GREEN HYDROGEN 24/7

HYDROGEN BIO

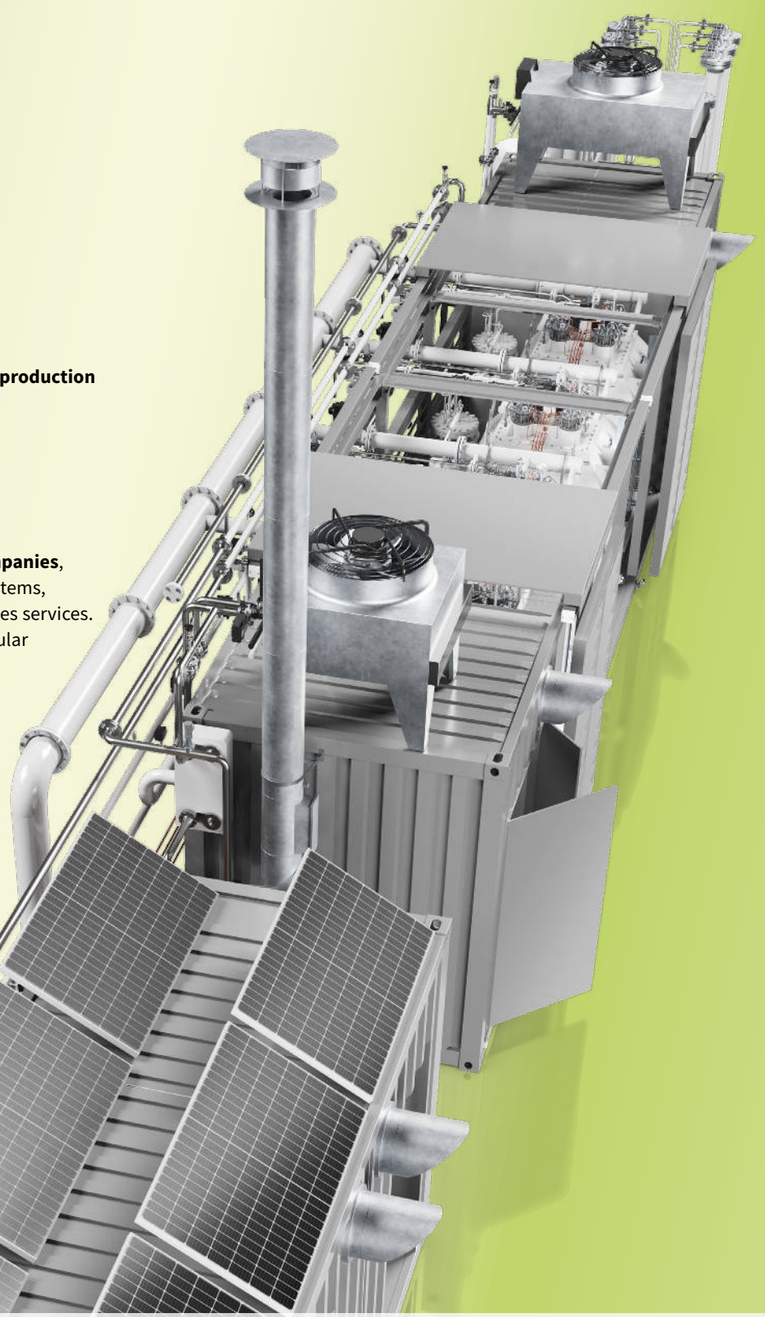
Our team builds plants for production of hydrogen from biogas.

Within the **WS group of companies**,
e-flox stands for turnkey systems, commissioning and after-sales services.
WS Reformer supplies modular steam reformers.
BtX energy offers services in project development and implementation planning.

