

Fuel injection lines

Developed for your benefit.

From raw material to finished steel components.



MANNESMANN
PRECISION TUBES

A Member of the Salzgitter Group

The Company



The Company

Mannesmann Precision Tubes GmbH, based in Mülheim an der Ruhr, is an internationally recognized partner of the automotive industry for high-grade, customized precision steel tubes and tube components.

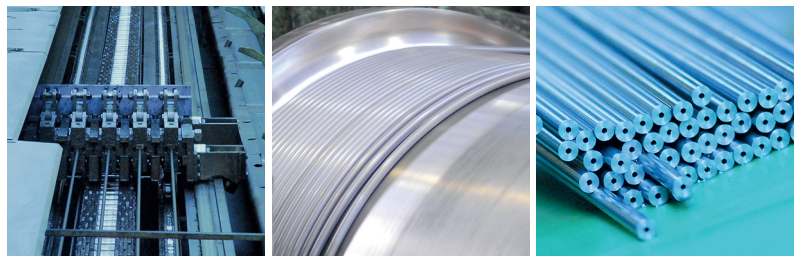
Our locations in Germany, France, the Netherlands and Mexico facilitate high delivery performance and customer satisfaction.

The Group structure

The synergy from our affiliation with the Salzgitter Group ensures guaranteed supply along the entire value chain – from the starting material to the ready-to-install component.



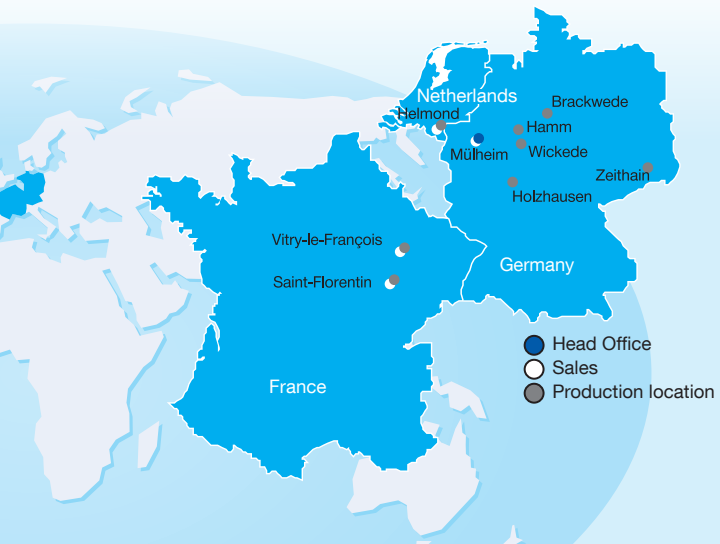
The starting material



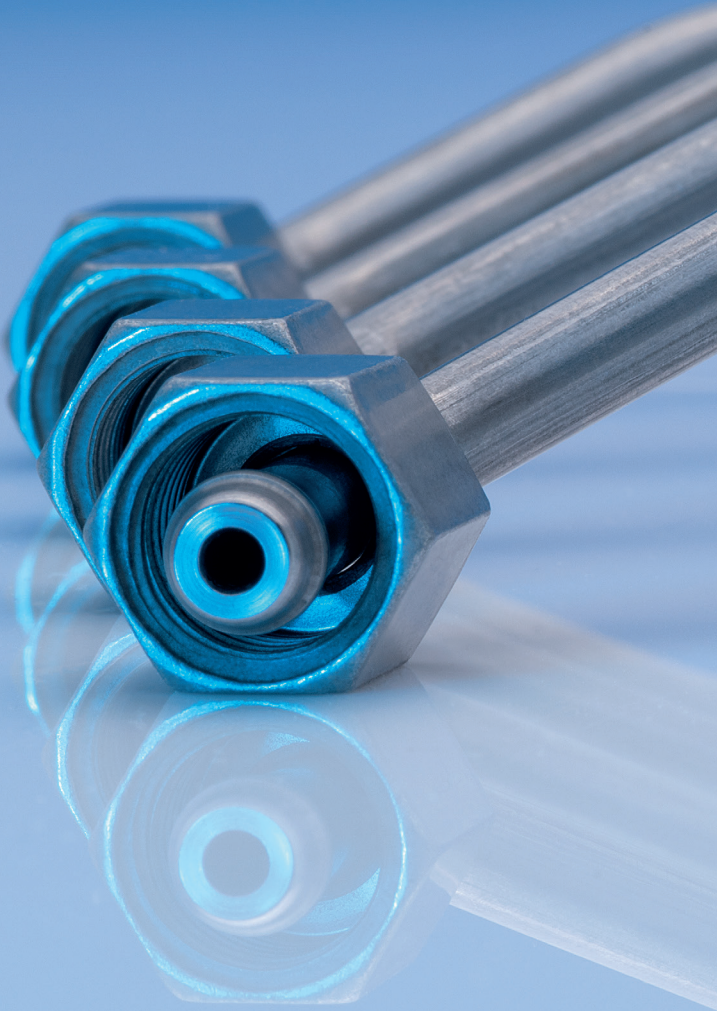
Hüttenwerke Krupp Mannesmann GmbH (HKM)

