

BILFINGER

now!



we care

GREEN LIGHT FOR THE ENVIRONMENT

Liquefied gas is an environmentally friendly alternative to diesel – and we're building the infrastructure

we create

Getting on top of the energy transition with diverse solutions and technologies

we can

How an innovative device is advancing research into clouds



BILFINGER

CLIMATE PROTECTION

MEETING THE CHALLENGES OF THE ENERGY TRANSITION

How technology and services help comply with environmental standards while increasing efficiency

Following the Paris Climate Agreement in 2015, over 180 countries have to date set national climate protection targets aimed at limiting global warming to less than 2 degrees Celsius above pre-industrial levels. To ensure these targets are met, numerous national and international directives, laws and regulations have been passed. The energy-intensive nature of the process industry means it has been significantly impacted by these regulations.

As a reliable partner to the process industry, Bilfinger offers a variety of technologies, processes and services to help customers overcome challenges in making the transition to renewable energy. To this end, we rely on a range of technologies that reduce energy consumption and greenhouse gas emissions from industrial plants. The Bilfinger portfolio includes products and services for boosting energy efficiency, harnessing and storing renewable energy, flue gas purification, carbon capture and utilization, use of liquefied natural gas as well as waste-to-energy systems.



INDUSTRIAL SERVICES CUSTOMIZED CONCEPTS

How we make our customers more competitive



Solutions

Harnessing renewable energy

A central question that hangs over the use of wind and solar power plants is how to store excess energy. Together with Siemens Gamesa, Bilfinger built a steam power plant with a heat storage system in Hamburg. The facility stores and reconverts electricity generated by wind power. Rock-fill heated by the electricity acts as a storage system. The heat stored in the rock can be used to drive a generator's steam turbine, converting the energy back into electricity.

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Reducing CO₂

The steel industry is responsible for some of the highest levels of CO₂ emissions. For every ton of crude steel produced in Europe, around 1.3 tons of CO₂ are currently released into the atmosphere, while the global average is over two tons. Hydrogen provides the means to significantly improve this ratio. Which is why a leading steel producer has launched a pilot project at a plant in Germany. Bilfinger is on board as a consultant and will also provide additional expertise and services.

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Increased efficiency

The Duisburg public utility company's thermal power station simultaneously generates electricity and district heating. In the past, the generation of heat and power was linked, which had a negative impact on profitability. When district heating consumption is high but electricity use is low, power has to be sold below the market price. Bilfinger's solution was an innovative two-zone district heating accumulator, which makes it possible to decouple the production and consumption of district heating and electricity, ensuring that the plant operates more efficiently.

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A Bilfinger two-zone district heating accumulator increases the efficiency of the Duisburg public utility company's thermal power station.

we create

3 questions for...
Duncan Hall,
COO



As Chief Operating Officer, Duncan Hall is driving the concept of the energy transition to renewables at Bilfinger.

Mr. Hall, the process industry has been particularly affected by the transition to renewable energy. What can Bilfinger do to help its customers meet the challenges that go with it?

When it comes to industrial plants, there are three approaches to meeting climate targets: switching from fossil

fuels to renewable energy sources, further increasing energy efficiency, and scrubbing or preventing environmentally damaging emissions. In each of these fields, Bilfinger draws on multifaceted expertise and many years of experience with the relevant technologies.

How can we as a service provider respond to these diverse needs?

