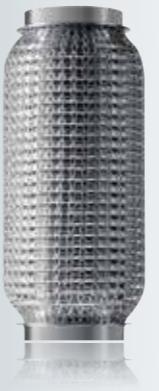


HYDRA®

Quality by Witzenmann



WITZENMANN
managing flexibility

WITZENMANN JAPAN



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THE GROUP

With 24 Companies in 19 countries
Witzenmann is the worldwide Number 1 in our industry.



World Leader

Witzenmann is a global group specialising in the design and manufacture of flexible metal elements. Guided by our vision of "managing flexibility", our company has become renowned as a reliable manufacturer and as the innovative development partner of choice within the industry. Today Witzenmann offers the widest range of products available, enabling us to provide optimised solutions time and time again.

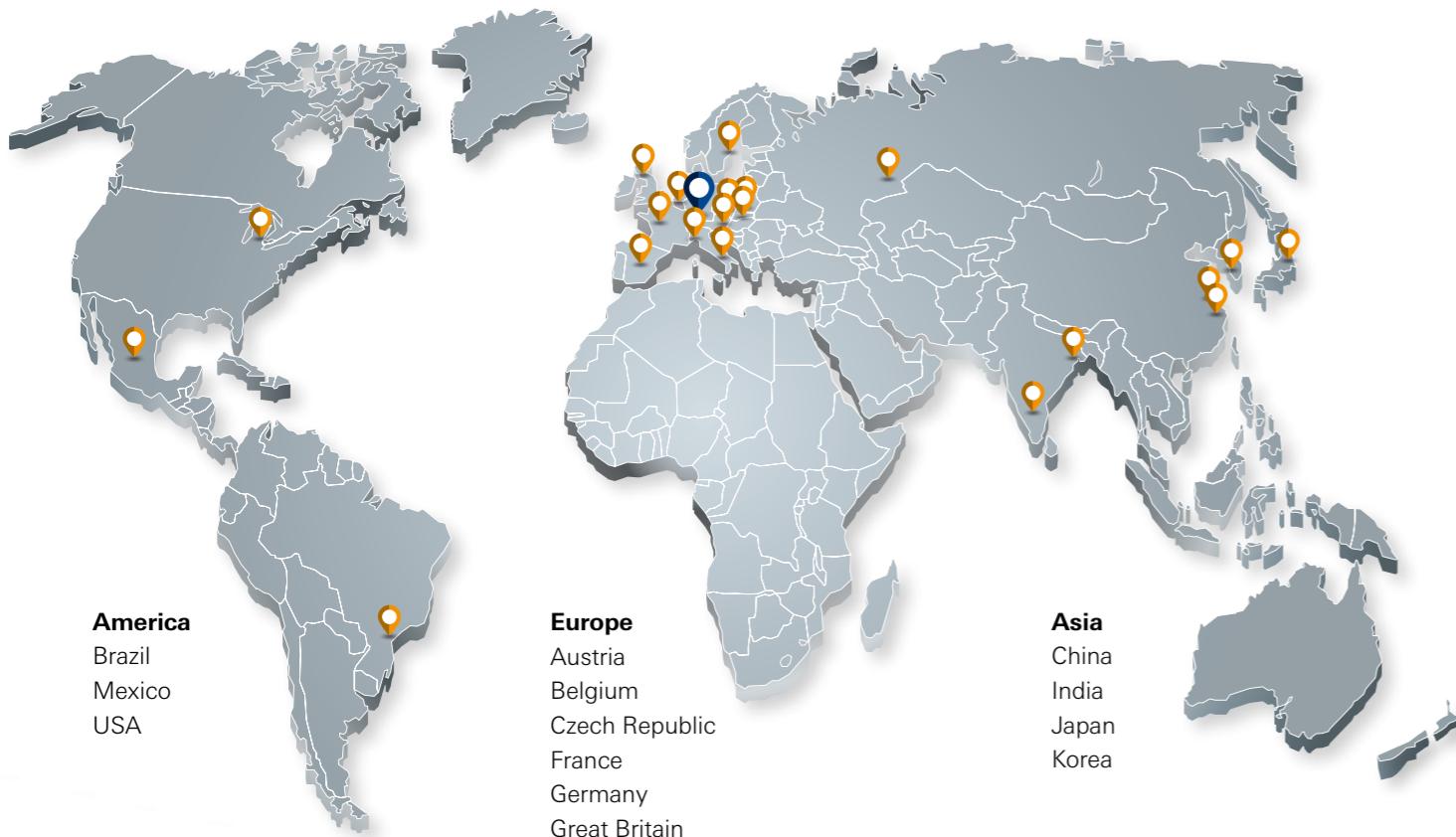
Assuming Responsibility

As a signatory to the Declaration of Accession, the Witzenmann Group is committed to the 10 principles of the United Nations Global Compact. This initiative by former UN Secretary General Kofi Annan is based on internationally agreed conventions and treaties on human rights, labour standards, environmental protection and anti-corruption. The Global Compact aims to make the 10 principles an integral part of business strategy and operation.



OUR FLEXIBLE NETWORK

The group's renowned international technology network across Europe, Asia and the Americas generates advantage in terms of operational excellence and innovative strength.



Europe
Austria
Belgium
Czech Republic
France
Germany
Great Britain
Italy
Poland
Russia
Slovakia
Spain
Sweden

Asia
China
India
Japan
Korea

Always Close to the Customer

One of our corporate principles is to manufacture our products close to our markets. In practice, this entails establishing extensive local knowledge both in production and in engineering. To ensure this, our Competence Centre in Pforzheim provides the respective subsidiaries with the appropriate Witzenmann technology. This strong technology network within the group enables us to address global trends and to develop corresponding optimised solutions. This has made us the innovation leader in our industry.

Fast Service, Efficient Production

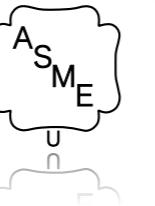
To be "always close to the customer" is to provide fast, local, efficient service. Through our network of worldwide subsidiaries we are able to provide:

- Sales support and customer relationship management
- Engineering expertise including design calculations, whether for new components or complete piping systems
- Production and assembly services to meet required delivery times for replacement parts or new variants



