03.2019

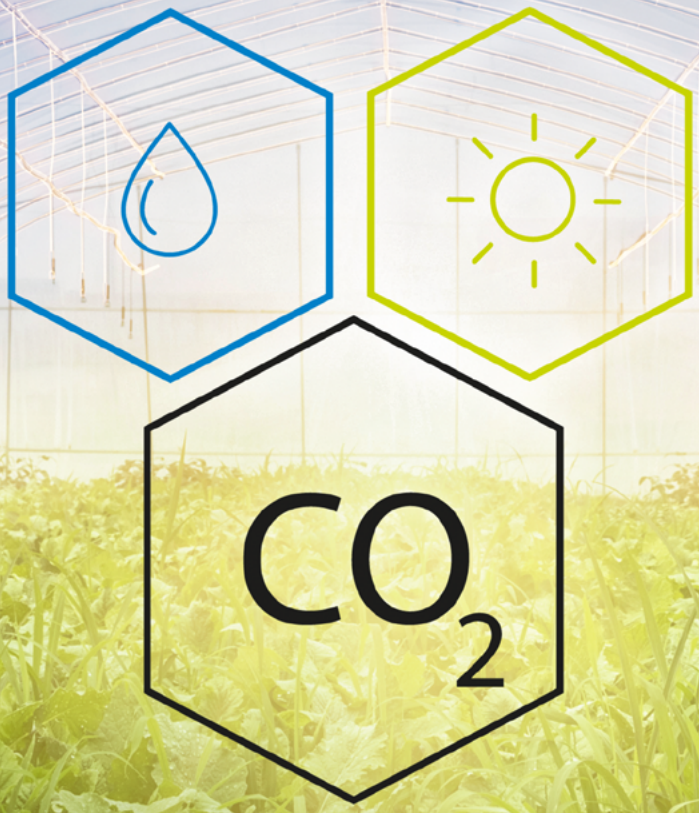
BILFINGER now!

we care

Fault-free facility?
Our drones deliver
high-resolution images

we can

Keeping things humming!
Our services for
rotating equipment



we create

RICH HARVEST

How captured CO_2 creates ideal conditions in the greenhouse

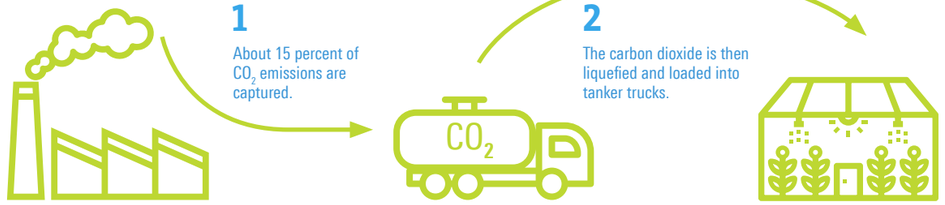
BILFINGER

we create

CARBON CAPTURE AND REUSE

FROM THE CHIMNEY TO THE GREENHOUSE

Innovative project: In the Netherlands, Bilfinger proves that carbon dioxide can be used to fertilize plants



Today's greenhouses are so well insulated that natural CO_2 levels in the air drop.

Bilfinger CEO **Tom Blades** harnesses expertise and innovation to achieve sustainability goals.

SUCCESS THROUGH SUSTAINABILITY

"In order to serve our customers, we have set a course for sustainability. For instance, we reduce industrial plants' CO_2 emissions and clean the exhaust gas produced by ocean-going vessels. With Bilfinger's products, technologies and innovations, our customers are able to comply with environmental standards, conserve resources and operate sustainably. At the same time, they benefit from our extensive engineering expertise and decades of experience in many industrial sectors. By using technology transfer, driving innovation and bringing even unconventional solutions to life, we deliver greater sustainability, efficiency and safety to our customers."

PILOT PROJECT

PUTTING CO_2 TO GOOD USE

How carbon capture opens up new possibilities

Nowadays, it is common knowledge that carbon-dioxide emissions need to be minimized because they damage the environment. A less well-known fact, however, is that CO_2 can also be put to good use – for instance, in the food and beverage industry or in growing flowers and vegetables in greenhouses.

The Duiven facility in the Netherlands is no longer just a waste incineration plant – it also supplies energy and raw materials.

Cover illustration: Jochen Stuhrmann; cover photo: Shutterstock; photos: Bilfinger (2), Shutterstock

Photosynthesis, which is essential to plant life, requires CO_2. Particularly in the summer months, CO_2 levels in greenhouses drop and need topping up from external sources. At the same time, an additional injection of CO_2 stimulates plant growth, acting like a fertilizer.

CAPTURE, PURIFY, LIQUEFY

Many horticultural businesses still generate the necessary CO_2 by burning natural gas. With its pilot project, Dutch energy-from-waste operator AVR proves there is a better way. Thanks to the engineering expertise provided by Bilfinger Tebodin, a substantial amount of the carbon dioxide produced at the AVR waste-to-energy plant in Duiven is no longer released into the atmosphere. Instead, it is used to promote the growth of plants in greenhouses. The CO_2 is captured, purified and liquefied. Next, it is transported in tanker trucks to the users – horticultural businesses that feed it into their greenhouses, where the CO_2 improves quality and leads to higher yields.

