

Gases for  
**tomorrow**

**Tyczka**  
**HYDROGEN**

Tyczka Hydrogen  
**Your partner for  
green hydrogen**



## Working towards a greener economy with hydrogen

Hydrogen is a zero-emission energy carrier and an essential building block for a holistic energy transition based on renewable energies.

Hydrogen brings flexibility to the energy system and improves the integration of renewable energies. One of its greatest advantages is that hydrogen makes renewable electricity easy to store, easy to transport and versatile in its use. Thus, hydrogen transforms solar and wind energy

for temporally and spatially independent use in industry, mobility and power and heat generation.

Hydrogen also opens up new import routes for renewable energies, thereby contributing to the diversification of our energy portfolio in Europe. Whether it is imported in the form of liquid or gas, bound in ammonia or methanol, hydrogen is the foundation of these options.



» Hydrogen is the connecting element of a cross-sectoral energy transition. Tyczka is going to speed up this transformation with hydrogen. Hydrogen is happening now!«

**Thomas Zorn**  
Managing Director of Tyczka Hydrogen GmbH

## Tyczka Hydrogen Your partner for green hydrogen

### Our Mission

We are implementers of a cross-sectoral, sustainable energy transition with green hydrogen!

Tyczka Hydrogen specialises in hydrogen production and supply for customers in the industry, mobility and R&D sectors. The Tyczka Group has a strong foundation as a supplier of industrial gases and LPG and can draw from 100 years of experience. We are unlocking the full potential of hydrogen to drive the energy transition.

Our operations cover the entire value chain, from hydrogen production to compression and filling, transport and logistics, to refuelling and application technology for our customers.

The Tyczka Hydrogen team has many years of expertise in working with hydrogen and a wealth of experience in the energy and industrial gases sector. We draw on this expertise and tap into our entrepreneurial and innovative spirit to find tailor-made solutions for every individual requirement. Our top priority is to find efficient solutions as a partner to our customers.

» Hydrogen as an energy carrier with all its facets never ceases to inspire us day by day. We bring this enthusiasm into the projects with our customers and partners, thereby helping them achieve sustainable success.«