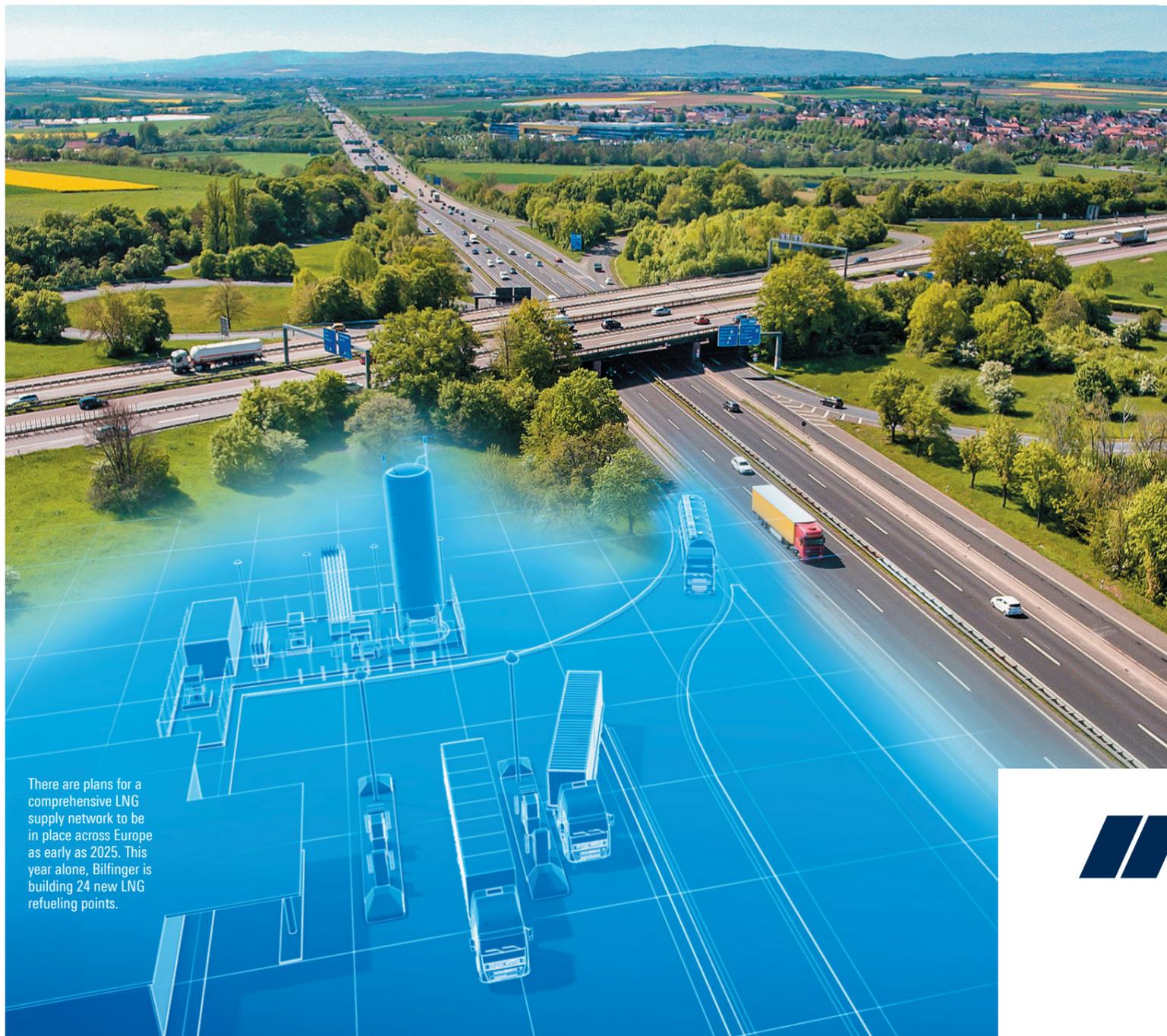
We mobilize our corporate units to pool

available expertise and jointly tap the relevant markets. We put together specialist teams that focus intensively on such key topics as energy efficiency, flue gas purification, CO₂ issues or the use of hydrogen. We strive to support, advise and guide our customers through all requirements relating to the energy transformation. At the same time, we continue to further hone our product portfolio.

What opportunities for future business development do you see opening up as a result?

The changes in energy supply will remain a central issue for years to come across the globe. The market for smart solutions geared to tackling the associated problems will continue to grow in the future, which will in turn present great opportunities. That means our chances of making our mark as a leading supplier in this sector are good.

Cover – Illustration: Jochen Stuhmann, Photo: iStockphoto; Photos: Daniel Tomczak/DWV, Stefan Mikolon



There are plans for a comprehensive LNG supply network to be in place across Europe as early as 2025. This year alone, Bilfinger is building 24 new LNG refueling points.

REDUCING CO₂

REFUELING POINTS FOR LNG TRUCKS

Liquefied gas is an environmentally friendly and economical alternative to diesel. Bilfinger is playing a leading role in expanding LNG infrastructure

The aim is for heavy goods transportation on German roads to impact the environment and climate much less in the future. This is why the German Federal Ministry of Transport and Digital Infrastructure launched a subsidy program for heavy goods vehicles designed to facilitate the switch-over from diesel to alternative fuels for forwarders and other companies that have their own fleets. The trend toward LNG is plain to see. Compared with diesel, liquefied gas produces up to 25 percent fewer CO₂ emissions and reduces nitrogen oxide by almost 90 percent. And with a range of 1,500 kilometers on a single tank of fuel, LNG-powered trucks are a genuine alternative to diesel vehicles. LNG lets logistics companies reduce their environmental footprint in a highly economical manner.

The fundamental prerequisite for any appreciable deployment of LNG trucks is a comprehensive network of refueling points. An EU directive requires that LNG-powered vehicles be able to refuel easily throughout the European road network by the year 2025 at the latest, with the maximum distance between refueling points not exceeding 400 kilometers. Import terminals are the starting point for the LNG supply chain. This is where the natural gas is stored in insulated tanks at extremely low temperatures since it reaches its liquid aggregate state at -163 degrees Celsius. Transported via road, rail or pipeline, LNG reaches trailer loading stations before being distributed by truck to individual refueling points.

Bilfinger boasts in-depth expertise in LNG technology and will in the coming years join forces with a range of partners to create a network of several hundred LNG loading stations and refueling points across Europe. So far, ten refueling points have been built in France, Germany and Poland. A further 24 will follow in 2020. As an end-to-end provider, Bilfinger offers both installation and maintenance services. The company is partnering with tech firm Cryostar, which offers market-ready solutions for LNG fueling.



