EnviTec NEWS 02/19

+ UP-TO-DATE
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Newsletter of EnviTec Biogas AG

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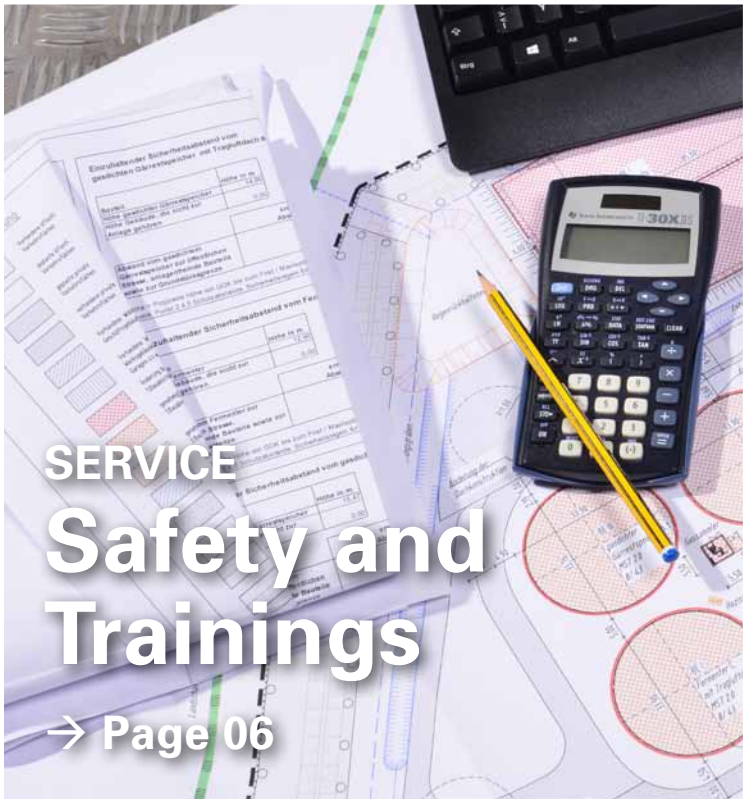

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Dear Readers,

Calls to do more to protect the climate and take greater responsibility for our planet and its resources have never been louder. In Germany, however, these calls seem to have fallen on deaf ears. The government's climate package, announced in September, simply isn't enough. Too little, too late, in fact: the starting price per tonne of CO2 emitted has already been criticised as too low – and therefore virtually useless – by a large number of scientists.

But don't just take our word for it: economists at the German Institute for Economic Research (DIW) have also underlined another problem with the policy – that the CO2 price will actually hit low-income families the hardest, when measured against household income. So far, not so good.

Things are just as bad for electric vehicles, our supposed saviours once again promoted by the climate package. The trouble is, EVs are only good for the climate if the energy in their batteries is 100% from renewable sources. This point has been picked up on by two recent studies that highlight the benefits of gas-powered mobility for the climate. The first report, commissioned from Fraunhofer ISI, Hamburg University of Technology and IREES GmbH by Biogasrat+ e.V., is entitled 'Carbon footprints, costs and potential of various drive systems for trucks and passenger vehicles'. The Association of German Cities and Municipalities has also recently published the results of a study from the Engler Bunte Institute at the Karlsruhe Institute of Technology.

As a key innovator and employer in the renewable energy sector, we believe it is our duty to help ensure the mobility transition with CNG, and we therefore dedicate both this Newsletter and our recently published white paper to this topic. We're also including our usual articles covering industry news, tips and trends – as well as a feature on EnviTec Service!

I hope you enjoy reading this issue of our Newsletter,

Jörg Fischer,
CFO EnviTec Biogas AG

Good to know

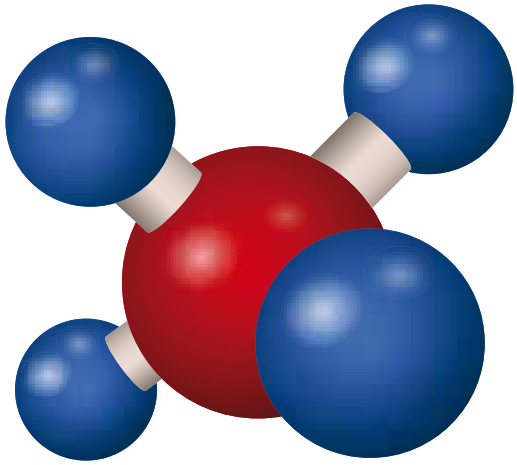
EnviTec to attend renewable mobility conference