**Dr. Christoph Stiller**  
Head of Business Development & Sales of Tyczka Hydrogen GmbH



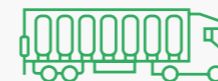
Renewable energy



Hydrogen production



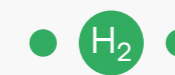
Compression and filling



Transportation and logistics



Supply and application technology



Application in mobility and industry

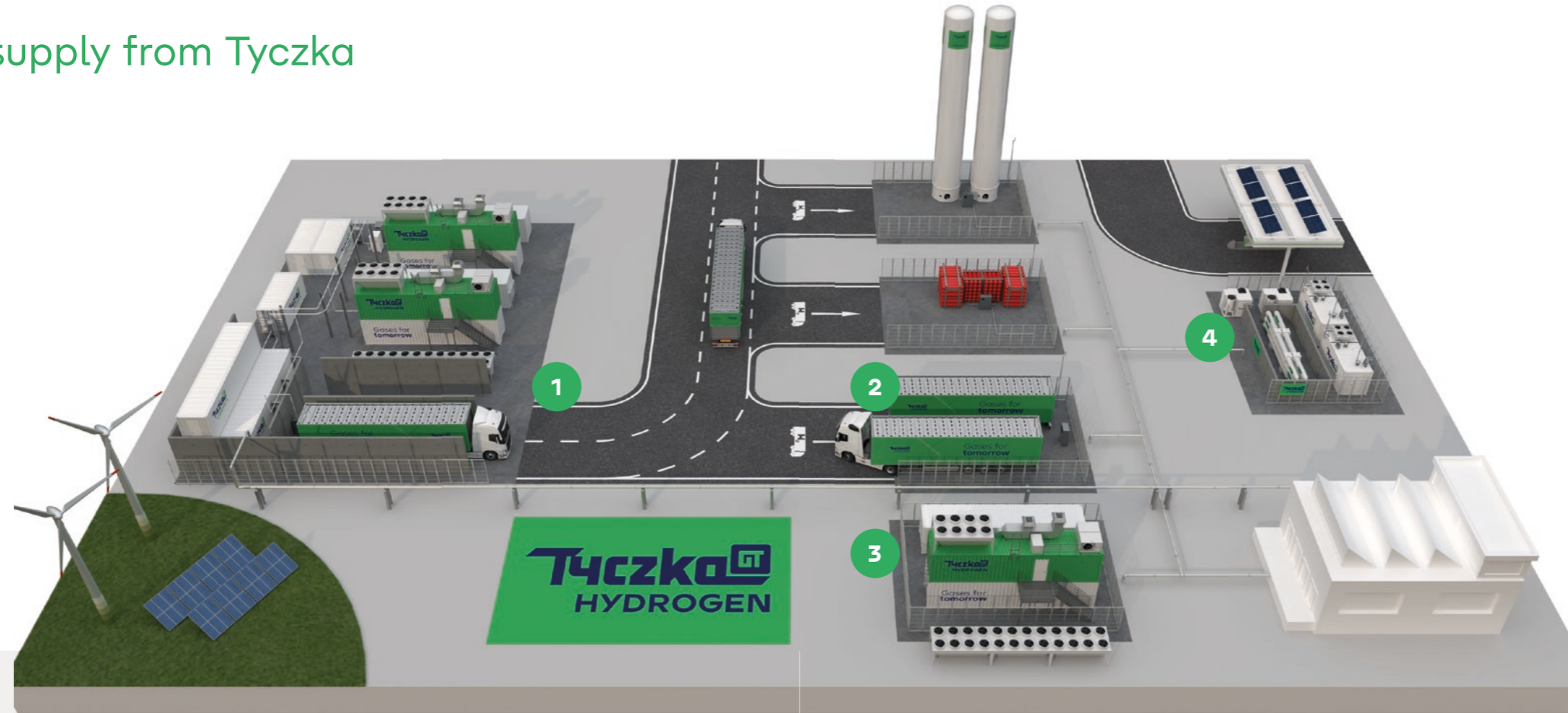
Our value chain



Our value chain



## Your hydrogen supply from Tyczka



1

### Hydrogen production

- We design, build and operate hydrogen production plants that use electrolysis technology for our growing production network.
- From these, we supply customers directly on-site via pipelines, or we fill our modern fleet of compressed gas trailers with hydrogen to supply regional markets.
- We develop regional solutions with our partners along the entire hydrogen value chain.
- If necessary, we also source the product from third parties and take care of filling, transport and storage to supply our customers.

2

### Supply and marketing of bulk hydrogen

- We supply green and conventional hydrogen in Germany and Austria via compressed gas transported in trailers.
- We use a network of sources to ensure a high level of availability and offer a broad range of purities and certifications.
- We use the latest transport technology with high delivery volumes and low specific emissions.
- We work with you to develop optimal supply concepts based on our storage concepts.

3

### On-site production operator models

- On-site generation with electrolysis can be an alternative to bulk supply via trailer: less site traffic, cost optimization, use of the by-products oxygen and heat, use of your own electricity.
- Working together with you, we examine your framework conditions to develop a concept for the generation and buffering of hydrogen at your location – including backup supply and operator models – and then put it into practice.
- In the operational phase, your only task is to use the product – we handle everything else.

4

### Refuelling station and application technology

- We work with you and our technology partners to develop innovative and demand-oriented refuelling solutions based on rental and operator models on your company premises and beyond, and then put hydrogen supply into practice.
- We support the implementation of your vehicle fleet project, from forklifts to regional trains.
- We advise you on the selection and design of your processes and the associated application technology (e.g. gas conditioning, burners, fuel cells).

## Our supply and technology solutions



### Pressure tank installations

Our steel tanks have a maximum pressure of 45 bar and are ideal for long-term supply of medium to large quantities with low-pressure requirements.

