

# WOOD ASH FROM INDUSTRIAL WASTE MANAGEMENT

*Tommy Claesson*

*University of Kalmar, Department of Natural Sciences,  
Sweden*

## ABSTRACT

At present, most ashes, from heat plants in Sweden, ends up on waste deposits. Even ashes from wood ends up in this way, which is against a sustainable tinking and also costs a lot of money. Wood ashes, which contains a lot of nutritive elements as K, Mg, Ca, S, Zn, Mo, Cu etc. is today treated as a waste material. This work however, shows that we in the future can bring back wood ashes to the forests where it belongs.

By chemical analyses we know that wood ashes contains about 50 elements and we can find not only nutritive elements but also heavy metals. When burning wood, there will be about 1% of the tree left as ash. One important objection against returning wood ashes to the forests is that we are returning a heavily concentrated material. The forest administration in Sweden has because of this decided that before returning the ashes it has to be agglomerated. In this project we are granulating ashes together with Etec-dolomite. By doing this we are adding valuable Mg- and Ca- carbonate to the product and we are at the same time reducing the negative effects of heavy metals.

In the autumn 1995 the first granules of Etec-dolomite and wood ashes were made in the laboratory. During the next winter a prototype were constructed and buildt. It consists of a mixer, where water, ash and dolomite is mixed, a tumbler, where the granules are made, and an oven, where the granules are hardened.

For the present, all ashes from the heat plant "Draken" in Kalmar, 300 ton/year, are treated in this prototype. The granules constructed are in between 0 to 4 mm and dissolution tests shows that the dissolution rate for the bigger granules will be about 20 years. Despite the risk of a concentrated ash, many other factors like storage qualities, transportation qualities and spreading qualities will be better with the granulation together with Etec-dolomite.

Ecological investigations, where we are looking at the uptake of elements from the granules to different plants both in the laboratory and in forests, have started and results are continuously reported.

Technically we have found out that if the ashes contains more than 15% of coal, unburned wood, the granules will not be stable but fall apart. Different tests are planned to see if it is technically possible to control the burning process and measure the carbon content in the ashes on line.

This project is carried out as a cooperation project between Kalmar University and Kalmar Energi och Miljö AB.