KRAFTSTOFFE DER ZUKUNFT

On 20 and 21 January 2020, the 17th International Conference on Renewable Mobility, "Fuels of the Future", will be held in Berlin, Germany. The conference is the flagship event and main discussion forum for German, European and international developments in renewable mobility, and EnviTec Biogas will naturally be attending and actively participating as a biogas all-rounder and champion of the transition to sustainable transport with bio CNG! For more information, please visit
▶ **www.kraftstoffe-der-zukunft.com**

Safety first!

The German EnviTec SHE Team (Safety, Health and the Environment) is once again offering training for TRGS 529 (i.e. the 'Plant Safety Technical Rule'). For dates and details about the one-day refresher course or two-day foundation course, please visit our training pages at
▶ **https://www.envitec-biogas.de/service/schulungen**



10 TWh biomethane in the grid

Industry players expect to see business remain stable in the biomethane market. This is shown by the 2019 Biomethane Barometer report published by the German Energy Agency (dena). To compile the report, dena interviewed around 60 companies about market developments, trends and mood. The survey shows that biomethane production rose again slightly in 2018, with over 10 terawatt-hours (TWh) of biomethane being fed into the grid for the first time. This is contrasted with a low level of construction of new biomethane feed-in plants, however. Consumption was 8.8 TWh, marking a slight rise in comparison with 2017 although still well under the feed-in figure. In the individual markets, sale volumes have changed only minimally. Biomethane continues to post the largest sale volume in the combined heat and power segment, which is subsidised by the German Renewable Energy Sources Act. The Biomethane Barometer report can be downloaded from ▶ **https://bit.ly/2Msrq2X**.

Tips and trends for plant operators

… at an exclusive event for EnviTec Biogas customers soon to be held for the 19th time in Germany. At the one-day conference, to be held for Region East on 21 January in Golzow and Region West on 23 January at our Saerbeck premises, EnviTec experts will cover current developments in the biogas industry and explain their relevance for plant operators. Places are still available. Please register online by 13 January 2020 at ▶ **marketing@envitec-biogas.de**

Winter Check goes polyglot

Winter, l'hiver, l'inverno: the EnviTec Winter Check is now available in English, French and Italian. A total of ten tips are offered to help operators to keep their plants running safely and efficiently throughout the winter season.
▶ **www.envitec-biogas.de/service**

Bavaria steps on the gas

Above-average rise in CNG vehicles of 11 percent in Bavaria. This has been reported by the Bavarian Natural Gas Mobility state initiative group. With 12,030 vehicles now registered, climate-friendly CNG mobility has powered through to a new record: the fleet of CNG vehicles is 11 percent higher than last year's figure. Growth in this green form of mobility has been uneven throughout the federal state, however: while Munich achieved growth of 16.1 percent, the number of CNG vehicles in Augsburg actually declined (–6.5 percent). Nationwide, 80,776 CNG vehicles are now registered in Germany (+7.0 percent).

Fraunhofer study proves biomethane has potential

The facts of the matter are clear: the biomethane produced as a regional and sustainable process along the entire value chain must be given a key role in Germany's energy transition. Significant biomethane capacities are now available and could already be helping to reduce CO2 in the transport sector. Olaf von Lehmden, CEO of EnviTec Biogas AG: "The favouritism shown to electric drive systems by policymakers and businesses alike is misguided."And this has now been underlined by the recent study "Carbon footprints, costs and potential of selected car and truck drive systems."

This paper, issued jointly by the Fraunhofer Institute for Systems and Innovation Research (ISI), Hamburg University of Technology (TUHH) and the Institute for Resource Efficiency and Energy Strategies (IREES) concludes by saying that biomethane is not only able to contribute to achieving Germany's climate protection targets but can even help to reduce pollutant emissions as well. The team of researchers investigated the alternatives to the traditional combustion engine currently available for cars and trucks in Germany. In their study, the researchers made comparisons between passenger vehicles using a hybrid diesel/biofuel mix, battery vehicles, natural gas vehicles, and vehicles using biomethane/synthetic methane. For trucks, diesel-powered vehicles were compared with those running on a gas fuel: fossil natural gas, biomethane or synthetic methane. The entire vehicle lifecycle—from production to usage phase and recovery/recycling ('well-to-wheel' approach)—was also factored into the study.