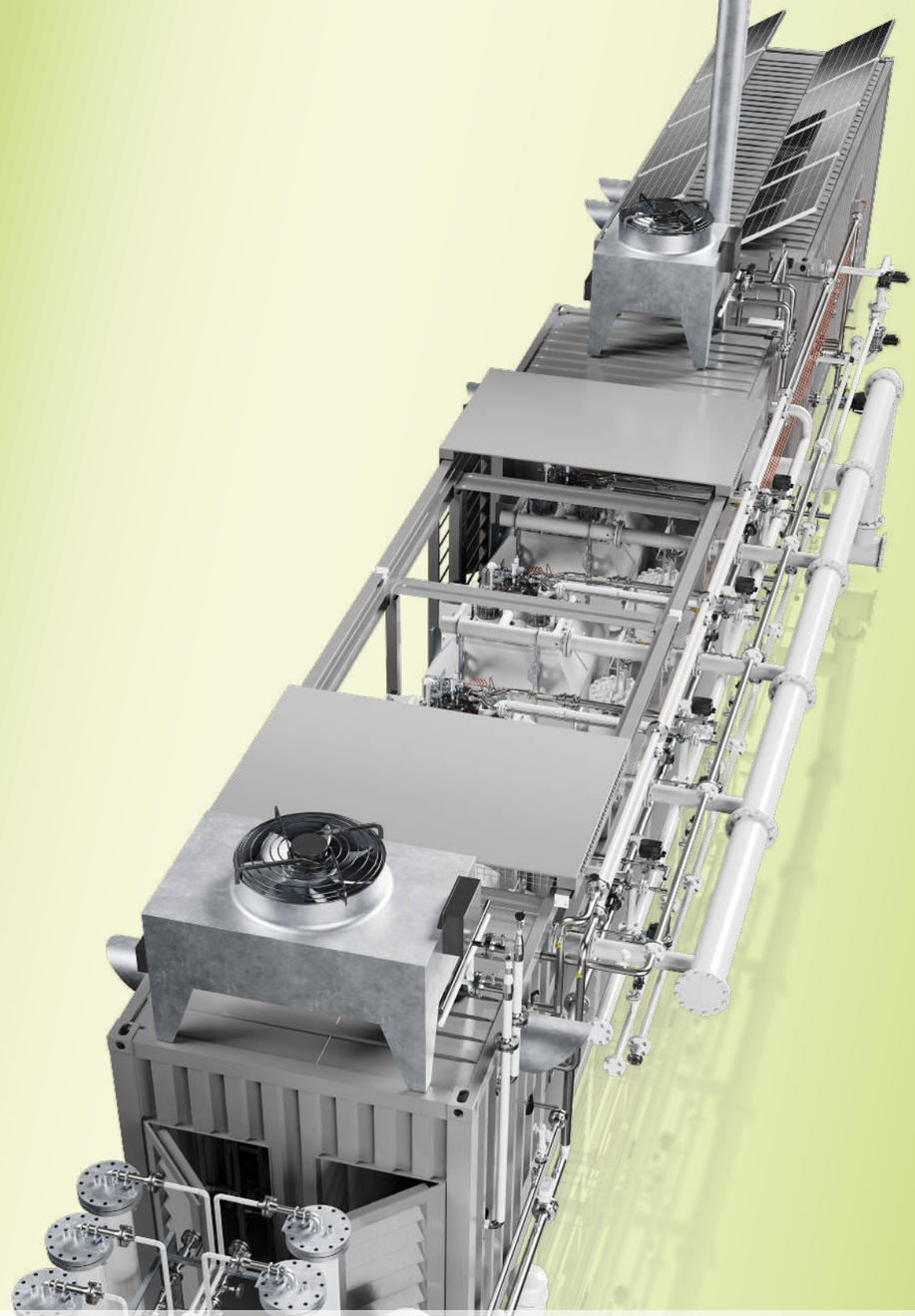
eflox

WS FLOX REFORMER

BtX energy



BTH 400



BtX energy

PROJECT DEVELOPMENT

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Green Hydrogen 24/7 BTH 400

Turnkey Plants producing Hydrogen from Biogas

HYDROGEN BIO

BTH400

Future Biogas

Imagine producing climate-neutral or even climate-positive fuel.

