

WITZENMANN

managing flexibility

Witzenmann GmbH

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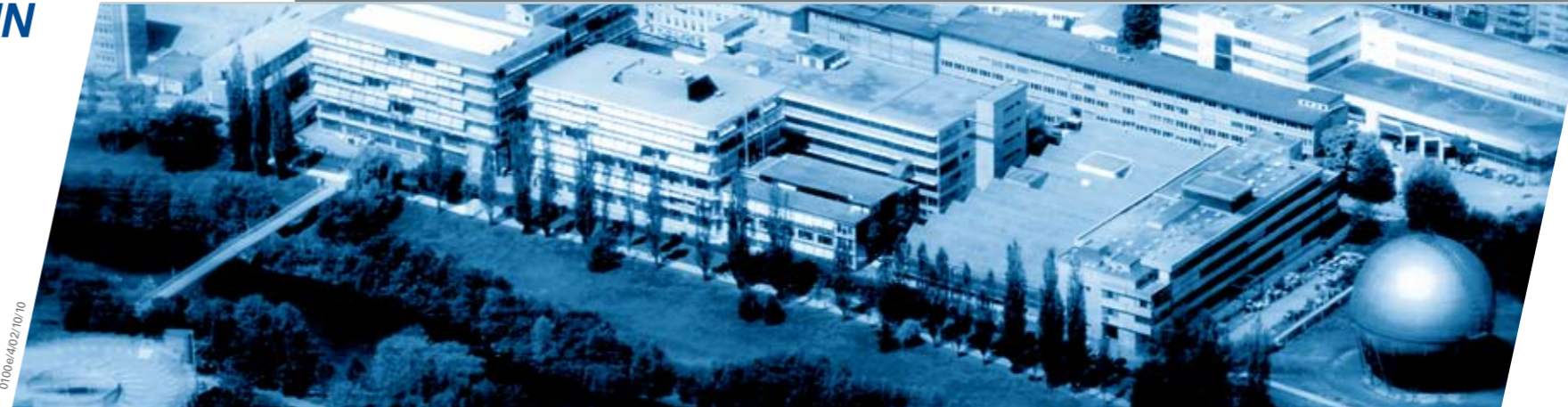
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KEEP THINGS MOVING. IN ALL INDUSTRIES.





WHEREVER YOU NEED US. WORLDWIDE.



Worldwide

America

Brazil
USA

Asia

China
India
Korea

Europe

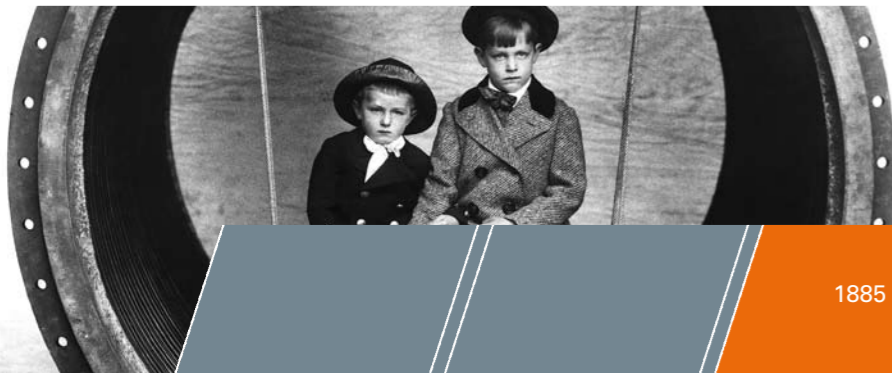
Austria, Belgium,
Czech Republic, France,
Germany, Italy, Poland,
Russia, Slovakia, Spain,
Sweden, UK

Witzenmann's solutions are in great demand in many areas: they compensate for movement and thermal expansion in pipework of all kinds. And they serve as safe, pressure-resistant piping elements for the transport of solid, liquid or gas media.

As technology leader and Europe's No. 1, we are to be found right where our customers are – worldwide.

23 companies serving all major markets right around the globe.

