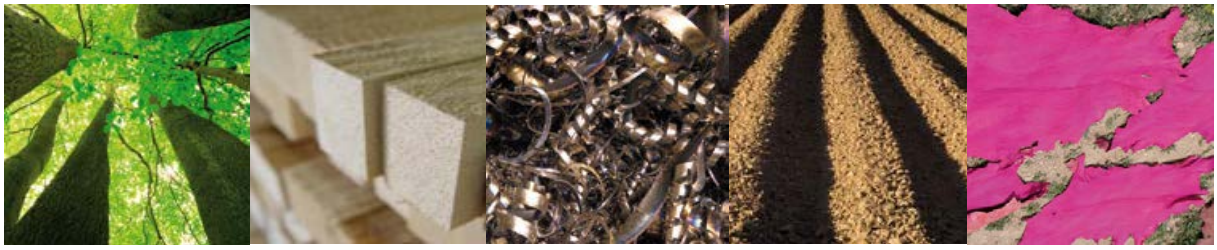

CIP Eco-innovation
Pilot and market replication projects
Call 2010

Call Identifier: CIP-EIP-Eco-Innovation-2010

MARE NEWSLETTER No 3

English version

Contract ECO/10/277237

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MARE Project aims at the development of an innovative technology for the treatment of Waste Oils & Petroleum Residues (WO&PR) through the design, construction and demonstrative operation of a thin film evaporator.
The beneficiaries of the Project are **CYCLON HELLAS S.A.** and the **Ecological Recycling Society.**

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The best of Eco-innovation projects

The following projects have received funding from the European Community's Competitiveness and Innovation Framework Programme (CIP), and more specifically under the framework of the Entrepreneurship and Innovation Programme (EIP) - Eco-innovation. These are the projects the more successful so far.

T4T – Textiles for textiles will make clothing more sustainable

In Textiles for Textiles (T4T) an automatic sorting installation for post consumer textiles and clothes is demonstrated. The installation is able to sort textile materials on fiber composition (cotton, wool, polyester, blends, …) and on color. Sorting is considered essential in upgrading textile recycling. The sorting is based on NIR-spectroscopy and the sorting algorithms developed in the T4T-project is the standard in textile sorting. This guarantees buyers of sorted textiles a constant quality in terms of composition regardless at what sorting plant they buy and when they buy.

As reclaimed fibers (a product after opening sorted fractions) are amongst the most environmental friendly textiles material available, the T4T-project contributes in making textile products more sustainable.

In NL about 5 kg of textile waste per inhabitant is collected for reuse/recycling and another 5 kg is recyclable but ends up in the landfill/incinerator (in UK similar numbers). For Europe this means: ± 7000 ktons of second hand textiles which can be put to value by re-use/recycling.

The goal of T4T:

- Development of an industrial scale automated sorting machine for textiles based on NIR technology (building upon the Craft-project Identitex of 2001)
- Identifying market opportunities of sorted fractions and do small scalepilot projects (clothing and nonclothing)

More information

SATURN - Sensor-sorting Automated Technology for advanced Recovery of Non-Ferrous metals from waste

The SATURN project focuses on the demonstration of enhanced recovery of non-ferrous metals from waste using sensor-based sorting technology. Starting in August 2009, a pilot plant will be installed and demonstrated in Salzgitter, Germany and in operation in October 2009. This innovative sensor sorting process will be tested and optimised under real market conditions evaluating waste from different EU countries.

Europe faces changes in waste legislation, requiring a pre-treatment (incineration or bio-mechanical treatment) step before final disposal in EU member states. Current separation methods rely mostly on manual sorting taking place outside Europe resulting in the loss of these resources. The SATURN process will demonstrate effective separation of non-ferrous metal fractions including aluminium or copper. By establishing and demonstrating a cost effective process through the SATURN project, advanced sorting can take place in the EU, increasing both European added value and energy efficiency by improved recycling rates. In addition, it will provide waste sorting companies with an effective sorting technology to reach the new targets set by the EU in waste legislation.

Expected and/or achieved results

- Establishment of a pilot plant that is able to produce non-ferrous metal products with high purities.
- Increased chain of added value in the European recycling sector.
- Enhancement of the energy efficiency in the production of items made of non-ferrous metals.
- Implementation of sustainable development / Sustainable management of resources.