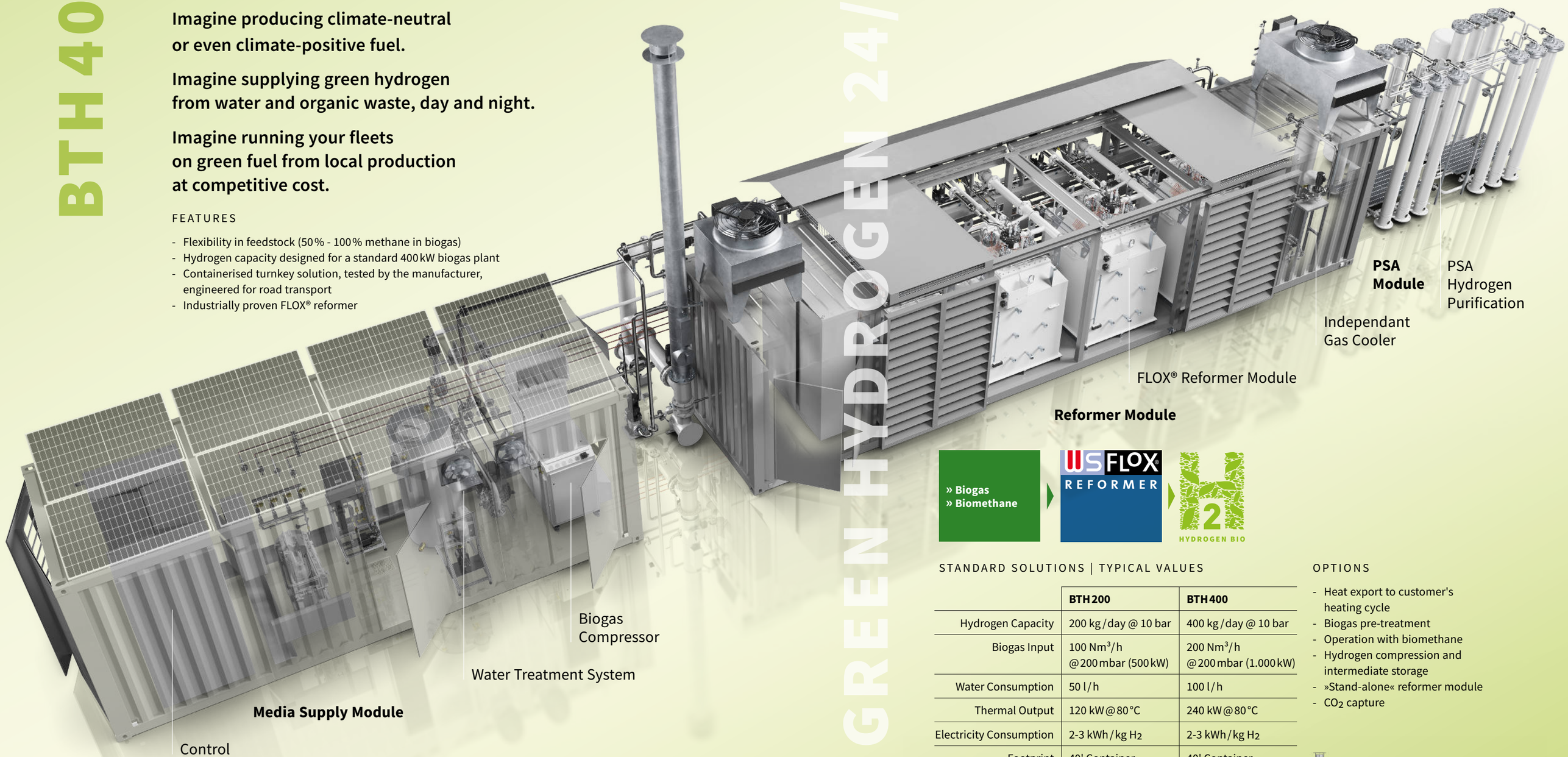
Imagine supplying green hydrogen from water and organic waste, day and night.

Imagine running your fleets on green fuel from local production at competitive cost.

FEATURES

- Flexibility in feedstock (50 % - 100 % methane in biogas)
- Hydrogen capacity designed for a standard 400 kW biogas plant
- Containerised turnkey solution, tested by the manufacturer, engineered for road transport
- Industrially proven FLOX® reformer