QUALITY BY WITZENMANN

TS 16949, ASME, EJMA, U-Stamp ...
German Quality manufactured by Witzenmann

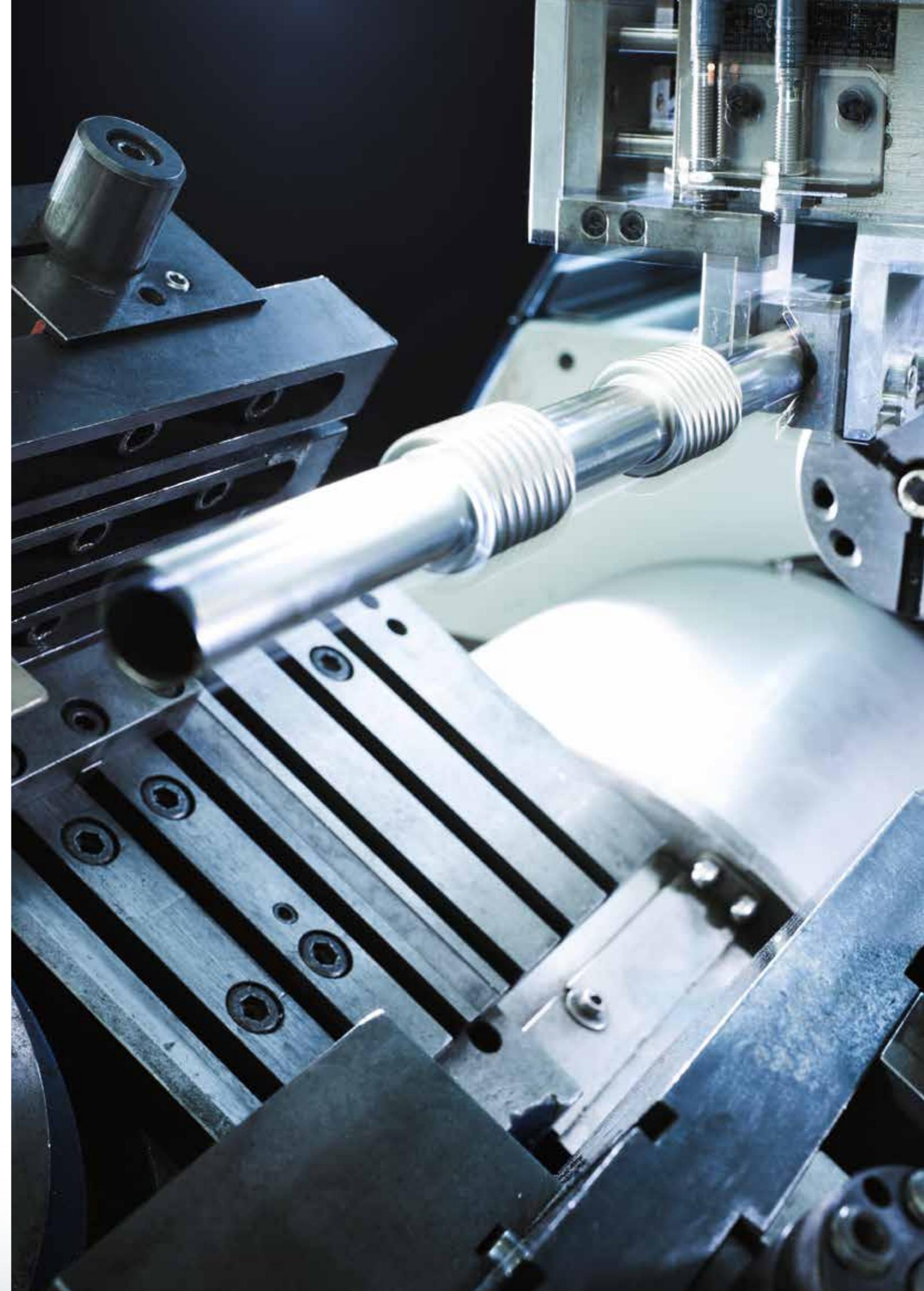


Quality by Witzenmann

Product durability, absolute reliability and outstanding levels of service are essential for a company that strives for overall quality leadership. "HYDRA – Quality by Witzenmann" is supported not only by our DIN ISO 9001 / TS 16949 accreditation, but also by a wide variety of national and international approvals and certifications such as EJMA, ASME or U-Stamp. Our customer base includes all of the world's major manufacturers. This is reason enough for us to consistently enhance the qualitative development of our product solutions.

Technology Transfer from Other Markets

Witzenmann is involved in many highly specialised markets including aerospace, nuclear power and even medical technology. These are all fields in which maximum functional reliability is required under the most demanding operating conditions. The resulting need for continuous development, with uncompromised quality, is what makes Witzenmann the chosen development partner across the world.



WITZENMANN JAPAN



Local specialists – wherever you need us.

It is Witzenmann's competence as global leader and our years of experience working within the Witzenmann Group that makes us your partner of choice. As a specialist for flexible metal elements, Witzenmann Japan is your partner in the field of absorbing vibrations and movements in pipelines.



Success in special applications

Witzenmann Japan was founded in 2012. With its selection of products for the local market, Witzenmann Japan is one of the leading suppliers of flexible metal elements. Special focus is placed on customer-specific solutions for the automobile and commercial vehicle industry and for machine construction. Witzenmann Japan's strength lies in supporting customers with special requirements such as extreme pressure, low temperature ranges, strict exhaust emission standards and highly aggressive fluids.

Quality where it matters

Whether it be special bellows for car fuel supply, customized piping systems for commercial vehicles and engines or the wide range of products for machinery and plant manufacturing, the engineering and "Quality by Witzenmann" always makes the difference. This also applies to technical building equipment, such as gas hoses or semi-flexible fittings in heating and air conditioning technology or flat ducts for exhaust air regulation in residential buildings. In the energy sector, our portfolio includes products for wind, solar or tidal power plants.

