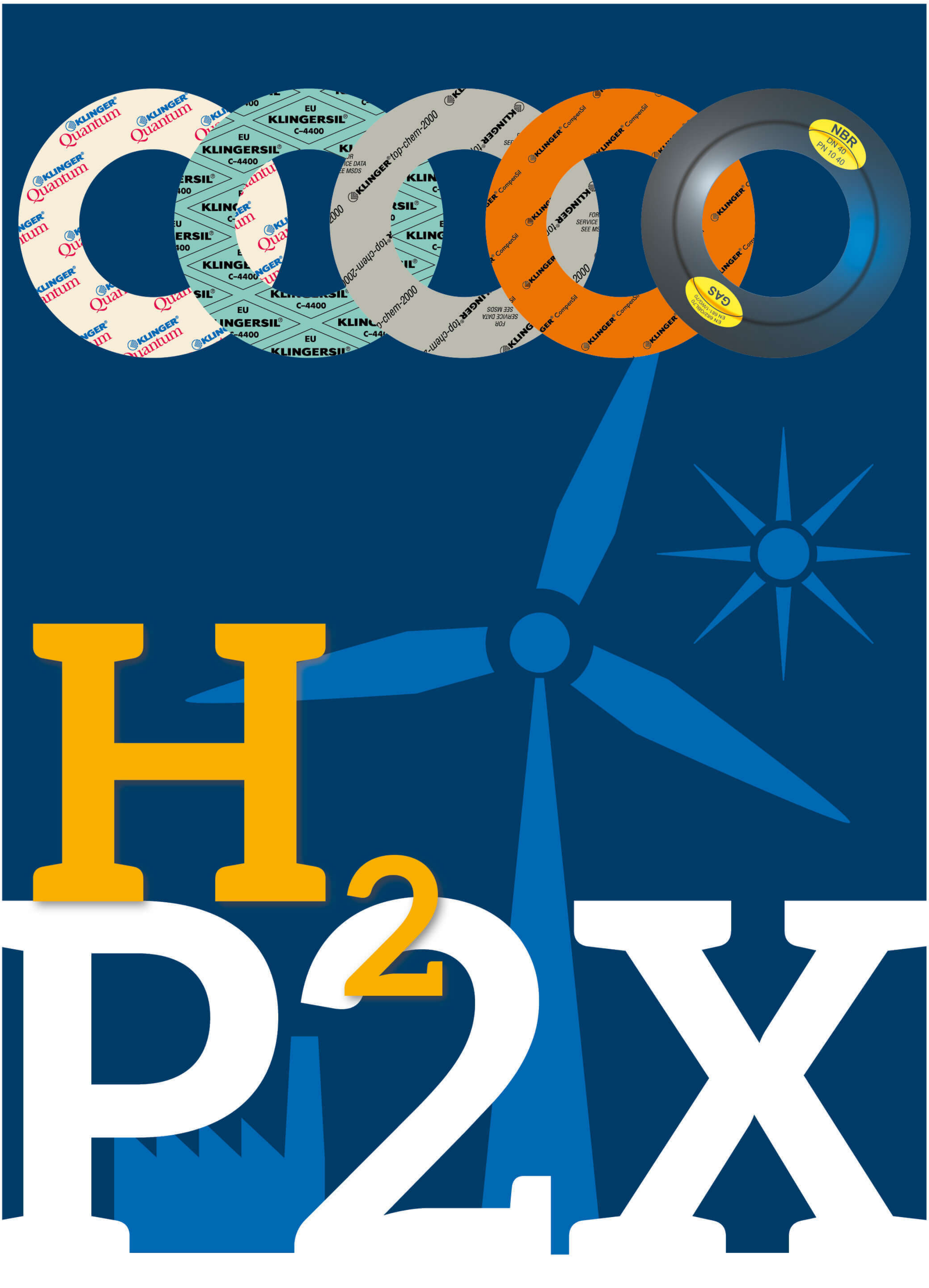
KLINGER Germany

POWER-TO-X

KLINGER® sealing materials - for all stages of the Power-to-X process



POWER-TO-X

Hydrogen – tomorrow's technology is relevant today

Most of the energy we use is generated from fossil fuels. Be it power plants that supply us with the electricity we need, or combustion engines in our vehicles. They all release CO_2 and thus endanger our environment in the long term. But alternative energy generation is being expanded.

But is that enough to satisfy our hunger for energy?