»Biomethane simply has the best greenhouse gas balance and offers mile-for-mile climate protection.«

Janet Hochi, Managing Director, Biogasrat+ e.V.

And its results, summed up by Janet Hochi, the managing director of biogas industry association Biogasrat+ who also commissioned the study, are crystal-clear: "Biomethane simply has the best greenhouse gas balance and represents mile-for-mile climate protection." In terms of costs, the biomethane pathways for cars are only slightly more expensive than the fossil fuel diesel both now and for 2030. When compared with drive systems

powered by other renewables, including e-mobility, biomethane fuelled vehicles lead the field in terms of a lifecycle cost analysis. Fuel costs are a much bigger factor for trucks than for cars. Accordingly, the study concludes, heavy trucks run on liquefied natural gas (LNG) made from biomethane incur much higher costs than trucks using fossil diesel/LNG. Compared with drive systems using other renewables, however, biomethane-fuelled trucks are much cheaper, both now and in the future. In the long term, the researchers found, only electric vehicles would have the potential to achieve the cost effectiveness of biomethane. Von Lehmden also notes another benefit discovered by the study authors: "If the biomethane capacities now available plus the biomethane capacities capable of being developed were to be used for sustainable mobility, we could power 18 million mid-range passenger vehicles—that's over a third of the current volume of cars on German roads.

The results from this research paper are therefore in line with our strategy of promoting biomethane on the market and seeking to gain more traction with policymakers." And, last but not least: "If the government were to incentivise biomethane as the most environmentally friendly and inexpensive solution for mobility, this would also exploit the German automotive industry's immense expertise in combustion engine systems—and that would protect jobs." With its 'Drive Biogas' business model, launched two years ago, EnviTec has long been an innovator here, and has been pioneering and promoting the use of biomethane in the transport sector. Bio CNG (compressed natural gas) can be used as a fuel by the many vehicles designed to run on natural gas, are now generally available on the market. ●

In Augsburg, zero-emission buses are now already in service—running on biogas sourced from the city's own biogas upgrading plants.

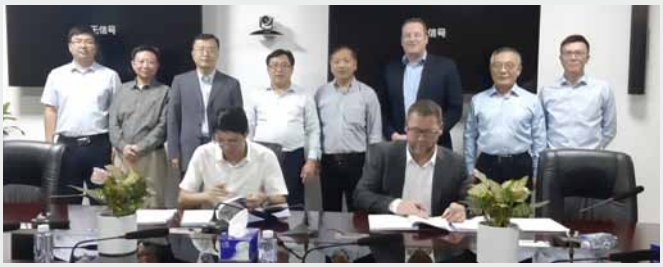
EVs not the holy grail of sustainable propulsion?

Nor is the Fraunhofer Institute alone in underlining the many advantages of organically sourced bio CNG. A report published by German car club ADAC also agreed that CNG drive systems were the 'greenest' option in terms of the overall production cycle and lifecycle. Both studies also highlight the failings of e-mobility on account of its vast electricity requirements, which cannot be fully met by renewables either over the short or long term.

- **https://www.isi.fraunhofer.de/content/dam/isi/dokumente/cce/2019/klimabilanz-kosten-potenziale-antriebe-pkw-lkw.pdf**
- **https://www.adac.de/verkehr/tanken-kraftstoff-antrieb/alternative-antriebe/klimabilanz/**