#### Details

- Internal volume up to 115 m<sup>3</sup>; height up to 21 m
- Usable amount up to approx. 434 kg hydrogen
- Can be set up horizontally or vertically
- Low maintenance



### High-pressure packs (MaxiPacks)

Our stationary high-pressure bundles with a maximum storage pressure of 200 bar are ideal for high-pressure requirements, small quantities and a gradual ramp-up of demand.

#### Details

- Base area is 2.4 × 2.8 m; height is 2 m
- Usable amount of approx. 75 kg hydrogen per MaxiPack
- MaxiPacks can be stacked on top of each other and expanded in modules
- Other formats are available upon request



### Trailer swap stations

Transport trailers for hydrogen are used to fill storage tanks, but can also be used for on-site storage as a swap concept or a multi-pressure supply system for refuelling stations.

#### Details

- Based on innovative composite tanks (type 4) with a maximum operating pressure of 380 bar
- Capacity of over 1,200 kg of hydrogen enables efficient transport, even over longer distances
- Other capacities also available

### Hydrogen refuelling stations in the rental and operator model

We design, build and operate hydrogen refuelling stations for various applications in transport and logistics.

#### Details

- Turnkey system with the appropriate technical solution from a single source
- Provision, hydrogen supply and, if necessary, operation of depot refuelling stations by Tyczka Hydrogen, with public access optional
- Refuelling pressures of 350 and 700 bar with and without pre-cooling



### On-site production operator models

For on-site supply at your premises, we offer the design, implementation and operation of production plants with electrolysis – from a single source.

#### Details

- Optimised operating strategy adapted to the individual needs / circumstances of the customer / location
- Ensuring the required hydrogen quality according to customer requirements
- Backup supply by Tyczka Hydrogen via trailer delivery from the production network



### Application technology

Upon request, we can help you find the appropriate application technology for your individual needs in conjunction with supplying you with hydrogen. We will gladly advise you and put you in touch with cooperation partners from our broad network.

#### Details

- Hydrogen powered vehicles: forklifts, trucks etc.
- Hydrogen-based cogeneration unit solutions
- Burners, heaters and other heat applications
- Gas mixing and conditioning – and much more



## Services associated with your hydrogen requirements

- Technical advice on the concept and dimensioning of your supply solution for our hydrogen
- Assistance with the approval process of your hydrogen installation
- Service & maintenance of your supply systems as required
- Remote monitoring of the tank levels for the greatest security of supply
- Digital processing of the supplier-customer interface



