

R&D PROJECT



Title of the project

Valorisation of sewage sludge in mass concretes

Acronym

LLOTS

Content of the project

This project proposes an alternative solution such as the addition of sewage sludge in the formulation of concrete.

In the global environmental scenario in which we are immersed, it is very important to have the possibility of recycling sludge in a beneficial activity.

The increasingly restrictive regulations on atmospheric pollution and sludge disposal, together with the foreseeable shortage of available landfill sites, the increase in development and the comfort of communities have accelerated the development of different ways of sludge valorisation, as in this case would be the LLOT technology. In this way, an attempt is being made to solve the problem of the growing consumption of natural resources in the formulation of concrete (such as aggregates and cement) and the parallel increase in the production of waste, in this case, sewage sludge.

General objectives

The general objective of the project is to develop the application of LLOT technology in mass concrete for civil works, known as ready-mixed concrete, specifically as an addition to cement.

This LLOT technology is particularly suitable for treating sludge from urban sewage treatment plants by means of incineration, which transforms the sludge into ash suitable for use in prefabricated and ready-mixed concretes.

The critical factor for the application of this technology is the formulation of the concrete, since the components that are incorporated into the mixture give specific characteristics for the construction site (both for the construction company and for the end client). In the realisation of the project, it is of interest to maximise the addition of sludge in the concrete formulation and to improve the application of the use of sludge.

Results and conclusions

The results obtained show that the addition of ash to partially replace sand does not lead to significant changes in physical properties or mechanical strength. The application of this innovation in civil works and building construction brings the following benefits:

- Reduction of the environmental impact of landfills by reducing the amount of sludge to be stored. The application of this technology would make it possible to treat 50% of all the dry sludge generated in Catalonia.
- Savings in the consumption of natural resources such as aggregates. Transforming an environmental liability, such as sewage sludge, into an environmental asset by means of a sustainable process with relatively low implementation costs and low or scarce maintenance costs.
- The dry sludge, once stable, can be added so that once the formula has been established, the concrete manufacturing process can be standardised as if it were a traditional process.
- The performance obtained in the laboratory has been optimal, thus taking the step towards the implementation of LLOT technology on site.

PROJECT PARTNERS

COMSA

PROMSA

Agència Catalana de l'Aigua

Universitat Politècnica de Catalunya (UPC)

Zicla

BUSSINESS AREAS

Infrastructure area

COMSA, S.A.

DURATION

2006-2007

BUDGET

103.760€

KEYWORDS

Concrete

Sludge

Environmental savings

COORDINATOR

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EXTERNAL FUNDING