In 2015, an amount of energy of 3600 TWh*1 was used in Germany. If we wanted to provide this amount of energy in the form of electricity from wind power in a decentralized manner, we would need wind turbines with a capacity of 3.5 MW each every 2.5 km. And that over the entire area of the Federal Republic of Germany.

Did we want the electricity from offshore wind turbines from the North Sea and the Baltic Sea, an additional 30–35 power lines would be required from north to south of Germany. And what problems there are with the first route the "Südlink power highway" is known. Everyone wants electricity – nobody wants the power line.

The energy supply system must therefore take into account the transport and storage of energy sources in order to be functional.

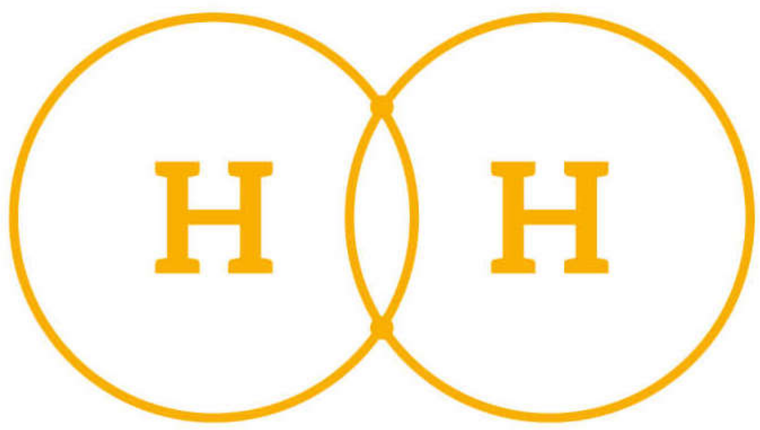
The topic of "hydrogen from alternative energies" and its use as an energy carrier in the most varied of areas is taking up more and more space in the public discussion.

Finally – we at KLINGER® say, because it is time to take advantage of this technological opportunity and tackle it on a large scale. Since the necessary technologies are available, it is now time to "get down to work".

KLINGER®, as a pioneer of static sealing technology, would like to use this information to provide its product users and processing partners with assistance in selecting sealing materials and sealing types in the respective process steps.

But what is Power-to-X?

Power-to-X (P2X) refers to the use of electricity from alternative energies (e.g. wind power, hydropower, solar) to generate various energy sources that can be used in a wide variety of consumption sectors. The "X", the energy carriers are for example, hydrogen, fuel gases and liquid fuels such as gasoline, ammonia, kerosene and diesel. The sector coupling (the networking of the individual energy industries and their joint use and production of energy sources) is in the foreground here.



Now hydrogen technologies come into play.

Hydrogen can be generated by electrolysis of water with electricity from renewable energies. Hydrogen can be stored and transported by ships and vehicles. And it can be brought to consumers through gas supply networks.

The infrastructure is there.

But there is more. With CO_2 from industrial processes, hydrogen can be converted into methane and other gases or liquids that can be used again in industry. And furthermore, eFuels such as ammonia, gasoline, kerosene and diesel fuel can be produced using existing processes. Storage and distribution work as before and they are CO_2-neutral.

Let's go this way together.
KLINGER® accompanies you.

*1 study by frontier economics
Presented on the foundation of the VDMA Power-to-X for Applications 12/2018

