DONG Energy's biomass conversion status and plan for coal phase out in 2023.

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Abstract

An overview of DONG Energy's biomass conversions of existing fossil fuel-fired combined heat and power plants is presented. The power plant Avedøre Unit 2 was converted from oil/gas firing to wood pellet/gas firing in 2003 and fully to wood pellet firing in 2014. The power plants Studstrup unit 3 and Avedøre Unit 1 have been converted 2016-2017 utilizing mainly wood pellets for heat production and until 2023 with coal for power production and as backup fuel. An overview of changes for conversion incl. transport and storage systems for wood pellets, modifications of roller mills, addition of coal fly ash to minimize fouling, slagging and corrosion and to reduce the rate of deactivation of the vanadium based SCR catalyst.

Conversion of Skærbæk power station is in final stage of commissioning with wood chips grate fired boilers with a total thermal input of 320 MW. To ensure high district heating capacity of the plant and thereby the total energy efficiency, flue gas condensation is applied. Current gas-fired unit is kept for power production and back up.

An overview of future bioconversion plans for remaining non-converted DONG Energy units in Denmark will be given.

Though DONG Energy has experience with biomass handling and use of biofuels for more than 25 years we are still facing technical challenges within areas such as fire and explosion safety, ash utilisation and alternatives to coal ash as additive. Some examples of R&D needs to support the green transformation of the power plants are presented.