | 1,875 | 656 | 2.9 |
| Option 3: | 134 | 1,125 | 0.2 |
| Option 4: | 750 | 1,400 | 0.5 |

### Resource savings

| RECP OPTIONS | ELECTRICITY (KWH/YR)/% | NATURAL GAS ($M^3$/YR)/% |
|---|---|---|
| Option 1: | 5,800/0.54 | / |
| Option 2: | / | 2,219/6 |
| Option 3: | / | 3,786/10.2 |
| Option 4: | 15,000/1.4 | / |

### Total pollution reduction

| RECP OPTIONS | TOTAL $CO_2$-EQ (T/YR) |
|---|---|
| Total: | 21.27 |

> An effective operation requires a regular monitoring of the used resources and the exploration of all available opportunities to increase their efficiency. In addition, a very important component in the work of the company is to have proper operation, a timely maintenance, and the modernisation of the technological equipment. Our participation in the EU4Environment Action has made it possible to identify problem areas in our production. In the future, our company intends to regularly raise employee awareness on resource efficiency and implement resource efficiency-based options, said the company engineer, Mr. Anantolii Trots.

The introduction of RECP Clubs programme has been part of the EU-funded EU4Environment Action and executed by UNIDO. In this context, **"Khorolskiy Mechanical Plant", PJSC** joined the Clubs programme to be monitored under EU4Environment. Follow-up visits have also been conducted to check on the implementation of the recommended RECP options. EU4Environment helps the EU's Eastern Partnership countries preserve their natural capital and increase people's environmental well-being by supporting environment-related action, demonstrating and unlocking opportunities for greener growth, and setting mechanisms to better manage environmental risks and impacts. For more details, visit: **www.eu4environment.org**

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