China bets on biomethane

China's stepping on the gas—both in building biogas plants and in the fuel sector. What is now the sixth construction project for EnviTec Biogas in the People's Republic of China will get underway near the city of Lankao, in the Chinese province of Henan, from early 2020. The operating company, PowerChina Lankao Biosyngas Co. Ltd., is one of the biggest state-owned companies in the People's Republic and signed a partnership agreement with EnviTec in 2018. The plant's final daily output is rated at around 50,000 Nm³ of biogas. Stefan Dehne, EnviTec Technical Sales Manager: "For this project, EnviTec is handling the planning and supplying the systems, while our partner will supervise construction and commissioning, and naturally also be organising the training of personnel." The biomethane produced independently by the operating company will later be sold for use in the fuel sector. The seventh project from EnviTec Biogas, near the city of Qinxian in the Chinese province of Shanxi, will also be completed by EnviTec by the end 2020. Following Dingzhou and Yingtan, Qinxian is now the third project where EnviTec is supplying biogas generation systems plus the EnviThan biogas upgrading technology. The operating company for the Qinxian plant will be Shanxi Energy & Traffic Investment Co. Ltd., who worked with EnviTec on the successful Shenmu Yuanping project. The four digesters in this biogas plant generate around 37,000 Nm³ of biogas every day, which is then purified into biomethane with the EnviThan membrane upgrading technology.



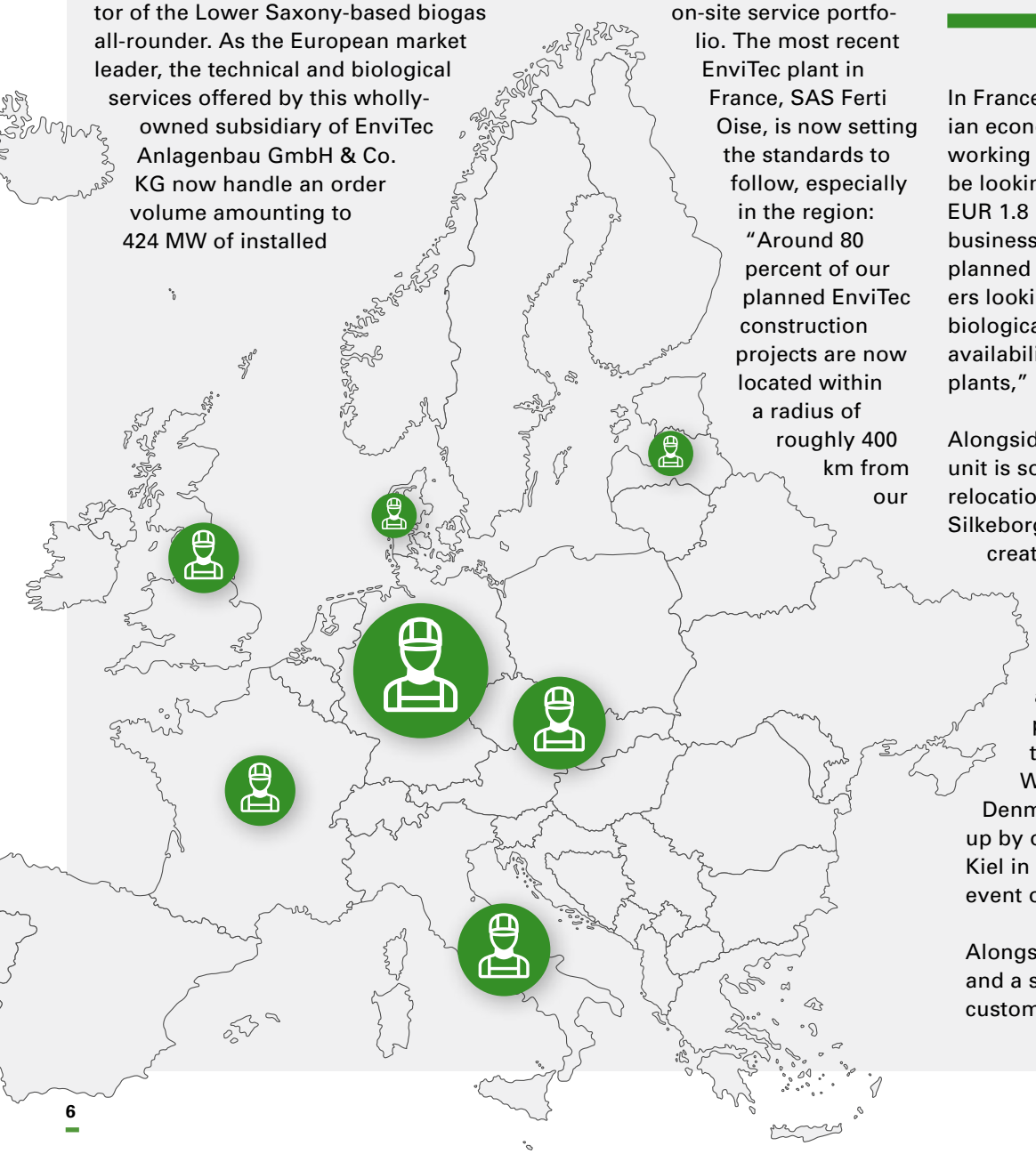
CFO Jörg Fischer at the contract signing ceremony for the Lankao project in Shenzen, P.R. China