GREEN HYDROGEN 24/7



» Biogas
» Biomethane

WS FLOX® REFORMER

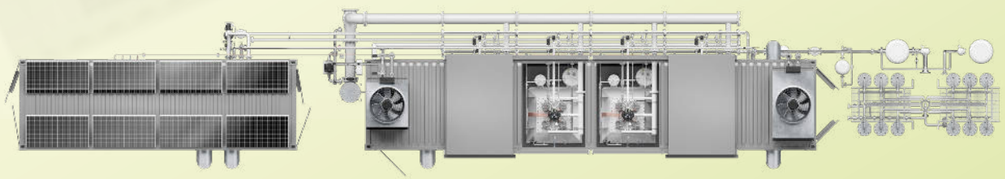
H2 HYDROGEN BIO

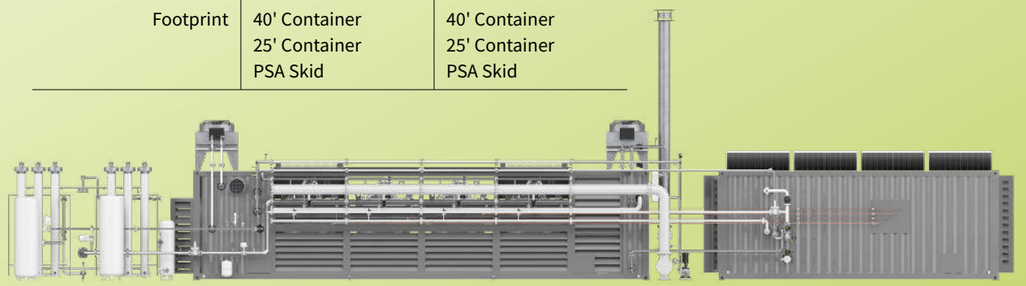
STANDARD SOLUTIONS | TYPICAL VALUES

	BTH 200	BTH 400
Hydrogen Capacity	200 kg / day @ 10 bar	400 kg / day @ 10 bar
Biogas Input	100 Nm^3/h @ 200 mbar (500 kW)	200 Nm^3/h @ 200 mbar (1.000 kW)
Water Consumption	50 l / h	100 l / h
Thermal Output	120 kW @ 80 °C	240 kW @ 80 °C
Electricity Consumption	2-3 kWh / kg H_2	2-3 kWh / kg H_2
Footprint	40' Container 25' Container PSA Skid	40' Container 25' Container PSA Skid

OPTIONS

- Heat export to customer's heating cycle
- Biogas pre-treatment
- Operation with biomethane
- Hydrogen compression and intermediate storage
- »Stand-alone« reformer module
- CO_2 capture





GREEN HYDROGEN 24/7

Upgrade your biogas.

Biomass fermentation is an established technology for the production of methane and CO2 from manure, slurry, residues from kitchens, sewage treatment plants, dung, slurry and organic residues of all kinds.

The resulting biogas is now mainly used to generate renewable electricity and, in some locations, to feed »bio-methane« into the natural gas grid. If there is no energy demand, it is simply flared off in many places around the world.

Develop markets and fair partnerships.

Our aim is to offer a reliable solution in the value chain fromgeneration to the utilisation of hydrogen. Here, cost transparency is the key to trust.

However, a success story requires close co-operation between producers and customers. These include plant operators, vehicle manufacturers, fleet operators and public organisations e.g. local authorities or regional sociations.

Bio-Hydrogen

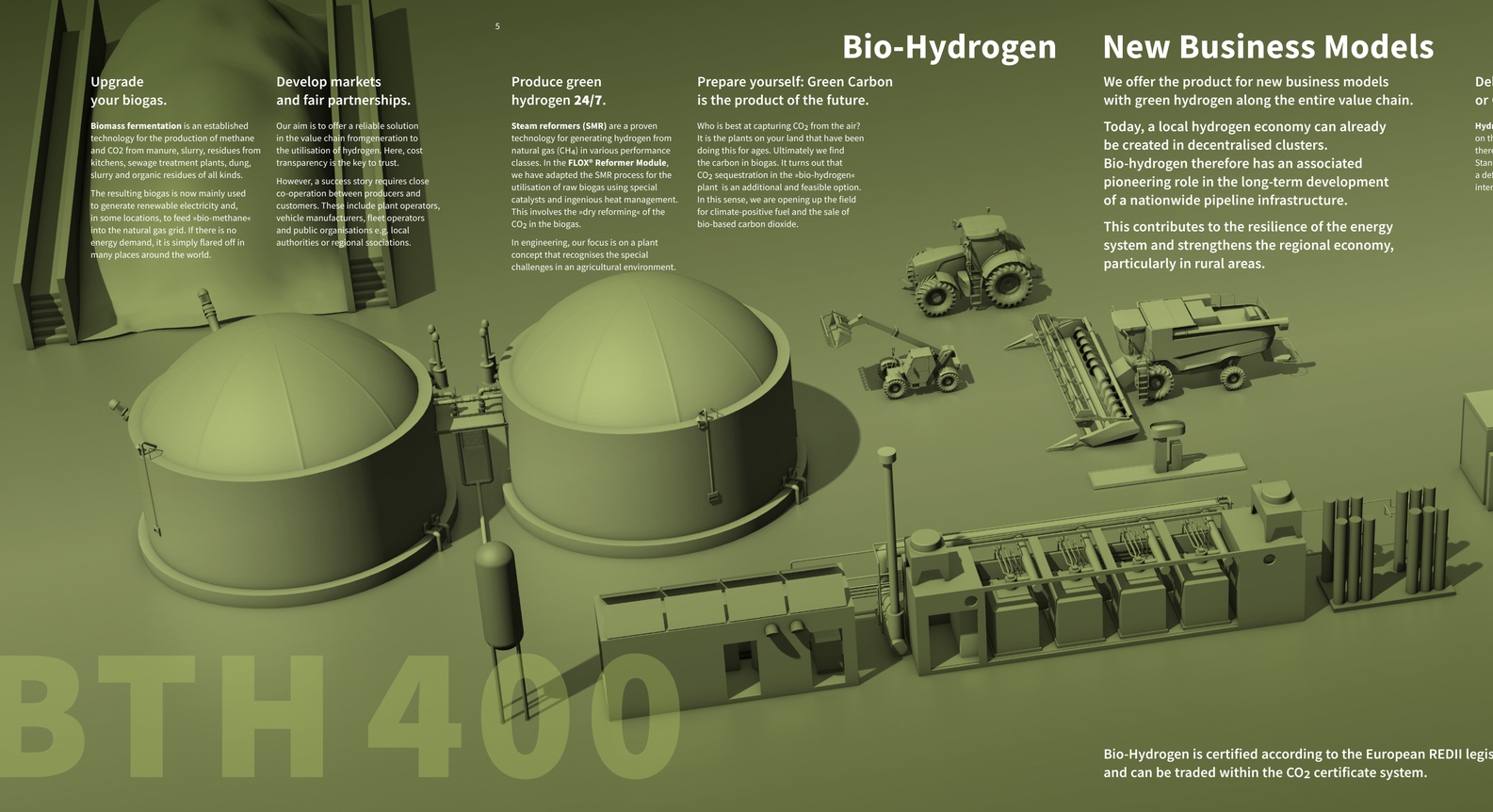
Produce green hydrogen **24/7**.

