

PELLETS

Enviva ships first consignment to Japan

TECHNOLOGY

ÖkoFEN's ZeroFlame pellet combustion tech

BIOFUELS

Multi-billion biorefinery & waste-to-fuel plans revealed

BIOGAS

Straw the feedstock for "verbiogas" expansion

MARKET & FINANCE

Renewable Carbon Initiative launched

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COVER PHOTO



Claus Sauter, CEO of VERBIO Vereinigte BioEnergie AG, lends a hand and helps with the straw harvest in Brandenburg. In doing so he wants to underline the importance of agriculture to the energy turnaround, and send a clear signal for regional value-added chains (photo Verbio).

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HORRIBILIS TO MIRABILIS VIA DIGITALIZATION

The end is nigh for what has been an 'annus horribilis' for many, and there is still seemingly not much to be jolly or festive about just yet. Although vaccines have been developed at breakneck speed and vaccination programmes have begun in some countries, the current state of imposed libertarian restrictions on a social mammal such as Homo sapiens are likely to linger for some time into 2021. The cloud on that horizon is that in some regions, these restrictions, both physical and digital, risk remaining enforced long after that corona has reverted to being a beachside brand of beer or cigar.

One silver lining in all this though is that perhaps now, more than ever before, do we begin to understand the all-encompassing impact and potential that digitalization with the Internet of Things (IoT) and the Industrial Internet of Things (IIoT) has on our daily professional and personal lives. Short of becoming avatar's, we've managed to transfer most of what constitutes physical interaction with other fellow beings into cyberspace in our bid to avoid physical. For digital novices affected by isolation as a result of social distancing, it has undoubtedly been a steep learning curve. One can entertain the idea of how this would have worked had the pandemic struck at the beginning of this century. This degree of digital dependence and cyber-mobility coupled with the pace of development is of course two-sided. Aside from slanderous social media posts and fake-news, the dark side reflects the in real life human condition in all its sinister and raw gory while regulation and legislation is by default trailing behind.

While much has transferred into cyberspace, there is still plenty that cannot. So, although those X-mas presents might have been ordered and purchased online, they still physically need to be manufactured and/or transported to the doorstep – manufacturing, shipping, storage, and logistics. Those few transactional clicks, whereby binary data sparks off physical actions somewhere else, ultimately consumes energy and resources, directly and indirectly, giving rise to emissions – a digital footprint. Given the rapid developments in digitalisation and the presumed surge in data traffic this year, will say travel emissions been replaced by power emissions?

One good read on the subject is a paper from telecoms major Ericsson 'A quick guide to your digital carbon footprint Deconstructing Information and Communication Technology's carbon emissions'. While obviously a serious ICT player with vested interests, the paper does provide all the background calculations and research references for further reading. The authors highlight that the global ICT sector (2019) accounted for about 3.6 percent of global electricity consumption and has a carbon footprint of approximately 730 million tonnes CO₂ equivalent (Mt CO₂-eq) or 1.4 percent of total global greenhouse gas (GHG) emissions. At face value, its GHG impact is roughly the order of magnitude as civil aviation (2015), which is often noted in mainstream media. However, as the authors point out, the similarity is only in terms of numbers, not in terms of scope so it is an apples and oranges comparison.

For the ICT sector, it is the total life cycle carbon footprint including electricity used by all equipment in the system during their use, manufacturing of networks, data centres, smartphones, computers and other user equipment, the construction of ICT-related buildings and, for instance, employee work travel and transport. For aviation the figure is just the fuel burn. The authors also find that electricity consumption and carbon footprint of the ICT sector do not follow the same trends as data traffic. Since 2010, total data traffic has increased approximately tenfold, while electricity consumption for the ICT sector has remained constant. And while the sector endeavours to continue to keep its own footprint in check, it is the application of ICT solutions, including IoT, machine learning and automation, in other sectors and industries where the greatest potential to reduce carbon emissions globally is found – up to 15 percent the authors find. This suggests that digitalization efforts by companies like Innofreight will not only have a positive effect on its financial bottom-line but also on its environmental impact and that of its clients.

So roll on 2021, there is the distinct possibility that 'annus horribilis' could be succeeded by an 'annus mirabilis' thanks to digitalization. In the meanwhile, from all of us at Bioenergy International, best wishes for the Season and may you and yours enjoy a happy, healthy and safe 2021.

