

Advancing resource efficient and cleaner production in Ukraine



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. In essence, RECP is all about producing with fewer resources and minimizing environmental impacts while increasing overall productivity.

For **Small and Medium-sized Enterprises (SMEs)**, the RECP methodology is an effective instrument in lowering production costs whilst improving their competitive advantage by applying environmentally friendly practices. The technical assistance and training provided to **Ukrstal Dnipro, PJSC** under EaP GREEN outlined a RECP action plan for the company team. The technical assessment identified 17 RECP options targeting energy, water, and materials consumption, as well as reducing the generation of harmful emissions and waste. The company successfully implemented **13 of the 17 recommended options**.

UKRSTAL DNIPRO-STRUCTURAL STEEL FABRICATION PLANT, PJSC STEEL CONSTRUCTION

Company overview

Address: 54 Udarnykv Str., Dnipro
Key products: construction steel
No. employees: over 200
Main markets: Ukraine
Founding year: 1890
Certification: ISO 9001, ISO 14001, ISO 45001



Ukrstal Dnipro, PJSC produces high quality welded metal structures for various purposes. The firm specialises in the production of metal structures for bridges and for the heavy industry (metallurgical, chemical, defence, and mining industries). Its production capacity is 95,000 tonnes of metal structures per year.

Benefits

Implementation of 13 RECP options
 Cost savings of 188,821 EUR/year
 Emission reduction of 321 tonnes of CO₂-eq/year
 Reduction of 163.9 tonnes of waste/year and 2,409 m³ wastewater/year
 Reduction of electricity use: 18.4 per cent from the total energy consumption/year

*The participation in the RECP Project gave us an opportunity to identify the challenging areas in production, and to outline some prospects for the future: introducing the electricity metering system, the modernization of the compressed air network, the application of modern welding mixtures, and many more, said **Oleksii Kashkariov, Head of Production Technical Preparation Department***

Action implemented by:

The project's approach



Metalworking is one of the most energy intensive industries, so the company was highly interested in finding ways to improve energy efficiency within its production processes. Out of the **13 implemented measures, 4 priority options** are presented below with the saving achievements describing the entire implementation:

RECP option 1. Replacing pneumatic tools with electrical tools. The compressed air system used for different pneumatic tools showed a low utilization ratio (0.49), high number of leakages (losses of more than 1/2 compressed air production), and a reduced equipment load factor (0.084). By replacing the pneumatic tools with electric ones, the efficiency of the compressed air system increased, so did the economic savings.

RECP option 2. Optimization of the transformers switch circuit. By optimizing the transformer bank load management, the option offered reducing energy consumption by operating transformers with maximum efficiency considering effective loads and disconnecting the idle ones.

RECP option 3. Optimization of the compressor operating modes. Previously, the compressors used only 20-30 per cent load of their total installed capacity. The option offered the possibility to use the compressor unit according to schedule within one network, increasing thus the load factor and the overall efficiency of the entire system.

RECP option 4. Applying paints which do not require preliminary blasting of the surface for painting. Change of paint type as input material for paint options that do not require preliminary abrasive treatment brought forth several benefits. By this option, the plant demands less compressed air from the compressor system, as well as requires reduced labour hours due to elimination of the abrasive treatment. The consumption of paint is reduced too as paint waste from the previous process are eliminated.

Saving achievements

MAIN IMPLEMENTED ACTIONS

- Option 1:** Replacing pneumatic tools with electrical tools
- Option 2:** Optimization of the transformers' switch circuit
- Option 3:** Optimization of the compressor operating modes
- Option 4:** Applying paints which do not require preliminary blasting
- Other options**



ECONOMIC KEY FIGURES

	Saving (Euro/year)
Option 1:	7,200
Option 2:	11,825
Option 3:	2,990
Option 4:	36,121
Others:	130,685
Total:	188,821



RESOURCE SAVINGS

	Water (m ³ /year)	Material (tonnes/year)	Electricity (kWh/year)	Fuel (m ³ /year)
Option 1:	-	-	79,100	-
Option 2:	-	-	129,900	-
Option 3:	-	-	32,850	-
Option 4:	-	16.9	140,976	-
Others:	2,409	147	185,491	39,641
Total:	2,409	163.9	568,317	39,641

Next steps

The company plans to continue applying the RECP methodology, as it has been recognized as an important business strategy. It intends to continue cutting down production costs and resource consumption by introducing an Automated System for Commercial Accounting of Power Consumption (ASCAP), modernizing the compressed air network, and applying modern welding mixtures.

*Thanks to the project and the RECP implementation, we became confident that the industrial processes and operations could be improved through cleaner production. Moreover, this not only decreased waste generation and environmental pollution, but also saved our budget and generated an additional income for the company through rational resources consumption, said **Oleksii Kashkariov, Head of Production Technical Preparation Department***

The introduction of RECP has been part of the EU-funded programmes: **EaP GREEN** (2013-2017) and **EU4Environment Action** (2019-2022) executed by UNIDO. In this context, Ukrstal Dnipro, PJSC joined the RECP training and assistance programme under EaP GREEN. Follow-up visits have been then conducted under the new Action to check the implemented RECP options after the EaP GREEN Programme ended. EU4Environment helps the six EaP partner 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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