FROM PIONEER TO MARKETLEADER



1885



Heinrich Witzenmann and
Eugène Levavasseur invent
the metal hose

1854: Company founded by Heinrich Witzenmann as a jewellery factory in Pforzheim

1885: Invention of the metal hose by Heinrich Witzenmann and Eugène Levavasseur

1889: Beginning of the industrial production of metal hoses

1899: Registration of the trade mark HYDRA®

1909: Invention of the metal hose expansion joint by Emil Witzenmann

1936: Beginning of the production of multi-ply axial expansion joints

1975: Beginning of the production of diaphragm bellows

1990 - 1994: Expansion of the Witzenmann Group in former East Germany, France, Italy, Spain, the Netherlands, the Czech Republic and Slovakia

1994: DIN ISO 9001 certification

1996: Establishment of a subsidiary in the USA

1998: QS 9000 and VDA 6.1 certification

since 1999: New companies established in Brazil, China, India, Korea and Russia

2004: 150 years Witzenmann

2008: Additional location in India (Chennai)

2010: 125 years of metal hoses



OUR COMPANY AT A GLANCE

Group

Around 3000 employees in 23 companies of the Witzenmann Group throughout the world generate a consolidated annual turnover more than 320 million euros.

Witzenmann GmbH in Pforzheim is the parent company of the Witzenmann Group. Some 1400 employees generate an annual turnover more than 200 million euros.

Shareholder:
Witzenmann family, Pforzheim

Supervisory Board:
Prof. Dr. Trutz von Trotha-Witzenmann, Freiburg
Prof. Dr. Herbert Paschen, Heidelberg
Dr. Sigvard Clasen, Pforzheim
Dr. Siegfried Goll, Markdorf
Linda Bahlo, Königsbach-Stein
Andreas Meiniger, Pforzheim

Managing Board:
Dr. Hans-Eberhard Koch
Dr. Gerhard Flöck
Dr. Matthias Weiergräber



Product Range

Metal hoses
Expansion joints
Metal bellows
Automotive components
Pipe supports

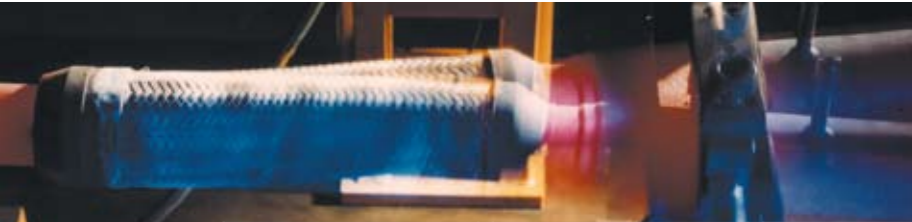
DIVERSITY AND VERSATILITY: ALL PART OF THE PACKAGE



Witzenmann provides the world's widest range of flexible metal elements. In addition to our standard model ranges, we also develop and produce customized product solutions. Our unparalleled know-how in engineering and production is the basis

for optimal solutions, whenever there is a need for insulation of vibrations and accommodation of movements in pipes – whether in heating, ventilation and air conditioning in commercial vehicles and engines, or in aviation and space travel.

ENGINEERING. THE BASIC FOR CUSTOMIZED SOLUTION



Engineering



Complete systems
Extensive pool of engineers
Large-scale test fields
Own facilities for tool and machine construction

The basis for customized solutions

We find the optimal product solution for every application. With a large pool of engineers on hand we help you realize this goal. Our specialists offer support from the first project meeting right up to the product development stage. From prototype to testing on to production.

This concentrated know-how enables us to develop and produce complete, fully compatible solutions. From pipe hangers (spring or constant) to supports (rollers, fixed and movable) and compensation for expansions in piping systems.

This expertise also enables us to offer you user-friendly design programmes that present and calculate metal hoses, expansion joints, metal bellows and complete load chains (Flexperte).

Know-how of the market leader – by mouse click.

ULTIMATE SAFETY IN INDUSTRY



Industry



Metal hoses
Expansion joints
Pipe supports and bearings
Hangers and supports
Design programmes

It's all about safety and cost-effectiveness. And providing a complete product range for industry that consistently meets these standards.

Witzenmann not only boasts the world's widest range of flexible metal elements for industrial applications. We are also the only provider of extensive solutions: metal hoses

and expansion joints, metal bellows, pipe supports and bearings. You can safely bet on that. Our expansion joints and bellows have a multi-ply design, making them both highly flexible and capable of withstanding extreme system pressures. This maximizes functional reliability, which is indispensable in view of the enormous stresses to which they are subjected to in continual

industrial operation. And reliability also means cost-effectiveness. That's because minimal down times and maintenance expenses considerably reduce operating costs. So we have given top priority to uncompromising quality assurance. From the selection and testing of special materials for aggressive media, to rigorous manufacturing inspection and components testing.

VERSATILITY IN HEATING, VENTILATION AND AIR CONDITIONING



Heating,
ventilation and
air conditioning



Gas hoses
Pressure hoses and protective hoses
Expansion joints
Sanitary hoses and spray hoses
Exhaust and ventilation systems

Safe and flexible in everyday use.
Our product solutions for heating, ventilation and air conditioning are now a household word in almost every area of life.