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ARTICLES

FEATURE: STORAGE, SHIPPING AND LOGISTICS

Gasum opens Finland's first LBG plant

6

Full "verbiogas" for German biofuels producer

8

Canadian consortium launch

10

CA\$875m waste-to-fuels project

12

Perstorp reveals Project AIR carbon capture to methanol plans

13

BELT awarded CA\$5.9m for biorefinery demo

14

Metsä's methanol plans and 3D fibre pilot

15

Chemical majors and shipper's confidence in methanol

16

Grön Fuels US\$9.2B biorefinery plans

17

Australia's first RNG-to-grid project

18

Dome Technology building fifth dome for Enviva

19

Bruks Siwertell to expand truck receiving at Enviva Pellets Greenwood

20

Port of Tyne reveals £1 million pellet handling investment

21

Enviva begins shipping pellets to Japan

22

The Industrial Internet of (rail freight) Things

23

HEAT & POWER

ÖkoFEN launches ZeroFlame pellet combustion tech

24

KPA Unicon to supply biomass boilers to Poland and Russia

25

Andritz to supply PowerFluid CFB boiler for Ichihara biomass power plant

26

DP CleanTech to supply boiler and flue gas cleanup to Thai EfW

27

Xebec Adsorption to acquire HyGear

28

STRABAG selected for turnkey biogas project in Poland

29

MARKETS & FINANCE

PIX Nordic

30

Baltpool to operate under own brand in Denmark

31

Renewable Carbon Initiative launched

32

BIOGAS

BiON signs MoU's to boost expansion of biogas activities in Malaysia

33

Agrigaz Vire biomethane-to-grid plant in Normandy goes live

34

India invests billions in CBG

35

Vaisala scoops Finnish Innovation Award with novel biogas measurement probe

36

Microferm Green Gas proving a hit for Dutch dairy farmers

37

Borger small-scale separator is big on results

38

Biogas Technology Suppliers Directory 2020

39

HZI hands over upgrading plant to Canadian biomethane-to-grid project

40

26 Baltpool – an international digital biomass trading platform, is poised to double up on its commitment to the Danish solid biomass market by launching operations under its own BALTPOOL brand name starting January 1, 2021.



8 The German Parliament, the Bundestag, recently decided on a toll exemption for gas-powered trucks. It means that the way is now free for increasing amount of CNG-powered trucks that can run on almost climate-neutral biomethane.

6 Nordic gas major Gasum Oy has reopened its biogas plant in Topinoja,



21 Enviva Partners, LP (Enviva), the world's largest pellet producer, has begun shipping pellets to Japan. The first consignment was sent from Port Panama City in Florida (FL) to Iwakuni Port, which is located in the western part of Hiroshima Bay, on the eastern end of the Yamaguchi Prefecture.



30 Vaisala, a global leader in environmental and industrial measurements has announced that its novel in situ 3-in-1 biogas measurement probe, the Vaisala MGP261, was selected as a winner in the annual Finnish Quality Innovation Award competition.



16 Grön Fuels LLC, a Fidelis Infrastructure LP portfolio company, has revealed plans for studying the feasibility of a major renewable fuel complex at the Port of Greater Baton Rouge in Louisiana (LA).



12 In Sweden, specialty chemicals major Perstorp Group (Perstorp) has revealed plans to reduce its carbon dioxide (CO₂) emissions by around 500 000 tonnes by producing sustainable methanol.



14 Metsä Fibre, part of the Finnish forest industry major Metsä Group, has announced that Veolia Nordic AB (Veolia) a subsidiary of global waste management services provider Veolia Group, is planning to build a crude methanol processing plant in connection with Metsä Fibre's bioproduct mill in Äänekoski, Finland.

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Fisker

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INNOFREIGHT Solutions

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Landia

30 Streisal

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24

MoistTech

24 Weltec Biopower

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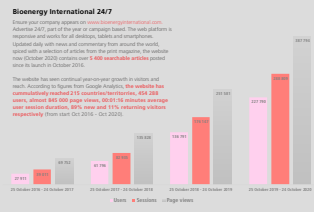
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Gasum opens Finland's first LBG plant

Nordic gas major Gasum Oy has reopened its biogas plant in Topinoja, Turku following an extensive expansion and modernization of the facility making it the first in Finland to produce liquid biogas (LBG) for use in transport industry, and ramping up biogas production in Sweden with new projects and acquisitions, and looking at biogas utilization, carbon capture and utilization (BECCU).