More information

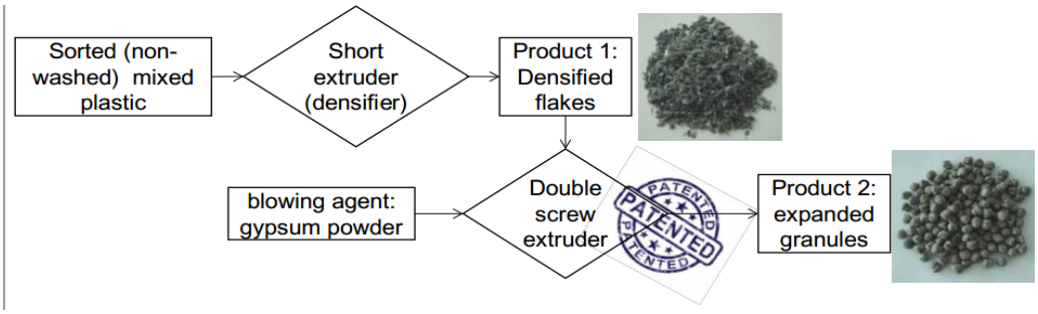
NUMIX: recycled plastic aggregate for lightweight concrete

The project promotes the wide adoption of lightweight aggregate products obtained from recycled plastics. NUMIX also promotes the production processes and methods to obtain the above products, seeking to establish partnerships Europe-wide for the production of Expanded Granules and Densified Flakes to be used as aggregate for lightened structural and non-structural concrete as well as for mortar respectively.

The main objectives of NUMIX project are:

- To promote industrial processes for the use of scrap resulting from the waste plastics sorting to produce: aggregates for lightweight concrete
- To increase the volume of mixed plastic waste destined to recycling, thus reducing the volume destined to incineration and landfill.

Detailed definition of the industrial production process



The life cycle analysis results demonstrate that NUMIX products have a lower environmental impact compared to traditional aggregates.

More information

PHOBIOR - An innovative photo-bioreactor for the production of micro algae with high amounts of omega-3 fatty acids

On 10 October 2012, ecoduna launched the first algae-breeding facility world-wide which is capable of utilizing the sun's rays entirely.

Algae are among the most important products of the third industrial revolution. They are the most likely resource to replace crude oil as an energy source and as a raw material in the synthetics industry.

The launch of the ecoduna industrial demonstration plant marks the removal of a further hurdle on the path to a global sustainable future using renewable resources.

PHOBIOR has succeeded in inventing a system which can capture the entire sunlight shining on a given surface area and convert it into valuable biomass through photosynthesis. Inspired by the efficiency of trees, which are able to photosynthesize over 25 times more sunlight than that which would fall on the surface area they cover, the developers have implemented this phenomenon in a technical system to breed algae.

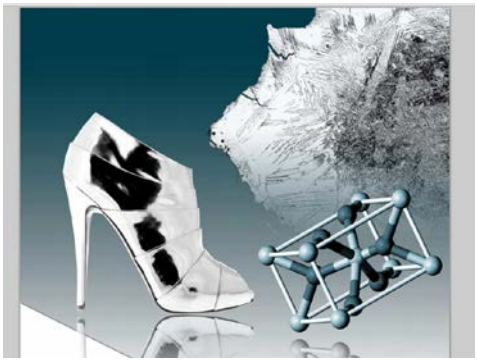
By increasing the surface area to the sun and turning the units containing algae to track the sunlight, ALL algae are exposed to sunlight AT ALL TIMES. The light intensity is regulated so that the algae are not damaged by over-exposure to sunlight.

Environmental improvements:

- CO2 as a valuable resource:1.8 tons of CO2 needed for 1 ton of produced algal biomass
- Oxygen produced: About same amount as biomass
- Production of omega-3 (quality) - Instead of killing fish
- Industrial production (e.g. 24/7): Using artificial light to "extend" the day – for high value products
- No fuel vs. food issue! with the ecoduna system

More information

Tileather - Eco-friendly leather tanned with titanium



Actually, chromium (III) is the most popular technology used tanning agent in the leather industry; chromium (VI), the carcinogenic form, has dramatic consequences on the environment and human health. Chromium is considered as a source of pollution due to the large volumen of exhausted residual tanning floats and solid waste produced.

The titanium tanning is an alternative technique that eliminates the 100% of the chromium and gives the final leather similar properties to those obtained from chromium tanning and reduce the environmental impact.

INCUSA became interested in titanium due to the benefits derived from its properties, such as biocompatibility with human tissues, innocuousness (hypoallergenic), biodegradability, lightness and strength.

As a result of the development of INCUSA's titanium tannage, it has been possible to obtain eco-friendly leathers tanned with titanium, register under the name SANOTAN. These leathers follow the demanding quality specifications and have advantages as comfort improvement and flame retardant properties.

The main objective of the Tileather project is to introduce into the European market leather produced using environmentally friendly titanium-tanning techniques, which has been registered by INCUSA as SANOTAN® leather. Through this novel process, chromium salts are replaced.

Environmental improvements achieved to date:

- 2.2 millon ft2 produced
- 1 million shoe pairs produced
- Chrome avoidance: 25.5 t
- Reduction in electrical energy consumption: 44,000 kWh
- Reduction in natural gas consumption: 325,600 kWh (29,735 Nm3)
- Reduction in chemicals consumption (other than chrome): 18.5 t
- Reduction in water consumption: 990 m3
- Reduction in CO2 emissions: 35 t

More information