Our product range covers not only niche markets that require highly complex special solutions but also high-volume series products.

AUTOMOTIVE

HYDRA® Components

Exhaust gas decoupling elements



The breadth of the product range

All reputable automobile and system manufacturers are today among Witzenmann's customers. In a wide range of areas, the company offers solutions that perceptibly improve the life span, economic efficiency and comfort of a car. In the exhaust gas area there are decoupling elements or ducts of different design that decouple vibrations, heat expansions or engine movements.

Flexible exhaust gas lines contribute significantly to improved pollutant emissions as the formation of nitrogen oxides is reduced in the combustion process. In oil, fuel and cooling circuits, the advantages of flexible metal lines are their absolute gas and diffusion tightness, long life span and temperature resistance. An essential criterion, especially when they are being built close to exhaust manifolds, turbochargers or the exhaust system.

Exhaust gas duct



Product range

- Decoupling elements/hose joints
- Decoupling elements/hose assembly
- Structure borne sound decoupling elements
- Exhaust expansion elements
- Exhaust gas return pipes
- Return lines for oil and water
- Bellow elements for fuel pumps or piezo injectors
- Corrugated hoses for gas or water
- Stripwound hoses-cable protection

Exhaust gas recirculation lines



ON AND OFF HIGHWAY

HYDRA® Exhaust system components

Heavy goods vehicle



In the commercial vehicles and engine sector our expertise is married to decades of experience in vehicles technology and industrial application. All metal hoses and expansions joints are developed to customer specifications and manufactured on a large scale.

Stripwound hoses

For trucks, busses, constructions machinery, fork-lift trucks, pick-up trucks, vans and tractors. With interlocked and corrugated profile. They are used for protective purposes and also as extraction, exhaust and conveying hoses. They are extremely resistant to tensile and transversal stresses.

Stripwound hose with corrugated profile



Flexible piping systems

A combination of rigid and flexible components for the use as a pressure-resistant system in gas and/or liquid cycles. They combine simple assembly with reliable compensation for misalignment in assembly and movement of the aggregate while conforming with the very highest safety standards.

Exhaust decoupling elements

Use of short, selfsupporting elements allows an installation position very close to the engine. We offer highly flexible elements in a number of designs to fully isolate the system from movements and vibration. Both of these designs are of course pressure resistant and gas-tight.

Recirculation lines



Exhaust gas and oil return pipes

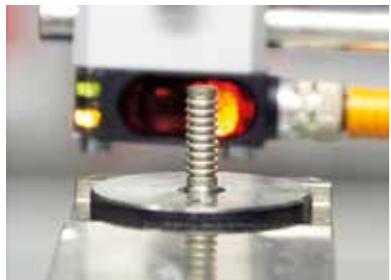
To reduce pollutant emissions from engines and to ensure oil supply to engines and turbo-chargers. These pipes compensate for thermal expansion, misalignment in assembly, vibrations and movements of the engine – at extreme temperatures.



INDUSTRY

HYDRA® Metal bellows

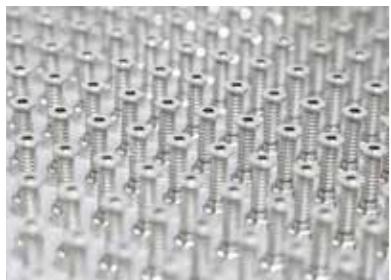
Clean room production



HYDRA Corrugated bellows

Witzenmann corrugated bellows are made by the hydraulic forming of thin-walled tubes. Depending on the requirement profile, they can be designed either with one or multiple walls. Single-ply bellows have small spring rates and are employed particularly in vacuum technology. Multi-ply bellows are very pressure resistant and at the same time very flexible. They are used, for instance, as valve shaft seals for operating pressures of up to 400 bar.

