



LIFE Project Number  
**LIFE05 ENV/DK/000153**

## **MID-TERM REPORT**

Reporting Date  
**30/06/2006**

LIFE PROJECT NAME  
**Utilisation of ash from incineration of wastewater sludge (bio  
ash) in concrete production**

## **EXECUTIVE SUMMARY**

The new full-scale handling facilities for the transfer of dry bio ash at the two Waste Water Treatment Plants (AWS and Lynetten) have been in operation since February 2006, and the last finishing works will be installed in July 2006.

Full-scale handling facilities for the reception of the dry bio ash at the concrete producing plant have been in operation at two Unicon factories (Avedøre and Hedehusene) since January 2006. Facilities at a third factory (Ejby) are presently being established and are expected to be in operation in August 2006.

The necessary permits from the Authorities have been applied for and have been granted, i.e. a permit to the WWTP for the reuse of the bio ash for concrete production as well as a permit to Unicon for the reception of bio ash.

Since February 2006 approx. 650 t of AWS bio ash has been used for the production of concrete mainly of Environmental class P at the two factories. This amount almost corresponds to the total amount of bio ash produced at AWS.

Unfortunately, this very satisfactory reuse of bio ash from AWS has not yet been effectuated using bio ash from Lynetten. Thus, the first production of concrete using Lynetten bio ash was not a success with respect to handling properties as well as strength.

This serious problem is under examination in order to find and specify a solution.

A first conclusion: The oven (incinerator) type is important. Bio ash from a multiple hearth oven (Lynetten) is with no pre-treatment less suitable for concrete production than bio ash from a fluidised bed oven (AWS).

The project first phase establishing the necessary full-scale equipment has almost been completed. The second phase comprising analytical work and laboratory testing of concrete samples has just started and is expected executed according to the grant agreement plans.

A special task (no. 3) producing 'white bio ash' by separate incineration of sludge from a WWTP using aluminium for the precipitation of phosphorus is progressing satisfactorily. With a delay of 2-3 months, however, because of a need to prolong the period using a different chemical for the precipitation.

Contributions to the dissemination of the project: The home page has been established and is under current revision. An Article in "Dansk Beton", May 2006. A paper presented at an international conference in Switzerland, July 2006. A stakeholder seminar will be held in Copenhagen, October 2006.