A helping hand for our customers throughout Europe

… all in a day's work at EnviTec Service GmbH. From Riga in Latvia to Verona in Italy, from Rugeley in the UK to Velké Meziříčí in Czechia: with around 170 service technicians in Germany and Europe, an online shop [link in digital version], a 24-hour hotline and an online plant monitoring service, EnviTec Service GmbH is able to offer its customers advice and assistance all day and every day throughout the year.

"I'm proud to say that our expertise is now relied on by over 500 plant operators throughout Europe," says Martin Brinkmann, Managing Director of the Lower Saxony-based biogas all-rounder. As the European market leader, the technical and biological services offered by this wholly-owned subsidiary of EnviTec Anlagenbau GmbH & Co. KG now handle an order volume amounting to 424 MW of installed plant capacity. The company's many years of expertise are especially important to EnviTec's customers—who include many operators of non-EnviTec plants. "Ultimately, we were impressed by the reliability and quality of the plant engineering work, plus after sales support," says Hans Heinrich Lindwedel, operator and one of our first customers in Germany.

Over the border in France, EnviTec has been impressing customers since 2007 not only with EnviWaste and EnviThan plant construction work but also with its comprehensive on-site service portfolio. The most recent EnviTec plant in France, SAS Ferti Oise, is now setting the standards to follow, especially in the region: "Around 80 percent of our planned EnviTec construction projects are now located within a radius of roughly 400 km from our newest plant," explains Brinkmann. This was a key reason for the opening of a new service office in Venette, about 75 km northeast of Paris. "Thanks to its excellent transport connections in particular, this new location makes it much easier to work with our customers in France," adds Christian Ernst, Managing Director of EnviTec's French branch office.



GOOD TO KNOW

Order spare parts for your plant easily and 24/7 at our service shop.

In France, Europe's biggest agrarian economy, 11 employees are now working in the Service unit, which will be looking to post revenue of around EUR 1.8 million according to the latest business planning. "The new office is planned as a central hub for customers looking to use our technical and biological services, and ensure the availability of spare parts for their plants," Brinkmann continues.

Alongside France, another Service unit is soon to open in Denmark. The relocation of the current warehouse in Silkeborg to Ry in Central Jutland will create more space and establish an independent office. With some 180 square metres of capacity and a motorway exit nearby, the new site meets all of our requirements for providing an optimum service to our Danish customers. We employ two technicians in Denmark at the moment, backed up by our trio of technicians from Kiel in northern Germany in the event of any bottlenecks.

Alongside technical support services and a spare parts warehouse for our customers, our Danish duo also help

customers with plant commissioning activities.

Brinkmann: "In Denmark, there's plenty to suggest that the market will also continue to grow over the next few years—and especially in terms of maintenance work for third-party plants."

To ensure services are offered to a uniform standard, regular training is essential for technicians, whether based in Germany or abroad. "Alongside training courses offered by external providers, we also provide our technicians with on-site plant training and instruction," comments Brinkmann. Every service technician is given a training plan plus a checklist to be worked through: this guarantees the high standard of service both for the company and its customers that EnviTec strives to maintain. "To meet our customers' demanding requirements, EnviTec's experts use standardised methods oriented on current standards, such as those issued by the German Institute for Standardisation (DIN) or the Federal Compost Quality Mark Association (BGK)," Brinkmann concludes.