ONE-STOP PLANNING

Some 15 percent of the carbon dioxide that results from the incineration of waste in Duiven is re-used in this way. That is equivalent to an annual total of 60,000 metric tons of CO_2, an amount that can be raised to as much as 100,000 metric tons to meet increased demand. In planning the facility, AVR placed their complete trust in Bilfinger Tebodin's engineering expertise. Our Dutch subsidiary oversaw the project from its conception, through a feasibility study and the actual planning, to the tender and awarding of the contract. Alongside Bilfinger Tebodin, other Bilfinger companies within Engineering & Maintenance provide CO_2 capture, processing and storage services.

BYOND Learn more

we care

PRODUCING SCRUBBERS

CLEANER SEAS

Taking a peek over our engineers' shoulders

Bilfinger also takes the lead at the shipyard. This ensures that vessels are back at sea in the shortest possible time.

EXHAUST GAS CLEANING

ADVANCED TECH FOR SHIPPING

Thanks to our scrubber technology, shipping companies are able to meet stricter emission limits without having to convert to expensive fuel

By and large, shipping is considered to be environmentally friendly because CO_2 emissions are comparatively low. Even so, the industry is facing a major challenge. For cost reasons, most ships are powered by inexpensive heavy fuel oil with a sulfur content of up to 3.5 percent, which produces high sulfur dioxide emissions. This is set to change – for reasons including consideration for the environment and coastal populations.

The International Maritime Organization (IMO) is significantly tightening emission limits for ships. Since 2015, ships charting the waters of special Emission Control Areas, such as the North Sea and the Baltic Sea, are required to use fuels with a maximum 0.1 percent sulfur content or to deploy desulfurization technology. From 2020 on, all waters outside such areas will be subject to a sulfur content limit of 0.5 percent. This will affect some 50,000 commercial ships worldwide.

DECADES OF EXPERIENCE

Drawing on decades of experience in flue-gas desulfurization, Bilfinger has successfully transferred this expertise to ocean shipping. Desulfurization systems, or scrubbers, reduce sulfur dioxide concentrations in emissions from vessels just as effectively as using low-sulfur fuels. When the flue gas is brought into contact with seawater, the sulfur dioxide is almost completely neutralized.

So far, Bilfinger has worked for

8

shipping companies.

As a result,

73

ships have been equipped with

84

scrubbers in total.

There are essentially three different types of processes: open-loop, closed-loop and hybrid. In the case of open-loop scrubbers exhaust gases are cleaned in a continuous process and used wash water is discharged back into the sea in compliance with IMO specifications. A closed-loop process relies on absorbents added to the wash water to neutralize the gases. This processed water is stored in a tank for disposal on land. There is a clear trend toward hybrid scrubbers, which employ both open and closed systems. That is because a growing number of countries prohibit the discharge of polluted wash water off their coasts.

As a full-service provider, Bilfinger offers an all-in-one service package – from development through production to maintenance. Bilfinger scrubbers stand out for their low operating costs and excellent environmental performance. Desulfurization systems pay for themselves after a period of 12 months to two and a half years.

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Photos: Bilfinger (2), Shutterstock, www.flyability.com

THE BILFINGER MOMENT

FROM BOILERS TO FLARE TOWERS

Drones conduct inspection flyovers under the most arduous conditions

CHALLENGE What condition is an oil rig in? Is a boiler corroded? Our heavy-duty drones deliver high-resolution images

Until now, monitoring areas of industrial facilities that are hard to access, such as an oil rig's flare tower, called for either complex scaffolding or industrial climbers to carry out the inspections under arduous conditions. Checking the rotor blades of a wind turbine was also a challenge. Now, the specialists at Bilfinger Salamis UK do this work with the help of drones. Teams of two wrap the job up in a matter of minutes – and in complete safety.

The drone pilots are seasoned employees who know the ropes when it comes to maintenance work. Bilfinger employs the Falcon 8 drone, which has a proven track record offshore and is technically robust. Even if two of the eight rotors fail, it can still fly. Equipped with high-resolution digital or infrared, thermal-imaging cameras, the drones make it possible to detect even the tiniest thermal leaks in seals, gas pipes or insulation from a great distance. It is not just at sea that drones are used to monitor hard-to-access plant components. On land, too, they are a great solution for telecommunications towers, high-voltage lines and much more.

DRONE WITH A PROTECTIVE CAGE

When it comes to inspecting boilers, tanks and other virtually inaccessible containers, a special type of drone is deployed – the Elios from Swiss manufacturer Flyability. The protective cage that surrounds it makes it impervious to bumps against the inside of a container. Additionally, this drone can roll as well as fly. Besides an optical and a thermal camera, the Elios features an extremely powerful lighting system, allowing it to operate in complete darkness.

