

**Implementing a lab-developed liner recipe in a full scale cover construction – challenges, setbacks and success**

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Metallurgical slags from steel industry are valuable materials with beneficial properties for use within different types of constructions. Depending on their properties and the specific requirements of the construction, different slags suit different applications.

Many landfills have to be covered in Sweden and Europe within the next years. For the municipal landfill of Hagfors, the steel company Uddeholms AB initiated a joint research project together with the municipality of Hagfors and Luleå University of Technology in 2003. The work showed that several slags from scrap metal based steel making can be used in the construction. As a result of the project, Hagfors municipality signed a contract with the steel company about using slags instead of natural raw materials in the landfill cover which contributes to a sustainable use of limited natural resources.

The design of the top cover was developed by the research groups of Waste Science and Technology and Process metallurgy at the department of Civil, Environmental and Natural Resources Engineering at Luleå University of Technology in close cooperation with Uddeholms AB and Hagfors municipality.

Electric arc furnace slag (EAFS) and ladle slag from Uddeholms AB were tested in the lab and in full scale during the covering of the Hagfors landfill. The slags were used in the foundation layer, the liner and the drainage layer. Five test areas were built between 2005 and 2011 and samples were taken twice per year. The results show that the technical and environmental demands with regard to permeability and leaching can be fulfilled.

This presentation focuses on experiences from the project related to the transfer of the results from the lab to the full scale construction work in the field.