Precision bellows



HYDRA Precision bellows

Our precision bellows meet the highest demands for dimensional stability, cleanliness, functionality and service life. These bellows are manufactured under clean room conditions with continuous production monitoring and quality control. The smallest precision bellows measure only 3.0 mm and are therefore also suitable for use in mechatronic systems.

Characteristics

- High level of safety due to multi-ply bellows
- Design modified specifically to the customer's requirements
- Very small dimensions possible
- Regular requalification of important properties
- Heat-resistant
- Ageing-resistant



INDUSTRY

HYDRA® Expansion joints

Expansion joints production



HYDRA Axial, universal and lateral expansion joints

Exhaust expansion elements are bellows that compensate thermal expansions, movements or installation tolerances. They are used in the manifold areas upstream, downstream or between the turbochargers. The elements are in a compact design and are fitted with individual connections in accordance with customer specifications. Such as connections made of casting materials, for example. Here, we are able to weld all materials including carbon-based cast steel.

Characteristics

- Temperature and corrosion resistant
- Low fixed bearing load by means of anchoring
- Compensation of movements and thermal expansions

Application



Special designs

Special designs include expansion joints that differ from the usual product range. Such as in their geometry (oval or rectangular expansion joints). In their properties and materials (extreme light weight (aluminium), aggressive media (titanium), electrical conductivity (copper), magnetic permeability) or in their areas of use (DN 12,000 brick-lined for temperatures up to 800 °C, for high pressures or vacuum).

Characteristics

- Supplied with connecting pieces
- Individual, client-specific designs
- Durable and extremely robust



INDUSTRY

HYDRA® Metal Hoses

Stripwound hoses



HYDRA Stripwound hoses

Stripwound hoses from Witzenmann are wound from strips of material in various profiles depending on the respective application and specifications. The industry's broadest product programme ranges from the highly flexible metal hose with engaged profile through to the sturdy interlocked protective hose. The flexible metal elements are used as heat and ageing-resistant components in exhaust gas technology, for example, as protective conduits and conveying hoses.

Applications

- Protective hoses for electric cables and fibreglass strands in medical technology
- Extraction and conveying hoses for dust, chippings and pellets
- For ventilation and exhaust gas routing

Corrugated hoses



HYDRA Corrugated hoses

Corrugated hoses are mechanically formed from seamless or longitudinally welded tubes and are available in a variety of wall thicknesses, material types and packaging. These are used to convey pressurised fluids and fluids in a vacuum in an absolutely leak-tight manner. The hoses compensate for movement, expansion and vibration within the piping systems.

Applications

- Pressurised or vacuum-sealed gas, water, hydraulic or refrigerant lines in technical building equipment
- As pressurised hoses in the chemical industry and vacuum technology or as a noise and vibration-damping equalising piece
- As a conveying hose in heat exchangers and stratified storage systems
- Oil, fuel and exhaust gas lines in the automotive industry



INDUSTRY

HYDRA® Hangers and supports

Constant hangers



HYDRA Spring hangers and constant hangers with accessories

Spring hangers and constant hangers with accessories are used wherever pipelines have to be hung flexibly. They absorb the weight (with or without medium) of the pipelines and ensure defined flexibility of the pipelines. Our product portfolio includes spring hangers, spring supports, hinged spring supports, constant hangers, constant supports, accessories and pipe clamps. Thus, depending on the choice of hanger, a balanced load chain can be formed, which can encompass the pipeline.

Bearings



HYDRA Bearings

The product range includes floating, guide, fixed and roller bearings. In some cases, these have lifting devices or additional insulation saddles as well as supporting shells for supporting the pipeline. The complete range of bearings is perfectly matched and characterised by a sturdy design and maintenance-free operation. The patented clamps ensure ease of assembly and long operational reliability. The patented infinitely adjustable height adjustment ensures easy and optimum adjustment of the bearings to the conditions on the site.

FLEXPERTE® – Design software



FLEXPERTE® Software

- Intuitive operation
- Tailor-made design even of complex load chains
- Rohr2, CaesarII, PDMS and PDS interfaces
- Available free of charge – download from our homepage