Steam reformers (SMR) are a proven technology for generating hydrogen from natural gas (CH_4) in various performance classes. In the **FLOX® Reformer Module**, we have adapted the SMR process for the utilisation of raw biogas using special catalysts and ingenious heat management. This involves the »dry reforming« of the CO_2 in the biogas.

In engineering, our focus is on a plant concept that recognises the special challenges in an agricultural environment.

Prepare yourself: Green Carbon is the product of the future.

Who is best at capturing CO_2 from the air? It is the plants on your land that have been doing this for ages. Ultimately we find the carbon in biogas. It turns out that CO_2 sequestration in the »bio-hydrogen« plant is an additional and feasible option. In this sense, we are opening up the field for climate-positive fuel and the sale of bio-based carbon dioxide.



BTH 400

New Business Models

We offer the product for new business models with green hydrogen along the entire value chain.

Today, a local hydrogen economy can already be created in decentralised clusters. Bio-hydrogen therefore has an associated pioneering role in the long-term development of a nationwide pipeline infrastructure.

This contributes to the resilience of the energy system and strengthens the regional economy, particularly in rural areas.

Deliver CO_2-neutral or CO_2-negative fuel.

Hydrogen fuelling stations: Depending on the specific project and application, there are numerous options and designs. Standardisation is underway. We provide a defined interface for this within the intermediate buffer.

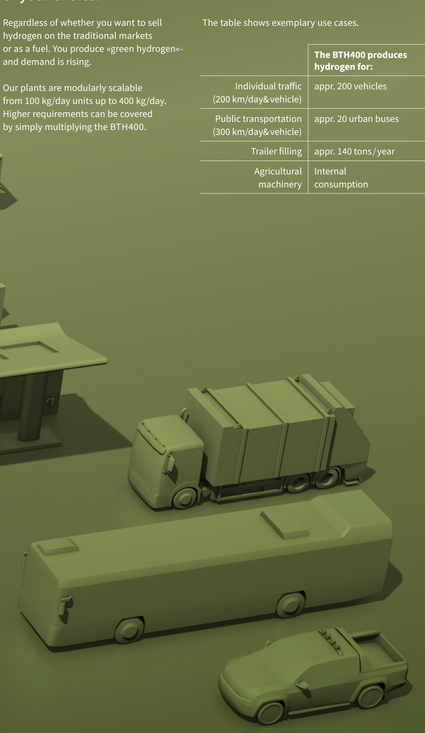
Operate the business model of your choice.

Regardless of whether you want to sell hydrogen on the traditional markets or as a fuel. You produce »green hydrogen«- and demand is rising.

Our plants are modularly scalable from 100 kg/day units up to 400 kg/day. Higher requirements can be covered by simply multiplying the BTH400.

The table shows exemplary use cases.

	The BTH400 produces hydrogen for:
Individual traffic (200 km/day&vehicle)	appr. 200 vehicles
Public transportation (300 km/day&vehicle)	appr. 20 urban buses
Trailer filling	appr. 140 tons/year
Agricultural machinery	Internal consumption



Bio-Hydrogen is certified according to the European REDII legislation and can be traded within the CO_2 certificate system.

H2 HYDROGEN BIO