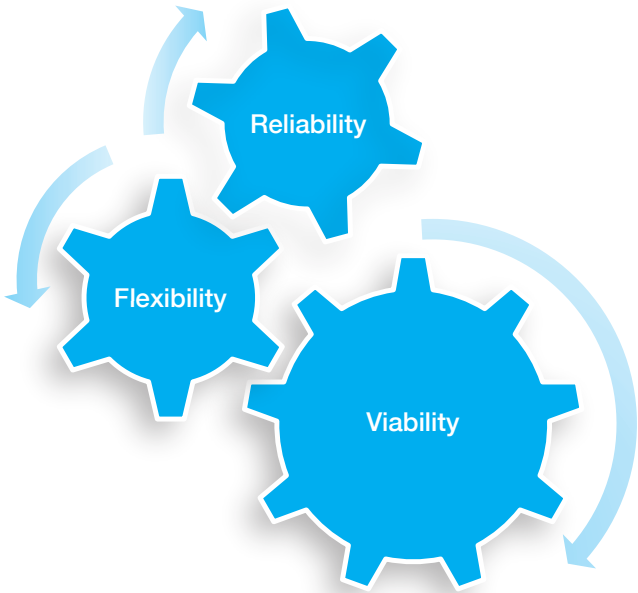
in Duisburg, in which Salzgitter AG holds a 30 % stake, produces our tube starting material – the so-called tube-making rounds. Mannesmannröhren-Werk GmbH in Zeithain processes these solid steel ingots into seamless hot-rolled tubes. These in turn form the basis for seamless precision steel tubes, used, for instance, in fuel injection lines.

Salzgitter Mannesmann Forschung GmbH, the central research company in the Salzgitter Group, provides wide-ranging support to the other Group companies in areas including materials technology, application processes, non-destructive testing, metal forming and surface technology.



Fuel injection lines

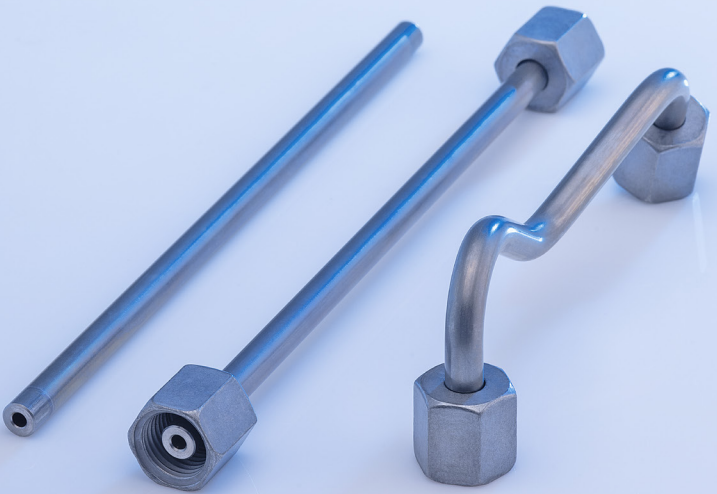




Ready-to-install components for diesel engines

- We develop
 - ready-to-install components
 - according to customer requirements
 - for passenger cars, trucks and off-road application
 - with analytical, numerical, experimental modeling
 - compliant with IATF 16949
 - using group-wide competencies along the entire value chain
- We manufacture
 - small and large series
 - with highest precision and efficiency
 - extensive online quality checks and analyses
 - and highest cleanliness standards
- We produce prototypes and sampling with serial tools

