

START OF EUROPEAN RESEARCH PROJECT FOR CONVERTING COAL FIRED POWER PLANT TO BIOMASS

This November the European ARBAHEAT consortium will start a research project to investigate the conversion of the ENGIE Ultra-SuperCritical coal-fired Rotterdam power plant into a biomass-fired heat and power plant. The innovative technology used to produce the required steam treated biomass has been developed by the Norwegian company Arbaflame AS. Goal of this showcase is to investigate the technical possibilities of cost-effectively converting the coal-fired power plant into a flexible 100% sustainable biomass fired plant, which will be able to deliver sustainable electricity as well as sustainable heat. For this project the consortium will receive over € 19 million EU funding.

Steam treated biomass pellets with comparable characteristics to coal

The ARBAHEAT project is aimed at integrating an innovative biomass pre-treatment installation into the ENGIE coal-fired power plant. The installation will produce so-called steam treated biomass pellets from sustainable biomass, which complies with the most stringent EU sustainability criteria. These pellets were specifically chosen as energy source as they have comparable characteristics to coal. Compared to normal biomass pellets they are more water resistant, have a higher energy density and have almost the same burning characteristics to coal. This will facilitate the use in an existing power plant and significantly reduce costs for converting the existing coal-fired power plant to biomass.

Although parts of the steam treatment technology and resulting biomass pellets have been tested before by Arbaflame on 15 other power plants, demonstrating the cost-effective integration of the technology into an existing modern power plant has never before been done to this extent. "A successful demonstration of this concept will establish an impressive showcase for other EU coal-fired power plants or even to other bio-energy plants", says Arbaflame CEO, Håkon Knappskog.

Promising solution for retrofitting modern coal-fired plants in a cost-effective way

The European ambitions to limit CO₂ emissions has a significant impact on the operation of coal-fired power plants and on the required balancing power to support the grid supplementary to solar and wind energy. Retrofitting some modern existing coal-fired power plants with the ARBAHEAT concept could offer a significant contribution to the realisation of decarbonisation targets in Europe by adding sustainable heat and power flexibility. The

state-of-the-art ENGIE power plant is the perfect candidate for this first demonstration project because of its size and strategic location in the port of Rotterdam. “The plant can play an important role in the harbour of Rotterdam not only supplementary to wind and solar but also in providing heat. However at this moment there is no viable business case to convert a coal-fired powerplant into a 100% sustainable and flexible biomass plant. A successful demonstration will allow for delivering large amounts of sustainable electricity and heat to the surrounding area”, says manager Coal ENGIE, Jeroen Schaafsma. Besides energy, the project will also produce other biological side-products from the steam treatment process, such as biochemicals, allowing for an even more sustainable and cost-effective conversion of the power plant.

Energy, science and EU government join hands in achieving sustainability goals

This four-year demonstration project brings together European expertise from the energy sector, the scientific community and the renewable energy sector committed to achieving the EU sustainability goals. In addition to ENGIE (NL) Arbaflame (NO), PNO Consultants (NL), TNO (NL), Sintef (NO), Free University of Brussels (VUB, BE), Port of Rotterdam (NL) and University of Bergen (NO) are also members of the ARBAHEAT consortium. The consortium partners have all the relevant knowledge and resources available to make the ARBAHEAT project to a success. With the € 19 million grant the EU acknowledges the sustainability of the project and its targets and supports the implementation of this demonstration project.

For editorial office

Please use of this press release with due acknowledgment.

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