LNG has the advantage that, for long-haul freight, there is a technology already available today that is both greener than diesel and economical."

ANDREAS LISCHKE, INSTITUTE FOR TRANSPORT RESEARCH AT THE GERMAN AEROSPACE CENTER

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THE SCIENCE BEHIND USING LNG A GENUINE ALTERNATIVE

Ask Andreas Lischke about the benefits of LNG and he doesn't have to think twice. "From an environmental perspective, the primary advantages lie in reduced particulate matter and nitrogen oxide emissions. The fact that liquefied natural gas (LNG) can be freely mixed and used with liquefied biomethane is another plus that helps

to minimize greenhouse gas emissions," says Lischke. And he would know: Lischke is not only a team leader at the German Aerospace Center's Institute for Transport Research but also co-author of the 2019 Shell LNG study. The high energy density of liquefied natural gas also means it provides a long range.

Subsidies have ensured that the use of LNG in long-haul and heavy goods transportation is already competitive today. So what does he regard as the biggest hurdle? "The widespread availability of LNG must be guaranteed." Bilfinger is a key player in making it happen.

SMALL QUANTITIES THAT MAKE A BIG DIFFERENCE ON-DEMAND DELIVERY

Since LNG is often needed in places far removed from major import terminals, facilities that produce the fuel locally in smaller quantities and deliver it on demand are playing an increasingly important role. This is why Bilfinger is further expanding its small-scale LNG activities. In collaboration with Cryotec Anlagenbau

GmbH, subsidiary Bilfinger EMS has developed a concept for preparing small quantities of gas for liquefaction. It entails treating gas from various sources, the liquefaction technology as well as making LNG available for further use in Europe.

THE BILFINGER MOMENT

INNOVATIVE CLOUD RESEARCH

A brand new type of measuring device is revolutionizing research into weather and the climate

CHALLENGE Conducting research on ice nucleating particles has always been very tough and only possible during brief time frames. Now, a compact device with cutting-edge technology is changing all that

When do clouds form and what are they made of? These questions are the focus of work at the Atmospheric Aerosol Research division of Karlsruhe Institute of Technology (KIT)'s Institute of Meteorology and Climate Research. Its scientists' principal interest are ice nucleating particles (INPs), which consist of desert dust, for example, and play a key role in the formation of ice in clouds. These tiny particles have a huge impact on weather and the climate because they contribute to the formation of precipitation. However, measuring the types and quantities of INPs in the atmosphere has only ever been possible with very complex methods and for short periods of time.

Now, this has all changed – thanks to the Portable Ice Nucleation Experiment (PINE), a device for measuring aerosols and INPs developed by the KIT research group in collaboration with engineers at Bilfinger Noell GmbH. PINE can be used for both field research, such as at weather stations on mountain peaks, and for laboratory experiments. It gives scientists a way to take continuous measurements wherever they choose, without big commitments in terms of personnel and material resources.



The PINE project team: Dr. Wolfgang Walter, Dr. Cristian Boffo and Tatjana Pfeuffer of Bilfinger Noell, and Dr. Larissa Lacher and Dr. Ottmar Möhler of KIT (from left).

Both KIT and Bilfinger consider PINE anything but a one-off product; in fact, it is to go into production – albeit in small runs – and be sold to other research institutes.

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For a high-investment project like PINE, we felt it was important to work with an experienced industry partner whom we know and respect. Bilfinger Noell's expertise with special devices served us well."

DR. OTTMAR MÖHLER, AEROSOL RESEARCHER, KIT

IN BRIEF

CWM DYLI | UK

REFURBISHED WATER POWER



The landmark-status Cwm Dyli hydro power plant in the Welsh region of Snowdonia went into operation in 1906. It feeds around ten megawatts of electricity into the grid. The water that turns the turbine comes from the Llyn Llydaw lake, 320 meters above the plant. Bilfinger UK has now been awarded the contract by the operator Innogy to refurbish the plant's instrumentation and control technology.

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TARGETS FOR 2019 ATTAINED

Bilfinger closed out the 2019 financial year on a positive note. Revenue grew organically by 6 percent to €4.3 billion, adjusted EBITA amounted to €104 million and reported net profit came to €24 million. With a reported free cash flow of €57 million, the company reached another major milestone.

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MANNHEIM | GERMANY

FIRST STEP TOWARD GREEN HEATING

The Mannheim-based energy provider MVV will be converting the source of its heat generation to renewables in the coming years. The first step was connecting the thermal waste incinerator to the regional district heating network. In February 2020, the turnkey district heating plant built by Bilfinger went into operation.

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SEEN IN...

Melkøya: On the island of Hammerfest in northern Norway, Equinor operates a natural gas liquefaction plant. Even under extreme climatic conditions, Bilfinger has provided comprehensive services to the facility since 2006.

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