

PELLETS

Impacts on US forest carbon pools

TECHNOLOGY

Twin-shaft scissors and Archimedian screw

BIOFUELS

Liquid Wind partners with Övik Energi on e-fuel

HEAT & POWER

ECLUSE steam network opens for expansion

MARKET & FINANCE

Pellets enhancing EU's green recovery

BIOENERGY

"Whenever and wherever bioenergy is discussed"
No. 5 November 2020 (113)

INTERNATIONAL

DISTRICT ENERGY - HEAT, POWER & COOLING
feature:





WOOD PELLETING PLANTS

The latest pellet mill type 65-1500 with 630 kW drive power reaches up to 12 t/h high quality level. It is the largest industry proven wood pelleting press in the market today. More than 60 large Kahl pelleting presses are installed just by the well-known US market leader. Recently pellet producers in Brazil (400.000 tons hardwood per year), Russia (2 x 150.000 tons per year) and Asia Pacific (already more than 40 large scale presses) have decided to install Kahl technology.



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COVER PHOTO



Kristina Säfsten, CEO of municipal energy company Övik Energi AB has every reason to smile. Together with Liquid Wind, the company could become the world's first biomass combined heat (CHP) plant that uses its biogenic carbon emissions to produce methanol (photo Sander Taats).

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BIOHEAT TO MULTI-UTILITY CLIMATE SOLUTION

According to the calendar (mid-November), we should be well into the 2020/2021 heating season up here in the northern hemisphere. For a home owner like the undersigned, that usually means that the chimney sweep has swept and vetted the chimney during August/September and pellet consumption begins to rise as the boiler transitions from hot water only mode to hot water and heat. The latter has yet to happen in earnest as it is still unseasonably warm. Good news for home economics, less so perhaps for pellet producers and district heating suppliers. Nonetheless, according to a report from Bioenergy Europe, fossil fuels and other non-renewable sources still dominate the European heating and cooling sector – 80% in 2018. This highly significant since space and water heating represent 75% of energy consumption in European homes, and as a whole, the heating and cooling sector represents 51 percent of final energy consumption in Europe and approximately 27% of EU carbon emissions. Thus decarbonising this sector is crucial for European carbon neutrality goals.

Renewable heat solutions, including bioenergy, are key in making that happen. Indeed, Bioenergy Europe's report shows that bioheat accounted for 85% of all renewable heat consumption in Europe in 2018 or almost 17 percent of the total energy sources used for heating. District heating with renewable heat and residual heat sources are an efficient way to decarbonise the heat supply in many European cities. While well established and prevalent in some countries such as the Nordic and Baltic states as reported in this issue, the concept of developing distributed energy and associated infrastructure systems other than electricity and gas is catching on – Vattenfall Heat UK just one such example. Process heat represents more than 60% of energy use in the European manufacturing industry. Amazingly, Bioenergy Europe's report also finds that 99% of renewable heat used by industry in 2018 comes from biomass, demonstrating that bioenergy is fundamental in aiding the transition of industry to carbon-neutral energy systems, like the ECLUSE superheated steam network in Belgium.

Moreover, the report found that 49% of bioheat consumed in 2018 was found in the residential sector, much of it supplied in the form of pellets as in the undersigned's household. And as Bioenergy Europe points out, it is the small and medium appliances that dominate, with their modernization, correct maintenance, and installation becoming key to reducing fossil carbon emissions and curbing local air emissions. The association together with the European Pellet Council (EPC) has recently launched a new dedicated campaign initiative called Switch4Air that aims to raise awareness of how the bioenergy sector can contribute to the improvement of air quality in Europe. With the impending heating season, there is a risk of an increased concentration of particulate matter (PM2.5 and PM10) emissions, largely a result of greater demand for household heating combined with outdated, inefficient and neglected heating appliance stock. This includes open fireplaces, old stoves, and boilers, which ought to be replaced. Promoting the deployment of highly efficient and modern bioenergy domestic appliances, as well as supporting the replacement of older models, for example with a scrap-page scheme, and ensuring correct maintenance and installation, are key to PM reduction.

On October 14, 2020, the European Commission (EC) presented its Renovation Wave strategy, a plan meant to retrofit and modernize more than 200 million existing buildings in Europe with better insulation and change of heating equipment or sources while also generating economic growth and raising the well-being standards for its citizens. The EU wants to at least double the pace of renovation of buildings over the coming decade, increasing the average rate of renovation, from the current 1% to 2% annually by 2030, a total of 35 million building units over the decade. Renewable heat bodies have welcomed the overall tone of the initiative and its focus on increasing the share of renewables in the heating and cooling sector but call for the deployment of coherent measures, including a price on carbon, to ensure a faster fossil fuel phase-out combined with further market uptake of renewable solutions.

For district heat plants, the best is yet to come. Opportunities exist for some to become combined heat and power (CHP) plants by retrofitting with an ORC turbine, like VänerEnergi's Töreboda heat plant. 2019 saw five district heat plants in Sweden add a total of 2 MWe new local capacity – and word just in is that Againty signed an order for ORC turbine no. 20 with a Swedish heat plant operator. Taking the opportunities with having a biomass-fired heat and power facility even further is Övik Energi. Partnering with Liquid Wind on a novel commercial-scale bioenergy carbon capture and utilisation (BECCU) project, it could very well become the world's first biomass CHP with eMethanol production.

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34 In Europe, SUSTAINABLE RESOURCES Verification Scheme GmbH (SUREV) has officially started operations of a new "independent and credible certification system" to ensure sustainable use of biomass within the energy sector.



10 In Finland, the City of Espoo has set a target to make Espoo completely carbon neutral by 2030. This target includes decarbonizing the city's district heating network operated by energy utility major Fortum by smart and flexible solutions such as deep heat and biomass.



12 In March 2019, the very first large-scale industrial steam distribution network at the Waasland Port in Antwerp, Belgium officially began operations. Called ECLUSE, the network distributes process steam generated from two waste-to-energy plants to five chemical companies at the port reducing carbon emissions while increasing energy efficiency.



15 Toshiba Energy Systems & Solutions Corporation (Toshiba ESS) has commenced operations of a large-scale carbon capture and storage (CCS) facility at the 50 MWe biomass-fired Mikawa Power Plant.



6 VänerEnergi AB is one of a growing number of Swedish district heat companies retrofitting boilers with an Organic Rankine Cycle (ORC) turbine to become combined heat and power (CHP) plants producing electricity for self-consumption and/or the local grid.



28 The world-leading certification scheme for wood pellets celebrates ten years of operations. First launched in 2010, the ENplus certification scheme has contributed to the development of the premium pellet market by introducing and maintaining harmonized pellet quality along the entire supply chain.



19 Power-to-liquids (PtL) developer Liquid Wind is partnering with municipal energy utility Övik Energi AB that will provide carbon dioxide (CO₂) and the location for Sweden's first commercial-scale carbon capture and utilisation (CCU) electro-fuel (e-fuel) facility.



25 With over 700 successfully completed projects since its founding in 1991, Latvian biomass combustion specialists SC KOMFORTS Group has grown to become a well-recognized brand amongst district heating operators and wood processing industries.



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