THE TOPINOJA PLANT, which was officially reopened on 12, 2020, is the first in Finland to produce liquid biogas, upgrade it to biomethane (renewable natural gas – RNG) and then use it for use in transport industry, and manufacturing.

The plant was one of the Sipilä's Finnish Government's key projects Bioeconomy, and clean solutions, the objective of which is to increase in a sustainable way the energy used in Finland by, in particular, improving the availability of biogas.

Meet growing demand

The plant will produce around 130 000 tonnes of biogas per year, which corresponds to the annual fuel consumption of 125 heavy-duty vehicles (HDVs). The plant will also produce around 4 000 tonnes of ammonia water for use as a recycled nutrient. The Turku biogas plant promotes the realization of the circular economy and the development of the gas market in the Turku region.

– We're one of the few companies in the Nordic countries to be able to provide industrial-scale biogas production and distribution. Gasum is continuously investing in biogas plants and increasing its production capacity.

and we are constantly pursuing new opportunities to increase production capacity. We are investing in the development of our plants so that we can take the circular economy even further. Demand for recycled nutrients is also showing development in different industrial sectors. Our Turku plant is a superb example of the realization of the circular economy, said Johan Cronberg, CEO of Gasum.

New and ongoing biogas projects

Gasum is boosting its biogas production capacity across the Nordics by expanding existing plants, building new ones, and increasing the production capacity of existing plants. The company is pursuing cost-efficiency in biogas production and the use of biogas from the production of third parties.

In Finland, it has made a basic plan and started to apply for permits to expand the biogas plants in Kuopio, Oulu, and Rovaniemi. The Lohja biogas plant is under construction and the 4 000 tonnes-per-annum Viinikkala biogas transfer station has been completed.

In Sweden, the 220 MWh per day Nyköpings LBG plant at Stora Enso's Nymölla mill is the most complete with start-up at the beginning of 2021. Gasum has also acquired ownership in the Skövde biogas plant in Västergötland. The plant

The Skövde plant, along with Gasum's biogas plants in Turku and Västervik, will produce a total of 120 GWh biogas per year. The plant is also boosting its production capacity by the biogas production in Sweden. The plant is also looking at the use of biogas from the production of third parties.

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– The grant from Klimatklivet (Climate Step) makes it possible for us to consider expanding the plant's production capacity.

Developing carbon capture and utilization

Gasum has been developing a pilot plant for carbon capture and utilization (CCU) in the region of Kujala. The plant is designed to capture and utilize carbon dioxide from biogas production. The plant is also looking at the use of biogas from the production of third parties.

As a whole, the company processes over 800 000 tonnes of biomass a year in its anaerobic digestion (AD) plant network and produces a total of 120 GWh biogas per year. The plant is also looking at the use of biogas from the production of third parties.

In Finland, Gasum together with the Lahti University of Applied Sciences (LAB), the University of Technology (LUT) and the Lahti Region Development Agency (LADEC) is developing a regional CO₂ emissions recycling concept in Pajala-Häme. A carbon capture and purification pilot aimed at utilizing recycled CO₂ in partnership with the Pajala-Häme Waste Management (PHJ) at the Pajala-Häme plant in Lahti, where LABIO Oy owns a 50 GWh per annum anaerobic digestion (AD) and biogas upgrading plant in partnership with Gasum.

The carbon capture pilot is part of the BIOSYKLI project, which is studying the largest regional producers of CO₂ and regional users for

– Gasum is continuously investing in biogas plants and increasing the performance of existing ones. Demand for biogas is growing in all segments and we are constantly pursuing new opportunities.

in the region to be able to use, explained Jukka Selin, Environment Expert and Business Development Manager, LADEC.

The recycling concept to be implemented in Kujala aims to purify CO₂ up to 99 percent, to make it as useable in as many applications and in a wide range of industrial sectors as possible. For example, as a growth enhancer in greenhouses, in the production of synthetic production, and the food and beverage industry.

– Soft drinks manufacturers, indoor horticulture and bakeries, for example, currently buy fossil carbon dioxide but at the same time renewable biogenic carbon dioxide could be released into the heavens in the surrounding area, said Professor Esa Vakkilainen, LUT.

The goal of the pilot is to create a biogenic carbon separation treatment and to find local users for bioCO₂, which is not of sufficient purity for the food industry. From the environmental aspect, the most important factor is to offer businesses renewable biogenic CO₂ instead of fossil CO₂. Demand for biogenic CO₂ is growing in all segments.

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