



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 is an effective means to 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.

"BIODIESEL GEORGIA" LLC - BIODIESEL PRODUCTION



Company overview

Location: Tbilisi

Key products: biodiesel, glycerine

No. of employees: 18

Founding year: 2017

Certifications: EN 14214, ASTM D6751



"Biodiesel Georgia" is the first company in the Caucasus region to specialize in large-scale biofuel production. Currently, its production is concentrated in a smaller facility located in Tbilisi, with plans to expand production, and to increase access to domestic and international markets. The company specializes in the production of sustainable biodiesel and glycerine (as a by-product) from waste cooking oil through a process called transesterification. The maximum capacity of the plant allows for a daily production of 3,300 litres of biodiesel and 390 litres of glycerine (210 tonnes of biofuel and 40 tonnes of glycerine per year). Presently, the company receives used cooking oil from around 600 partner organizations, and is considering cultivating and producing rapeseed oil for biofuel. Hence, it is planning to move to a larger site, where a higher production capacity would be possible. Motivated to improve energy efficiency and staff awareness, Biodiesel participated in the RECP Demonstration Project under EU4Environment (2019-2024). This publication shows the company's experience reported after the monitoring exercise.

BENEFITS FROM IMPLEMENTING RECP OPTIONS

1

Implementation of 2 RECP options (focused on energy efficiency)

2

Short payback period for the required investment (less than a year)

3

Reduced thermal energy consumption per tonne of product

4

Energy savings worth 12.5 kg of CO₂-eq per cycle

The project's approach

The RECP assessment examined the production site and identified several RECP options, out of which the following two were prioritized. The company team was able to follow a systematic approach to develop a RECP action plan and gained knowledge to introduce RECP as a continuous improvement cycle. Suggested RECP recommendations included medium and low-cost measures:

RECP Option 1. Replacement of the inline heater: The measure mainly consists of the replacement or significant modifications to the heater used for preparing the mixed methanol and the used cooking oil for further filtration. The inline heater would be modified to run on natural gas instead of electricity. The new measure would also result in a decrease in energy costs.

RECP Option 2. Replacement of the air heater: The measure is based on replacing or significantly modifying the air heater, which is used to prepare biodiesel before mechanical filtration takes place. The measure includes the replacement of the installed fans with a pump and using natural gas as fuel. As a result, this would improve the energy efficiency of the production process and lead to energy savings.

SAVING ACHIEVEMENTS

RECP measures

OPTION 1	Replacement of the inline heater
OPTION 2	Replacement of the air heater

Economic key figures

RECP OPTIONS	INVESTMENT (EUR)	SAVINGS (EUR/HOUR)	PAYBACK PERIOD (HOUR)
Option 1:	700	3	233
Option 2:	1,900	6.5	292

Resource savings

RECP OPTIONS	ELECTRICITY (KWH/CYCLE)
Option 1:	36
Option 2:	84

Total pollution reduction

RECP OPTIONS	TOTAL CO ₂ -EQ (KG/CYCLE)
Total:	12.5

“The company was using an inefficient technological system which led to excessive energy consumption, especially in the production processes that require thermal energy. Thanks to the RECP Demonstration Project, the company learned to systematically upgrade its technology and invest in awareness raising among the management staff. As the factory plans to improve production quality and increase production capacity, the RECP project has inspired us to come up with new ideas regarding the future implementation of RECP measures, said the technical consultant, Mr. Kakha Karchkhadze.”

The introduction of RECP has been part of the EU-funded EU4Environment Action and executed by UNIDO. In this context, **Biodiesel Georgia** joined the RECP training and assistance 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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