PROCESS STEPS POWER-TO-X

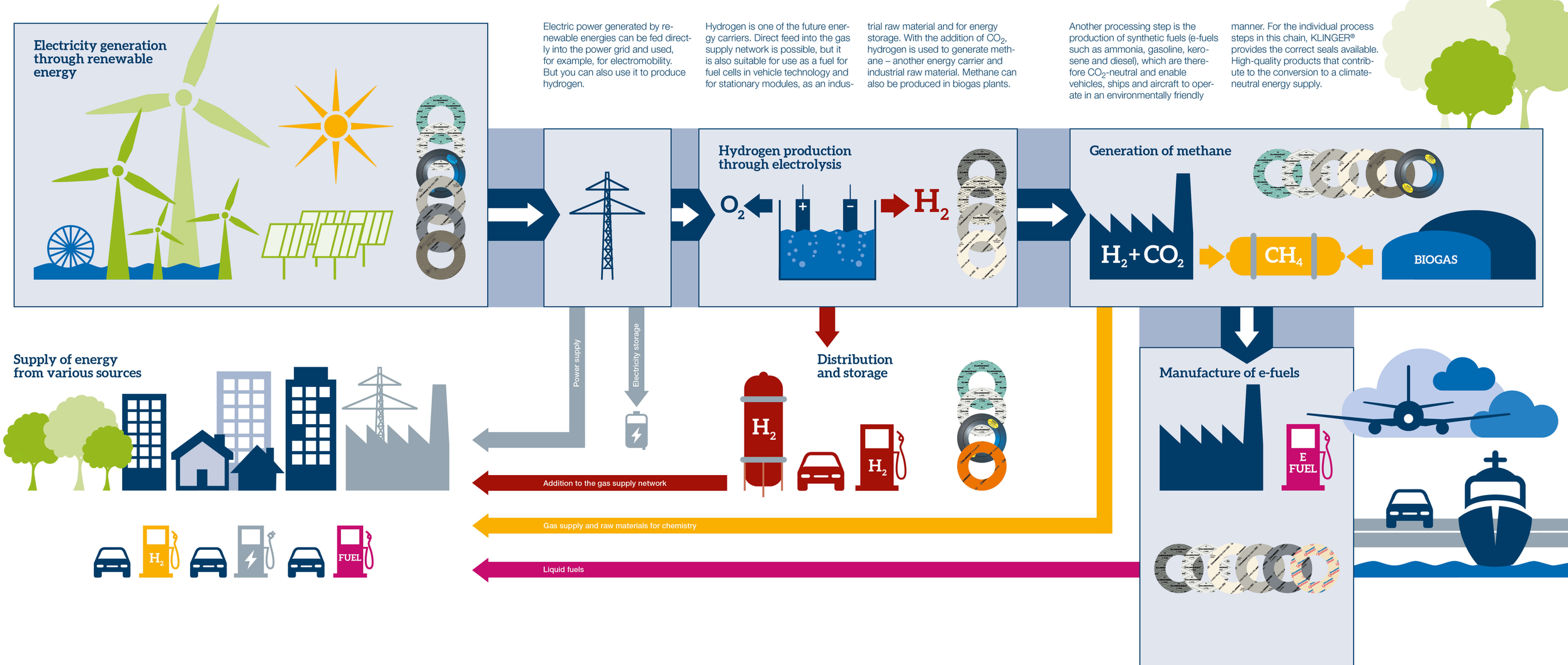
KLINGER® – the right seal for every step

KLINGER® accompanies you in the production and distribution of renewable energy

Electric power generated by renewable energies can be fed directly into the power grid and used, for example, for electromobility. But you can also use it to produce hydrogen.

Hydrogen is one of the future energy carriers. Direct feed into the gas supply network is possible, but it is also suitable for use as a fuel for fuel cells in vehicle technology and for stationary modules, as an industrial raw material and for energy storage. With the addition of CO_2, hydrogen is used to generate methane – another energy carrier and industrial raw material. Methane can also be produced in biogas plants.

Another processing step is the production of synthetic fuels (e-fuels such as ammonia, gasoline, kerosene and diesel), which are therefore CO_2-neutral and enable vehicles, ships and aircraft to operate in an environmentally friendly manner. For the individual process steps in this chain, KLINGER® provides the correct seals available. High-quality products that contribute to the conversion to a climate-neutral energy supply.

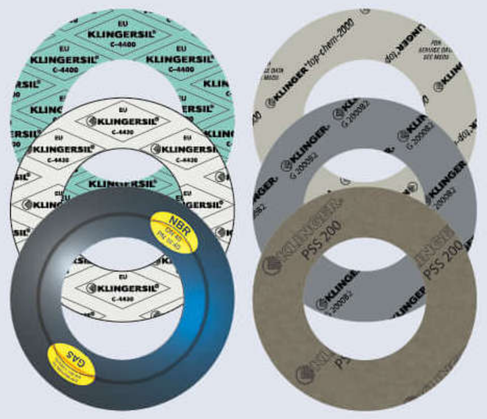


POWER-TO-X PROCESSES

Fields of application and the right KLINGER® products

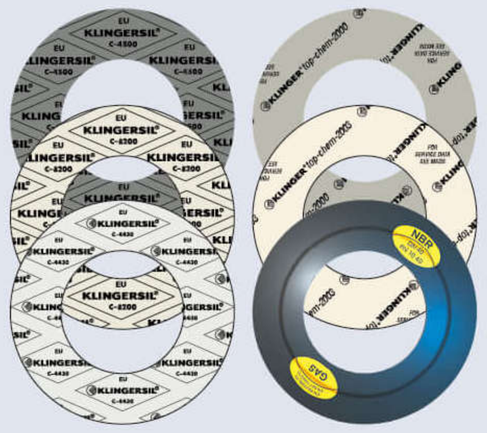
Electricity generation through renewable energy
Gaskets for steam and water turbines with supply and discharge lines and as corrosion protection between tower segments of wind turbines