An 'at-a-glance' guide to our services:

Alongside gas leak or pollutant testing and stainless steel corrosion repair work, we also receive regular enquiries for emissions and network protection audits: every plant is different, and environmental and legal requirements also vary from one country to another. This is why the EnviTec team tailors the services it offers to the specific requirements of the customer and country: as a one-off job on a time and material basis or as part of an all-inclusive service contract, and for plants and/or CHP units. EnviTec can also carry out other kinds of work designed to improve plant efficiency and avoid potential risks. These include the use of a gas camera to check a plant for gas tightness and leaks, for example. All gas control paths and connection lines, digestate tanks and digesters plus the tank roof itself are inspected, and the data is stored so you can compare it with later audits. Our EnviTec Service brochures offers a comprehensive guide to the services we offer. ●

Safety service expanded

By law, plant operators have to comply with a long list of test and inspections. Often, they'll have questions that can only be answered by the Safety, Health and the Environment (or 'SHE' for short) team at EnviTec Biogas Betriebs GmbH & Co. KG. Friso Reinecke, Safety Engineer at EnviTec, has recently acquired further expertise in this field. The 33-year-old can conduct safety inspections for plants requiring a licence as per section 29a of the Federal Immission Control Act (BImSchG): as a licensed appraiser (BImSchG section 29b(1)) he is now fully authorised to do so. Apart from inspections for CHP and biogas/gas upgrading plants, the engineer also specialises in fire and explosion protection. "We are proud to be able to confirm our qualifications for this federal state requirement and offer Friso Reinecke's extensive expertise to the market," says Markus von Lehmden, Managing Director of EnviTec Biogas Betriebs GmbH & Co. KG. At the moment, Technical Rule for Hazardous Substances (TRGS) 529 is a hot topic among plant operators. Reinecke: "Here, we're making sure that our customers know that they can complete the required courses of training at our company." While required by law, this is also a worthwhile investment, considering the importance of safety in plant operations! ●

TRGS training dates

One-day refresher training:
20.01.2020 in 14806 Bad Belzig
22.01.2020 in 48369 Saerbeck
je ca. 9 – 16 Uhr

Two-day basic training:
27./28.02.2020 in 26169 Friesoythe
05./06.03.2020 in 14806 Bad Belzig

Contact us at
www.envitec-biogas.de/service/schulungen to book a place.

For further information please contact Judith Plogmann at marketing@envitec-biogas.de.

Employees on EnviTec

»I've only been back in biogas since the summer but already feel really at home — thanks to the warm welcome from the team here!«

Tobias Schniederkötter, Construction Supervisor, EnviTec Service GmbH

»I'm originally from Peru, and I find the company's friendly atmosphere and international focus hard to beat!«

Melany Selene Brito Cáceres, Trainee Draughtsperson

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Publisher:
EnviTec Biogas AG
Chief Editor:
Katrin Hackfort,
EnviTec Biogas AG
Concept and Design:
Kreutzmann Unternehmens-kommunikation, Hamburg
Pictures: Adobe Stock (214968240, S. 2; 276060070, S. 4), Shutterstock (1428410387, S. 2)
EnviTec NEWS is available free, by post or e-mail.

Enjoying advent together

From biogas plants to gingerbread houses: EnviTec builds them all! A lot of talented artisans and confectioners could be seen in action at EnviTec's major Advent event, held in the kitchens at our two facilities in Lohne and Saerbeck. Over a hundred adults and children came and spent the afternoon making and decorating their gingerbread house. The cake-making kits were supplied fresh from regional bakers Hof Löbke in Ibbenbüren. Marketing Manager Katrin Hackfort: "Our employee get-together was really popular—and a repeat event in 2020 looks very likely."

Over a hundred adults and children made their own gingerbread houses at the EnviTec event.

Top trainee

A double celebration: Niklas Thomann received a prize from the Chamber of Industry and Commerce for his outstanding results in the summer 2019 final exams, while vocational training at EnviTec Biogas was also recognised as 'Outstanding'. "Our experience, together with the ideas and creativity contributed by young people, ensures we are well-positioned for the future," commented Martin Brinkmann, Managing Director EnviTec Service GmbH, who accepted the award on behalf of the company.

Well-earned rewards: Niklas Thomann (left) and Martin Brinkmann

Danish Weeks at EnviTec Biogas

Three gas upgrading plants were shipped to Denmark in November.

A hat trick: In November, no less than three gas upgrading plants made their way to Denmark in just two weeks—a record-breaking result! The plant construction team at our Saerbeck facility really stepped on the gas, finishing three plants for long-standing customers, including final testing and dismantling for shipping out. That clears the pipeline for new projects! Three new EnviThan plants will already start production planning in January.