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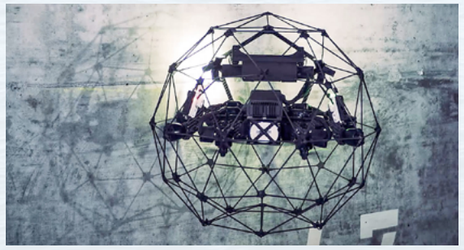
Flying beats climbing: Experienced, certified drone pilots inspect offshore facilities at no risk to themselves.



A win for occupational safety: Drones deliver reliable results even within confined spaces.

AERIAL INSPECTIONS

HELP FROM ON HIGH

Sites where we work with drones

KEEP YOUR MOTOR RUNNING

Bilfinger offers pooled expertise on rotating equipment in production facilities

Found in all areas of the process industry, engines, pumps, compressors and the like must run reliably around the clock without fail. Bilfinger provides services for rotating equipment – from manufacturer-independent consulting to engineering all the way to maintenance and ongoing optimization – throughout the entire life cycle.

Bilfinger offers customers a large network of providers, bundling the individual entities' expertise. The Continental Europe region alone has access to 500 experienced technicians and engineers with extensive specialist knowledge of rotating equipment. Rounding out the portfolio, a large rental pool of more than 20,000 machines ensures a reliable supply of replacement and reserve equipment.

In addition, customers can take advantage of flexible partnership models to reduce their investment in property, plant and equipment. The Value Performance Contract offers still more benefits. It is designed to optimize and maintain the value of the rotating equipment. The customer receives a fixed-price availability guarantee with annually decreasing maintenance costs – and Bilfinger ensures that everything runs smoothly.

We network our entities' know-how to make sure pumps and the like are always available.

ROTATING EQUIPMENT
CONFERENCE
September 24–25, Wiesbaden, Germany
RheinMain CongressCenter, Booth 17

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CORE INDUSTRIES
METALLURGY

AN INDUSTRY IN FLUX

Reducing pollutant emissions, increasing efficiency: How Bilfinger helps metallurgy customers achieve ambitious goals

Reducing CO_2 emissions while remaining competitive: The metallurgy industry is in flux.

For many companies that process steel, iron, aluminum or copper, the most pressing question is: how can emissions and maintenance costs be reduced? At the same time, such businesses need to boost plant efficiency to compensate for the rising cost of raw materials and energy. Bilfinger has the right solutions to meet these challenges and provides end-to-end services for repair, maintenance and upgrading of industrial plants as well as for reducing carbon dioxide and sulfur dioxide emissions. As in other sectors, we offer our metallurgy industry customers tailored services based on the Bilfinger Maintenance Concept.

Bilfinger is highly skilled in the provision of refractory services, for instance, in aluminum factories and steel mills. Our experienced teams of engineers, project managers and technical specialists are ready and waiting to carry out the full range of services for the metallurgy industry, from installing refractory elements through maintenance to build-out at the end of the equipment life cycle.

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we can

ENGINEERING & MAINTENANCE

ENGINEERING SERVICES FOR ABU DHABI

UAE | MIDDLE EAST

Bilfinger Tebodin Middle East has received several engineering orders from the Abu Dhabi National Oil Company (ADNOC). They include the first planning phase of a new wastewater-treatment plant. The facility is part of a refinery in Ruwais. Engineering services to modernize dust-emission control systems in two sulfur-processing plants are also part of the order package.

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ENGINEERING & MAINTENANCE

Bilfinger Westcon has been awarded a contract by Anadarko Petroleum to perform assembly work for a new plant to be built in Latham, Colorado, that will produce cryogenic gas. This is the second order Bilfinger Westcon has received from Anadarko at this location. The plant is part of a network of natural gas pipelines in the states of Colorado and Wyoming. The contract is worth around

USA | NORTH AMERICA

€ 25 million

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ENGINEERING & MAINTENANCE

BILFINGER WINS ORDER FROM SABIC

UK | NORTHWEST EUROPE

Bilfinger has received a major order from SABIC UK Petrochemicals for engineering and maintenance work at its Teesside plant. This includes services in mechanical and electrical engineering, instrumentation and control technology as well as scaffolding, insulation, corrosion protection and asbestos removal. The four-year contract has a volume of around £50 million, or some €60 million.

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TECHNOLOGIES
ENGINEERING & MAINTENANCE

SIGNIFICANT GROWTH IN THE SECOND QUARTER

Bilfinger has continued its positive performance. Despite challenging economic conditions, revenue grew by 8 percent to around €1.1 billion in the second quarter of 2019. Adjusted earnings before interest, taxes and amortization improved by 47 percent to €17 million – an increase of €5 million over the prior year. "For the eighth consecutive quarter, we have achieved organic revenue growth," said Bilfinger CEO Tom Blades, summing up the situation. Blades also announced the refinancing of a corporate bond issue maturing in December 2019: "This testifies to the investors' confidence in our company and we don't intend to let them down."

BYOND Learn more

Photos: Bilfinger, iStockphoto, SABIC

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