



ICOL - Innovative collection system and Life Cycle Assessment for waste lube oils

LIFE02 ENV/GR/000360



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#### Project description:

##### Background

Lube oil is a by-product in the distillation of petroleum to produce gasoline. It is a transparent, colourless oil, which is of low value but produced in high quantities. It is used to lubricate moving parts and for cooling, cleaning and corrosion control. High levels of industrial activity and large numbers of vehicles have increase the generation of waste lube oils (WLO). Inadequate disposal methods of WLO such as burning or uncontrolled dumping pose significant environmental threats. In Greece, the typical methods for WLO collection and reuse were inadequate and did not completely guarantee environmental safety. This resulted in several environmental problems including the pollution of soil, surface water and groundwater. Furthermore, poor collection rates meant that the potential for the reuse of collected oil was wasted. Waste prevention and management is one of the four top priorities of the 6th Environment Action Programme. The EC has passed legislation for the environmentally sustainable management of waste oils (Waste Oil Directive 75/439/EEC, amended by Directive 87/101/EEC). Among the Greek laws, law 2939/2001 concerning the alternative Waste Management of packaging and other wastes, and the PD 82/2004 ("Measures, Terms and Programme for the Alternative Management of Waste Lube Oils") are most relevant to this project.

##### Objectives

The primary objective of the project was to provide solutions to the problem of the management of WLO in line with the relevant EU and national laws for recycling and reusing packaging and waste. It aimed to design and implement an optimum collection system for WLO to allow their effective reutilisation. This sought to achieve higher collection rates of WLO, the minimisation of collection costs and significant environmental benefits. To explore the transferability and sustainability of the management system it was decided to implement the project in two big Greek urban and industrial centres - Thessaloniki and Patra. In each location, the integrated system would be monitored and evaluated to examine its performance under the different social and economic conditions leading to its eventual optimisation.

## Results

The project successfully demonstrated a sustainable solution for the management of waste lube oils. It developed and monitored an integrated collection system for the reutilisation of the oils in the two locations. The project achieved remarkable recovery rates during the implementation of the project. The project registered around 900 WLO sources in the Prefecture of Thessaloniki and 300 in the Prefecture of Achaia (Patras) and established collection points in the two areas. The main WLO collection points are petrol stations, vehicle-repair workshops, factories, harbours and airports. Two transfer stations were constructed for the temporary storage of the collected WLO prior to transfer to the beneficiary's refinery. Chemical laboratories were set up for the qualitative and quantitative testing of the incoming WLO. A fleet of collection trucks was established with essential tools such as GPS and GPRS. These elements allowed for the systematic monitoring of the integrated WLO management process enabling increased efficiency through the minimisation of the routes of the collection trucks and the maximisation of the quantities collected. Comparisons were carried out between alternative WLO management practices such as the burning of WLO in cement kilns and regeneration. The implementation of a Life Cycle Assessment of WLO made it clear that regeneration is far better for the environment than the production of virgin oil and the uncontrolled disposal of WLO. A cost-benefit analysis revealed that the integrated collection of WLO could be an efficient business activity, but its viability depends on the contribution (subsidies) of the lube oil producers. The project has already demonstrated its transferability within Greece. Given the success of the project, the beneficiary team has worked to register WLO sources across the whole of Greece. Furthermore, the beneficiary has already established and operates five more transfer stations in other Greek cities - Athens, Volos, Kozani, Kavala and Crete - and aims to expand the WLO collection system to the whole country.

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Environmental issues addressed:

Themes

Industry-Production - Chemicals  
Environmental management - Life Cycle Assessment-Management  
Waste - Waste recycling

Keywords

waste collection, waste oil, life-cycle management, comparison

Target EU Legislation

- Waste
- Directive 75/442/EEC -"Waste framework directive" (15.07.1975)

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	CYCLON HELLAS S.A.
Type of organisation	SME Small and medium sized enterprise
Description	Cyclon Hellas S.A. was established in Thessalonica (Greece) to found and operate factories of treatment, production and marketing of goods made from PVC and PE. Its activities have since extended to the industrial production and marketing of lubricants.
Partners	EPEM SA (Env. Planning, Engineering and Management), Greece

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Administrative data:

Project reference	LIFE02 ENV/GR/000360
Duration	01-OCT-2002 to 30-SEP -2005

Total budget	3,109,443.00 €
EU contribution	730,753.00 €
Project location	Kentriki Makedonia(Ellas) Dytiki Ellada(Ellas)

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Read more:

Project web site	<a href="#">Website of the project</a>
Publication: Layman report	Title: Layman report (EN) Year: 2005 No of pages: 10

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