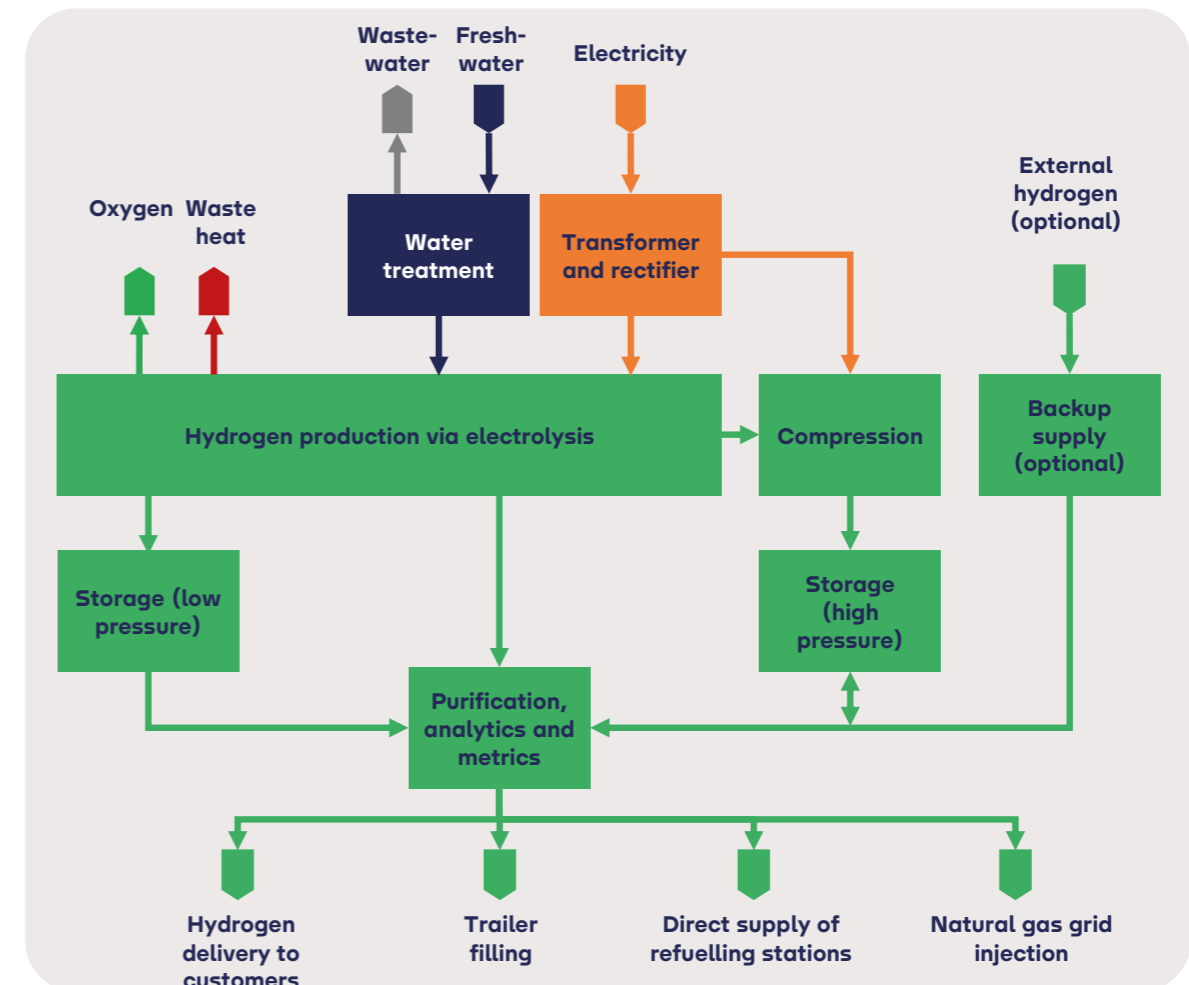
## Our quality standards

- 100 years of experience in energy and industrial gases from the Tyczka Group as a medium-sized family-owned company
- Technological expertise in all project phases, from engineering to plant construction and operation
- Highest safety standards based on a group-wide system for safety, health, environment and quality
- Implementation and collaboration according to certified quality and environment management standards (ISO 9001 / 14001)
- Further development of the state of the art through ongoing committee work
- Independence in the selection of components to the greatest benefit of the customer and suitable for specific needs
- Pragmatic and solution-oriented approach as well as fast reaction times and decision-making processes

## We produce your hydrogen – regionally or on-site

In addition to electrolysis, our production sites feature a number of other components, such as water treatment, compressors and buffer storage. A typical plant with an electrical capacity of 10 MW has the following specifications:

- Annual production capacity: 700–1,300 t H<sub>2</sub> (with utilization of 4,000–7,000 h/a)
- Freshwater consumption: approx. 2.5 m<sup>3</sup>/h
- Waste water: approx. 1 m<sup>3</sup>/h (the waste water merely has a higher concentration of the minerals than the freshwater and is therefore harmless and suitable for many applications)
- Oxygen by-product: approx. 1,000 Nm<sup>3</sup>/h (suitable for various on-site applications)
- Waste heat: approx. 2–3 MWh/h at 45–60°C (suitable for local heating supply, possibly via heat pump)



## Our added value for your project

### How we contribute:

- Design and build the hydrogen value chain
- Invest in, build and operate hydrogen production plants
- Develop manufacturing facilities, supply chains and demand
- Assist with acquiring project funding
- Network stakeholders and enable profitable partnerships
- Strategic cooperation for market development
- Gain political backing and public support



