Oslo energy storage

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2022 was a very eventful year for Hafslund Oslo Celsio, or Celsio, as we like to call ourselves. We have new owners and a new name, we started a pioneering project to construct a facility for full-scale carbon capture and storage at our Klemetsrud waste incineration plant, and we had zero incidents of injuries to employees.

Once completed, our carbon capture project at Klemetsrud will significantly reduce Oslo’s CO2 emissions. This will enable us to take an active role in the green shift and the global fight against climate change.

We have a great deal to be proud of at Celsio, but we will not rest on our laurels. We are well-equipped for growth and have what it takes to maintain our position as Norway’s leading circular energy company.

On 19 May, Fortum Oslo Varme was formally acquired by Hafslund (60 per cent), Infranode (20 per cent) and HitecVision (20 per cent). At the same time, the company changed its name to Hafslund Oslo Celsio (Celsio). Celsio has gained a group of financially strong owners that have extensive experience within energy, infrastructure and technological development, and has become part of the Hafslund Group.

Financing of carbon capture and storage (CCS) at Klemetsrud was secured on 28 June when an agreement was jointly signed by the Norwegian State, the City of Oslo and Celsio. The carbon capture plant will reduce a significant proportion of Oslo"s CO2 emissions, and the project is essential for Oslo being able to achieve its ambitious climate targets. In 2020, the City of Oslo adopted the target of reducing greenhouse gas emissions by 95 per cent by 2030, compared to 2009 levels. Construction of the carbon capture plant at Klemetsrud started in August 2022.

At the ZERO Conference on 24 November, Celsio was named the winner of the Business Climate Prize (Naeringslivets klimapris). Celsio was awarded the prize because of its ambitious and forward-looking carbon capture and storage project. This was the ninth time the ZERO Prize had been awarded. The prize is sponsored by the Confederation of Norwegian Enterprise (NHO), Norwegian University of Science and Technology (NTNU) and the Environmental Foundation ZERO.

Celsio supplies the residents of Oslo with district heating and cooling. Among other things, district heating is produced by utilising excess heat from the city’s waste incineration, data centres and sewage. Celsio owns and operates two waste incineration plants in Oslo and ensures sustainable handling of waste that cannot be recycled. In the summer of 2022, construction commenced on the world’s first full-scale carbon capture and storage facility at the Klemetsrud waste incineration plant.

In addition to being an energy supplier, Celsio is an infrastructure and urban development company that contributes to the development of a greener and smarter Oslo. Celsio also owns 100 per cent of the fibre

company Hafslund Fiber, which supplies dark fibre to the business sector. At the end of 2022, Celsio had approximately 200 employees working at the two waste incineration plants at Klemetsrud and Haraldrud and at the headquarters in Sk?yen.

Celsio owns and operates two waste incineration plants, one of which is located at Klemetsrud and the other at Haraldrud in Oslo. From these plants, the company provides safe and environmentally friendly final treatment of residual waste that cannot or should not be recycled. Celsio incinerated a total of 356,000 tonnes of residual waste in 2022. The waste heat from waste incineration is fed into the district heating network.

Celsio produces, distributes and sells district heating. The production of district heating is largely based on waste heat from the company’s waste incineration plant, however also includes excess heat from data centres and Oslo"s sewage. Other energy carriers such as bio-oil, electricity and wood pellets are also used during peak-load periods.

Celsio is actively working to increase the use of local excess energy as sources of heat for district heating production. STACK’s OSLO1 data centre at Ulven now transfers around 3.5 MW of thermal energy to Celsio’s district heating system. This provides heat equivalent to heating and hot tap water for 4,000 Oslo homes, and reduces Celsio’s need for an alternative supply of energy by 20 GWh.

Celsio has thus far identified three areas for commercial growth in Oslo as being the most important market areas for district cooling: City-centre (within Ring 1, including Filipstad), Sk?yen and Ulven/?kern. The commercial building Construction City is currently under construction at ?kern/Ulven. Through the company Hovinbyen Energy Hub, which Celsio owns together with housing developer OBOS, a new district cooling centre will be established to supply district cooling to the commercial buildings in the Ulven/?kern area.