Gaskets
KLINGERSIL® C-4400 und C-4430
KLINGER® KGS GII
KLINGER® top-chem 2000
KLINGER® graphit
KLINGER® milam



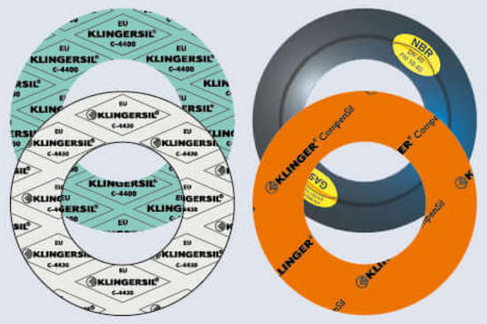
Hydrogen production through electrolysis
Standard seals and housing seals in electrolysis systems for alkaline and acidic electrolysis processes as well as in PEM-electolysers.

Gaskets
KLINGERSIL® C-4500 und C-8200
KLINGER® top-chem 2000
KLINGER® top-chem 2003
KLINGER® KGS GII



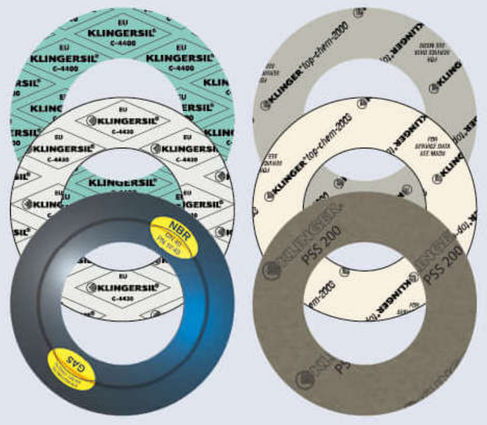
Distribution and storage
Gaskets for tanks and pipeline networks, for systems for gas storage in caverns. TA-Luft compliant.Gaseous and liquid physical state of the media.

Gaskets
KLINGER® KGS GII
KLINGERSIL® C-4400 und C-4430
KLINGER® CompenSil



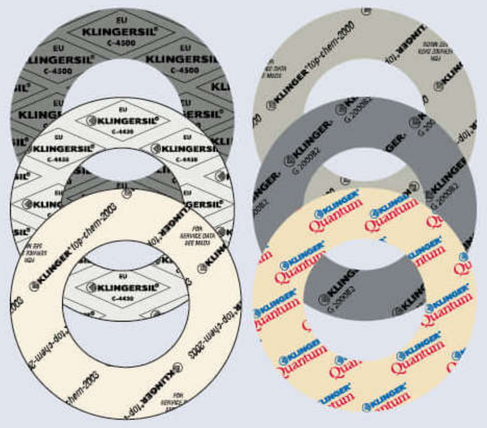
Generation of methane
Generation of methane and longer hydrocarbon chains from hydrogen and landfill and biogas. Here, processes supported by catalysis are used for chemical conversion in reactors, but also gas cleaning processes. Seals adapted to process and temperature.

Gaskets
KLINGER® KGS GII
KLINGERSIL® C-4400 und C-4430
KLINGER® top-chem 2000
KLINGER® top-chem 2003
KLINGER® milam



Manufacture of e-fuels
There are various processes for producing e-fuels (Fischer-Tropsch, Amonia-Synthesis, SNG-Synthesis, Sasol etc.) that support catalysis and are operated in the medium to high temperature range. Therefore, different types of seals can also be used here.

Gaskets
KLINGERSIL® C-4500 und C-4430
KLINGER® top-chem 2000
KLINGER® top-chem 2003
KLINGER® Quantum
KLINGER® graphit
KLINGER® milam



Certified according to DIN EN ISO 9001: 2015

KLINGER GmbH
Rich.-Klinger-Straße 37
D-65510 Idstein
Tel (06126) 4016-0
Fax (06126) 4016-11/ -22
e-mail: mail@klinger.de
http://www.klinger.de

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