Minimising heavy metals and PAH contamination from biomass ashes while returning nutrients

Jesper Cramer, Søren Houmøller*
dk-TEKNIK ENERGY & ENVIRONMENT, 15 Gladsaxe Møllevej, DK-2860 Søborg, Denmark
Fax: + 45 39 69 60 02; cramer@dk-teknik.dk

In Denmark biofuel fired plants are producing app. 20,000 tons ash per year. The potential of the manurial value in the ash is not utilised in agriculture and forestry. This project will investigate the Danish experiences of recycling bioash to agriculture and forestry and determine the environmental, technical and economical barriers preventing full utilisation of the potential. Furthermore the manurial value of different fractions of ash (bottom ash, fly ash, etc.) from straw and wood chip fired plants will be analysed. Possible technical solutions that can increase the utilisation of the ash will be investigated.

Background
If the biofuel-fired plants can separate the bottom ash from the fly ash, most of the bottom ash could be utilised on fields and in forests. As the bottom ash is the major part of the ash, it would be possible to utilise the present 10.000 tons of bottom ash per year in Denmark. Prognoses predict a production of 30.000 tons of ash per year within 30 years if the Danish goal for the use of biomass is reached.

Project activities
The project is completed through the following activities:
- Collection of data about the present practice and experience from all larger Danish biofuel plants
- Data processing and evaluation of the collected data
- Screening of the technical possibilities
- Collection of ash samples and evaluation of the analysis for selected bioashes
- Economical, agricultural and planning evaluations.

Expected results
The results from this project will provide:
- The Danish biofuel fired plants an overview over the methods for separation of the ashes
- The Danish biofuel fired plants with advice in operation planning regarding optimal ash separation
- Agriculture and forestry a better understanding of the possibilities of recycling the ash
- The authorities better possibilities to control the recycling of bioashes.

Project partners
dk-TEKNIK ENERGY & ENVIRONMENT is an independent technological institute with high competence in utilisation of inhomogeneous fuels - analysis, characterising, combustion chemistry, combustion technology (deposits) residuals and flue gas cleaning in connection with biofuels, waste, sludge and fossil fuels.

Danish District Heating Plant Association. Association for the Danish district heating plant.

Tech-wise is a consulting engineering company specialized in services related to energy and power plants and systems based on the utilisation of fossil fuels and renewable energy

The Danish Forest and Landscape Research Institute (DFLRI) is a sector research institute under the Ministry of Environment and Energy. The objective of the DFLRI is to generate and disseminate knowledge on forests, landscapes and planning.

The Danish Agricultural Advisory Centre is one of the two levels in a unique advisory system and the farmers are both the owners and users of this system.