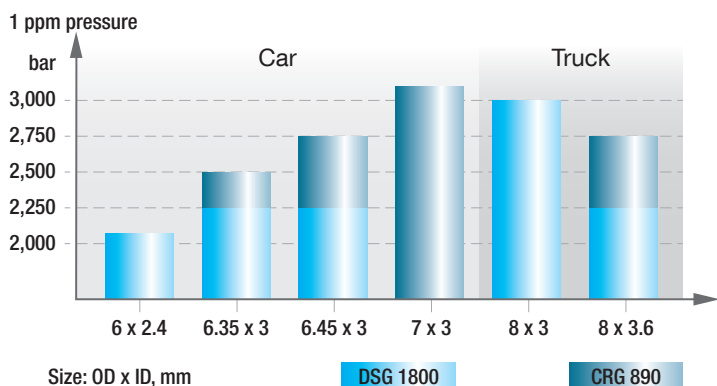
Tubes for Diesel injection lines



Tubes for Diesel injection lines

Production of Mannesmann Precision Tubes

- Material grades: from E355 to CRG890, depending on the application
- OD x ID: various dimensions available
- High and stable surface quality
- Coating: Zn/ZnNi layer, top coat
- Max operating pressures above 3,000 bar



Size, OD x ID	Operating pressure	Material
6.35 mm x 3.0 mm	2,200 bar	DSG 1800
6.35 mm x 3.0 mm	2,500 bar	CRG 890
6.45 mm x 3.0 mm	2,750 bar	CRG 890
7.00 mm x 3.0 mm	3,100 bar	CRG 890
8.00 mm x 3.0 mm	3,000 bar	DSG 1800
8.00 mm x 3.6 mm	2,750 bar	CRG 890

Other dimensions and materials on request

Diesel injection lines are manufactured from Mannesmann's broad range of precision steel tubes. Their properties not only meet present-day standards, but also take into account the most stringent requirements to be expected in tomorrow's diesel engine technology.

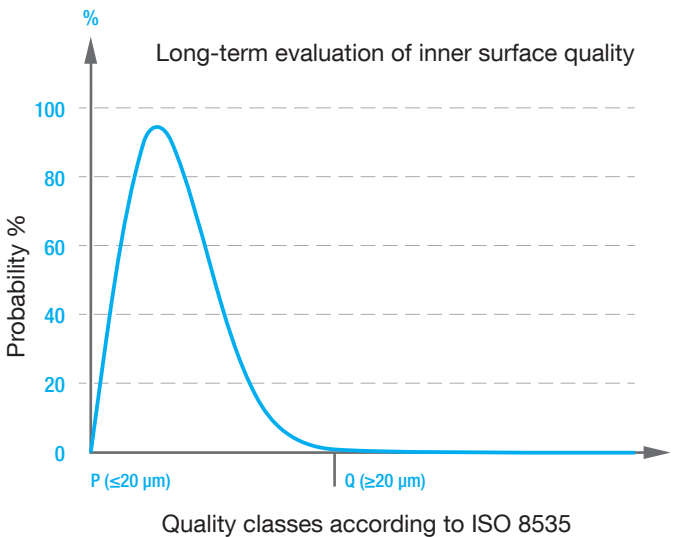
Fatigue strength and reliability



Excellent surface quality

Precision steel tubes for injection lines from Mannesmann Precision Tubes stand out from the rest

- high process reliability
- high process stability
- high process effectiveness



Surface quality is ensured through

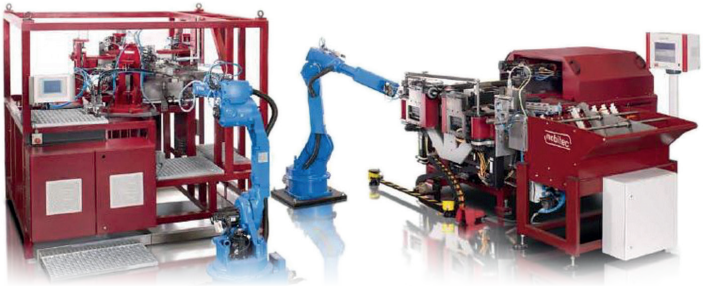
- US testing
- Eddy current testing
- Specially adapted manufacturing processes and process media
- Tailored heat treatment

Production facilities



Tube endforming, bending and autofrettage at maximum pressures of over 8,000 bar

- Production of small and large series
- Capable of the most complex bending geometries
- Fully interlinked production plant with extensive in-process measurements
- Highest flexibility through shortest tool change times
- Just-in-Sequence deliveries
- Prototypes made with serial production tools
- Low cycle times and highest plant availability through predictive maintenance



Comprehensive process monitoring and quality control

100% in-process measurements

Cameras and laser light barriers

Accompanying measurements

Coordinate and shaft measuring machines, roughness measurements and cleanliness tests

Computer-aided quality assurance

SPC, CpK and MSA

100% recording of process parameters

Upsetting and bending forces
Autofrettage pressures

Complete traceability

Nuts marked to customer specification (e.g. DMC)

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