



LIFE EMU-NEW - Proecological pilot installation for fabrication of asphalt emulsions modified by nanostructural waste polymers

LIFE14 ENV/PL/000370

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#### Project description:

##### Background

The EU Waste Framework Directive (2008/98/EC) and the Packaging and Packaging Waste Directive (94/62/EC) place emphasis on reuse and recycling of plastic waste. It is calculated that in the EU27 in 2008, 25 million tonnes of plastic waste were produced, including 12.1 million tonnes (48.7%) of stored waste. While the target was to recover 12.8 million tonnes (51.3%), just 5.3 million tonnes (21.3%) was recycled. According to estimates for 2015, the level of mechanical recycling will increase to 30% (from 5.3 million to 6.9 million tonnes). But waste storage and incineration with energy recovery will remain the dominant method of waste management. In Poland in 2012, only 25% of plastic waste was recycled, 17% was used for energy recovery and 58% of plastic waste was deposited in landfills.

The growth of plastics production is proportional to gross domestic product, and as a result the general growth of plastic waste production in 2008-2015 is expected to reach 5.7 million tonnes (23%). This increase is mainly due to a 24% increase in the size of packaging sector and is consistent with an overall Europe-wide increase in this waste. With no improved methods of product design and better waste management, the amount will continue to increase in the EU along with production.

##### Objectives

The overall objective of the LIFE EMU-NEW project is to develop innovative pilot technology for producing bitumen emulsion modified with polymer recyclate and mineral nanofillers that can be used in the production of asphalt. The technology has been studied and verified by the beneficiary at laboratory scale,

and key process parameters have been established.

This technology will be tested in a pilot plant consisting of four phases: 1. Modified asphalt production station; 2. Nanofibers production station; 3. Waste polymer liquefying, purifying and modification station; and 4. Emulsion production station.

In addition, the project will improve the eco-efficiency indicator by lowering the material-consumption rate of the production. The plant is expected to require less asphalt for the production of asphalt emulsions, because these nanoemulsions achieve additional durability by being reinforced with nanofibers from the chosen groups of polymer waste and mineral nanofillers. The project also aims to expand the lifespan of the products.

Expected results:

- A pilot plant for manufacturing of bitumen emulsions modified with polymer recyclate and mineral nonofiller;
- Treatment of 176 tonnes of waste polymer per year. If upgraded to industrial scale this amount could reach 1 119 tonnes/year of waste diverted from landfill, translating into savings of 50 000 tonnes of crude oil per year; and
- Reduction in the use of asphalt by 8-10%, with the consequent saving of crude oil. From reduced asphalt use alone, this technology could save around 100 000 tonnes of crude oil per year, if replicated at national level.

Results

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Environmental issues addressed:

Themes

Waste - Waste recycling

Keywords

plastic waste, road construction material

Target EU Legislation

- Waste
- Directive 2008/98 - Waste and repealing certain Directives (Waste Framework Directive) (19.11.200 ...

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	FLUKAR SPKA Z OGRANICZON ODPOWIEDZIALNOCI
Type of organisation	Large enterprise
Description	The coordinating beneficiary Flukar, is a private company specialising in production, research and development regarding lubricants (including motor oils, emulsifiers, floatation agents, brake fluids) and solvents.

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Administrative data:

Project reference	LIFE14 ENV/PL/000370
Duration	01-AUG-2015 to 31-DEC -2019
Total budget	4,445,095.00 €
EU contribution	2,628,123.00 €
Project location	Lodzkie(Poland Polska) Mazowieckie(Poland Polska) Malopolskie(Poland Polska) Slaskie(Poland Polska) Lubelskie(Poland Polska) Podkarpackie(Poland Polska) Swietokrzyskie(Poland Polska) Podlaskie(Poland Polska) Wielkopolskie(Poland Polska) Zachodniopomorskie(Poland Polska) Lubuskie(Poland Polska) Dolnoslaskie(Poland Polska) Opolskie(Poland Polska) Kujawsko-Pomorskie(Poland Polska) Warminsko-Mazurskie(Poland Polska) Pomorskie(Poland Polska)

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Brochure	Title: "LIFE EMU NEW: Proekologiczna instalacja pilotazowa do produkcj emulsji asfaltowych modyfikowanych nanostrukturami z polimerów odpadowych" (12.8 MB) Year: 2017 Editor: Flukar Sp, NFSIGW No of pages: 8
Brochure	Title: "LIFE EMU NEW: Proekologiczna instalacja pilotazowa do produkcj emulsji asfaltowych modyfikowanych nanostrukturami z polimerów odpadowych" (5.59 MB) Editor: Flukar Sp No of pages: 8
Leaflet	Title: "LIFE EMU NEW: Pro-ecological pilot installation for bituminous emulsion production modified with polymer waste nanostructures" (10.2 MB) Editor: NFSIGW No of pages: 2
Project web site	<a href="#">Project's website</a>
Project web site - 2	<a href="#">Project's Twitter page</a>
Project web site - 2	<a href="#">Project's Facebook page</a>
Publication: Article-Paper	Title: "Proekologiczna instalacja pilotazowa do produkcji emulji asfaltowych modyfikowanych nanostrkturami z polimerów odpadowych: Nowa koncepcja wykorzystania odpadowych tworzyw polimerowych do wytwarzania emulsji asfaltowych" (624 KB) Year: 2017 Editor: Flukar Sp No of pages: 5
Video link	<a href="https://www.youtube.com/watch?v=rtn-puwQrss">LIFE EMU NEW. Ecological bituminous emulsion (https://www.youtube.com/watch?v=rtn-puwQrss)</a>

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