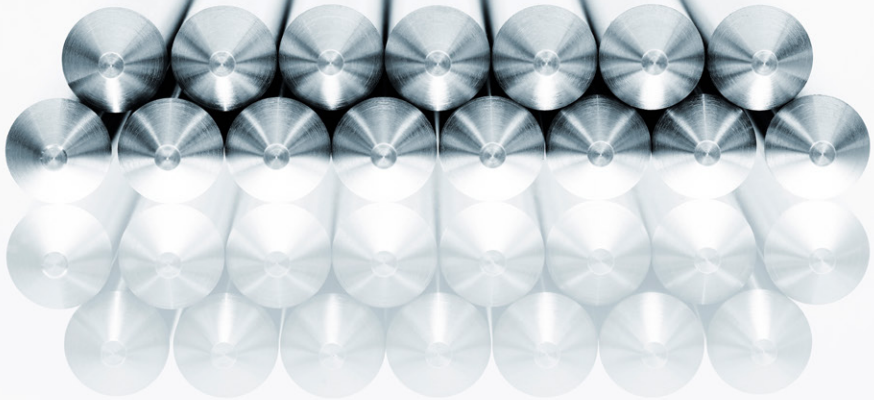


HIGH-PERFORMANCE
MATERIAL FOR

ZAPP

H₂ APPLICATIONS

STRIP FOIL
PLATE WIRE
BAR PROFILE
TOOL STEEL



ZAPP IS CERTIFIED TO ISO 9001

OUR APPLICATIONS

We offer products and solutions in the following areas

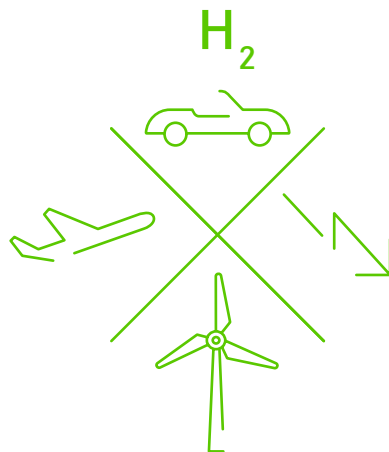
- special steel grades
- tightest tolerances
- best magnetic properties
- highly formable materials
- creep resistant materials
- resistance to hydrogen embrittlement
- avoidance of warpage
- cut lengths
- test samples
- special heat treatments
- product commissioning
- prefabrication solutions
- collaborations with universities/ external laboratories

Typical alloys

- 1.4404/316L
- 1.4301/304
- Alloy 750
- Zapp SF
- 1.4028MO
- Alloy 718
- Zapp zeroMAG
- 1.4845/310S
- 1.4435/316L mod./Zapp HyType®
- Zapp HyFormion
- 3.7025/3.7035
- 1.4003/1.4005
- 1.4105
- Nickel 201/2.4068
- 1.0715

Tool steel

A range of Z-Grades for toughness, compressive and wear resistant tooling applications.



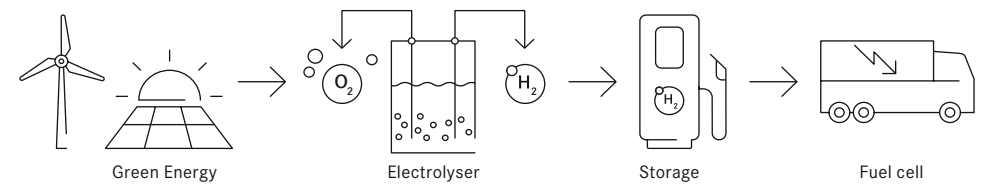
HYDROGEN – THE CLEAN ALTERNATIVE

Your H₂ choice – Your H₂ chance!

We offer an array of products, which are **perfectly** suited to use within hydrogen applications. With the Zapp Group you have found a reliable supply partner, who is also open to the **development** of new products.

For us, **technical customer support** is a fundamental part of good service. A service, which our long-standing customers value greatly. We can help you to select the optimum material for your specific application.

With access to over **50 engineers** and a worldwide **network** of active researchers and institutions, we offer countless solutions for the **H₂ industry**.



TYPICAL PROPERTIES OF ZAPP PRODUCTS FOR HYDROGEN APPLICATIONS

Bar steel for use in solenoid valves

- An excellent combination of magnetic properties, corrosion resistance and machinability.
- Our ferritic materials are tested for resistance to hydrogen embrittlement.
- For use in various control valves within fuel cells, H₂ combustion engines and tank systems.

NEW: Zapp HyType® family with high strength, suitable for safety-critical components in direct contact with hydrogen, such as housings, pistons, fittings and valves.

Housing materials: pressure resistant up to 1,000 bar

Compressor

For components such as membranes, diaphragms and flapper valves service life, specifically life cycle fatigue, is an important criteria within high-quality compressors. Typically, martensitic stainless steels, such as Zapp SF (Super Fatigue) and nickel-based precipitation hardening grades, such as Alloy 718 are used for this purpose. These materials optimally combine the required properties for use within the H₂ environment.

Electrolyser

We offer corrosion resistant materials for your electrolyser. For AEL electrolysers we typically recommend Nickel 201, whereas for PEM electrolysers the properties of pure titanium, typically Grade 1 or Grade 2 are favoured.

Fuel cell

NEW: Zapp's highly formable strip – our development Zapp HyFormion series – enables the serial production of precise, finely structured channels with extremely small radii for thin bipolar plates. Various alloys are available for the perfect combination of corrosion resistance and formability, depending on the specific design requirements.

Forming and stamping technology

Our materials are characterized by high hardness, toughness and wear resistance for cutting, drawing and cold forming tooling, processing and heat treatment. With more than 40 application-specific PM steels, special tool steels and carbide steels in stock, we have a wide range of products to offer our customers.

Your application	Electrolyser	Valves	Compressors	Fuel cells	Forming and stamping	New developments
Product form	Precision strip Precision foil	Precision bar Precision wire	Precision strip	Precision foil	Round and flat bar	Carried out across the board
Grade	Stainless steel Nickel alloys Titanium	Stainless steel Nickel alloys Copper beryllium Carbon steel	Stainless steel Nickel alloys	Stainless steel Titanium	PM-tool steel Special tool steel Solid carbide	Consultation on grade and product form
Dimension	From 0.025 mm to 1.00 mm thickness	From ø 0.1 mm to ø 65.0 mm	From 0.075 mm to 1.0 mm thickness	From 0.025 mm to 0.3 mm thickness	Rounds from ø 1.3 mm to ø 500 mm Flats from 10.0 mm to 505.0 mm	Manufacture of samples



A man in a white dress shirt and a dark tie with blue diagonal stripes is leaning over a highly reflective, polished metal surface. He is smiling and looking towards the camera. His reflection is clearly visible on the surface below him. The background shows an industrial setting with metal railings and structural elements.

CONTACT

ZAPP GROUP

Zapp Precision Metals GmbH

Zapp-Platz 1

40880 Ratingen

H2@zapp.com

www.zapp.com

Further information regarding our products and locations are available in our image brochure and under www.zapp.com.

The illustrations, drawings, dimensional and weight data and other information included in this data sheet are intended only for the purposes of describing our products and represent non-binding average values. They do not constitute quality data, nor can they be used as the basis for any guarantee of quality or durability. The applications presented serve only as illustrations and can be construed neither as quality data nor as a guarantee in relation to the suitability of the material. This cannot substitute for comprehensive consultation on the selection of our products and on their use in a specific application.

The brochure is not subject to change control. Revision: August 2023