### Memberships in initiatives and associations

	Deutscher Wasserstoff- und Brennstoffzellen-Verband		Wasserstoff Bündnis Bayern
	Hydrogen Europe		CNA e.V.   Der ThinkTank für Transport, Verkehr & Logistik
	Cluster Brennstoffzelle BW		Plattform H2BW
	H2BZ Initiative Hessen e.V.		H2BZ Netzwerk RLP e. V.
	EIGA – European Industrial Gases Association		Wasserstoff Süd
	DVGW – Deutscher Verein des Gas- und Wasserfaches e.V.		IGV – IndustrieGaseverband e. V.

### Selected high-profile projects in the field of hydrogen

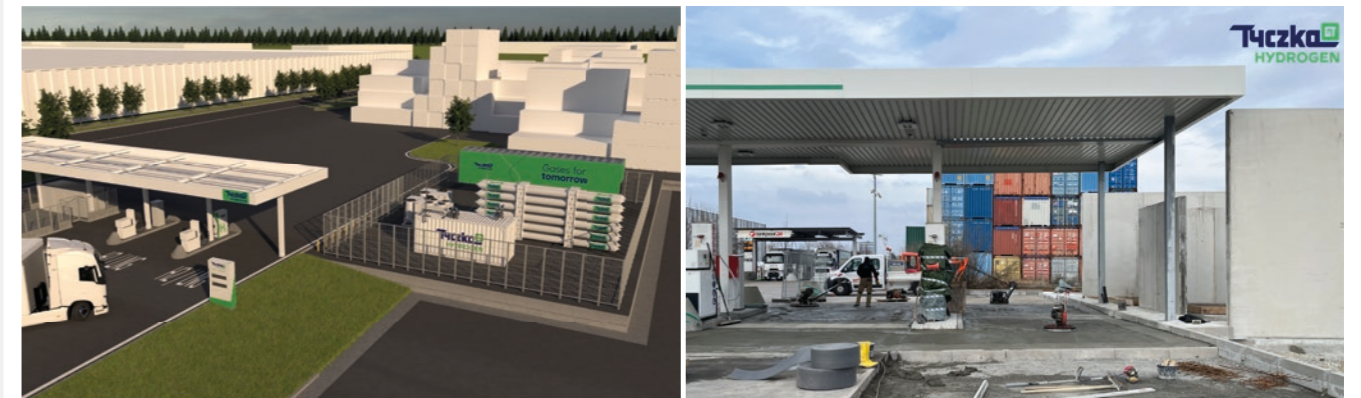
Tyczka Hydrogen has since November 2021 been a **shareholder of Hy2B Hydrogen GmbH:**



- Construction of a 5 MW electrolysis plant (400–700 tH<sub>2</sub>/a) for green hydrogen with trailer filling in Pfeffenhausen in southern Bavaria in cooperation with Hynergy Invest GmbH, BayWa AG, districts of Landshut and Munich and the energy cooperatives Isar eG, Niederbayern eG and Unterhaching eG
- Tyczka Hydrogen as a strategic partner for the entire value chain with access to green hydrogen
- Funding by Federal Ministry of Transport within initiative „HyLand“



### Tyczka Hydrogen builds **first own hydrogen filling station at GVZ Augsburg**



- Multi-energy location with 100% green hydrogen
- Capacity of up to 500 kg per day (1st stage) at 350 and 700 bar with pre-cooling
- Commissioning in Q2 2024
- Funding from the Bavarian refuelling station funding program H2T



Further references at: <https://tyczka-hydrogen.de>

# Tyczka Group

## Gases for tomorrow

100 years of success and experience in handling gases characterise our actions. With our LPG, industrial gases and hydrogen, we are securing the future energy supply and driving the decarbonisation of our markets through innovative solutions.

Our goal of actively contributing to a more sustainable world of tomorrow motivates us anew every day.

Get in touch with us –  
Our experts will find the right solution for  
your hydrogen demand.

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[More infos](#)



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