Our metal hoses and expansion joints enable heating and hot water cycles to work perfectly – day in, day out. Our gas-tight, pressure-resistant and

easy-assembly stainless steel hoses connect burners, boilers, hot water storage tanks and piping networks. Small expansion joints compensate for thermal expansion. Gas hoses ensure provision of the household gas supply. Complete solutions such as sprinkler assembly systems provide extra safety at minimal costs assembly. Exhaust and ventilation

systems stand for optimized cost-effectiveness in heating and air conditioning systems. Our product solutions are not only versatile, but also help to conserve natural resources. Our extensive stock and the standardization of our product range ensure that our products are always available when they are needed.

CUSTOMIZATION IN AUTOMOTIVE TECHNOLOGY



Vehicle technology



Exhaust decoupling elements
Exhaust expansion elements
Exhaust gas/oil return pipes
Structure-borne noise decoupling elements
Air-conditioning hose

Particularly in the automotive technology area, requirements for safety and environmental protection are increasing at ever shorter intervals. A challenge we meet head on with customised product developments.

Decoupling elements absorb engine movements and vibrations, insulating them from the exhaust system. With a positive result: a high level of driving comfort, low noise emis-

sions and long-life exhaust systems. Besides flexible exhaust return pipes, modern fuel injection and motor management systems also make a significant contribution to the reduction of fuel consumption and harmful emissions. Hydra precision bellows are used for this purpose as highly flexible and at the same time pressure-resistant sealing elements, e.g. in piezo injectors, sensor glow plugs and high-pressure fuel pumps.

Air-conditioning hoses as permeation-tight flexible lines allow for the use of environmentally-friendly coolants in the vehicle's air conditioning system. Solutions which are developed on an individual basis in close cooperation between our engineers and the manufacturers, subsequently tested and then produced in large series. Solutions which reputable vehicle manufacturers are already counting on today.

TAILOR-MADE FOR COMMERCIAL VEHICLES AND ENGINES



Commercial
vehicles and
engines



Decoupling elements
Exhaust expansion joints
Return pipes
Piping systems

Solutions that work perfectly on a smaller dimension in cars also find application in commercial vehicles and large engines. Not to mention shipbuilding, special vehicles, aircraft and rocket engines.

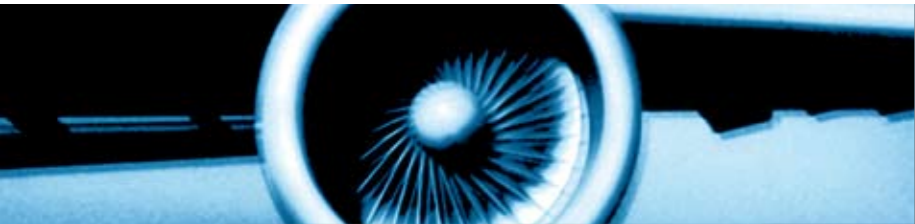
In addition to exhaust decoupling elements, exhaust gas and oil return

pipes, stripwound exhaust hoses and expansion elements, complete piping systems are also developed and produced according to the customers' specific requirements.

They absorb expansions and movements, and offer insulation from engine vibrations. They also already

provide the basis for compliance with the strict exhaust emission standards set to apply in the future. The results speak for themselves: as it is already the case in the automobile sector, our exhaust decoupling elements are used by all the European manufacturers of commercial vehicles and the leading exhaust system suppliers.

EXTREME RESILIENCE IN AVIATION AND SPACE TRAVEL



Aviation and
space travel



Fuel lines
Cryogenic lines
Hot gas lines
Anti-vibration systems
Pressure compensation systems

Nowhere are the demands on technology greater than in aviation and space travel. Witzenmann designs, develops and manufactures products for extreme conditions.

As a result, by virtue of our know-how and products we participate in many prestigious projects, including Ariane, Galileo, ISS, Eurofighter, Eurocopter and Rolls Royce, as well as in each currently produced Airbus airplane

model: Our flexible metal elements are always on board – whether as flexible hot gas lines for de-icing aerodynamically sensitive plane areas, as anti-vibration systems for helicopters, or as cryogenic supply lines maintaining rocket motors in a pivotable position. For each application our flexible components and systems are significant contributors in the ability of seminal research projects to take flight. All the way

up to space, where they ensure the necessary installation and pressure compensation in the cooling cycle of the Columbus module. In order to ensure the development of these solutions, we continuously invest in the optimisation of our research, development and manufacturing processes and technology. Because - extraordinary solutions require extraordinary effort.