

From raw material to finished steel components

Tubes and semi-finished components for rotor shafts



MANNESMANN
PRECISION TUBES

A Member of the Salzgitter Group

The company



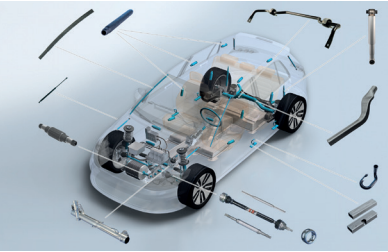
The company

Mannesmann Precision Tubes GmbH, headquartered in Mülheim an der Ruhr, Germany, is internationally active and a successful partner to the automotive industry for high-quality, customized precision steel tubes and tube components. Our locations in Germany, France, the Netherlands and Mexico form the basis for high delivery performance and customer satisfaction.

As one of the leading manufacturers of seamless and welded precision steel tubes, Mannesmann Precision Tubes offers you a wide range of products and **processes**. With our products, we aim to help you manufacture high-quality rotor shafts in optimized **processes**.



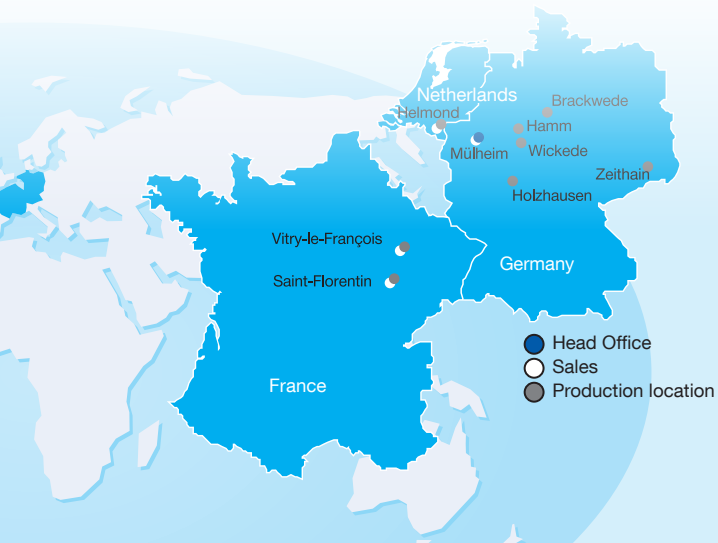
Everything from a single source



The entire value chain from a single source

From steel production to precision steel tubes and components. Thanks to its integration into the Salzgitter Group, Mannesmann is able to represent the complete value chain for the production of tubes and blanks for rotor shafts. Customer requirements are taken into account in a targeted manner through the consistent further development of products and processes.

Die Salzgitter Mannesmann Forschung GmbH is the central research company of the Salzgitter Group. It offers the group companies versatile support in: Materials Technology, Forming and Surface Technology, Application Processes and Non-destructive Testing.



Precision steel tubes

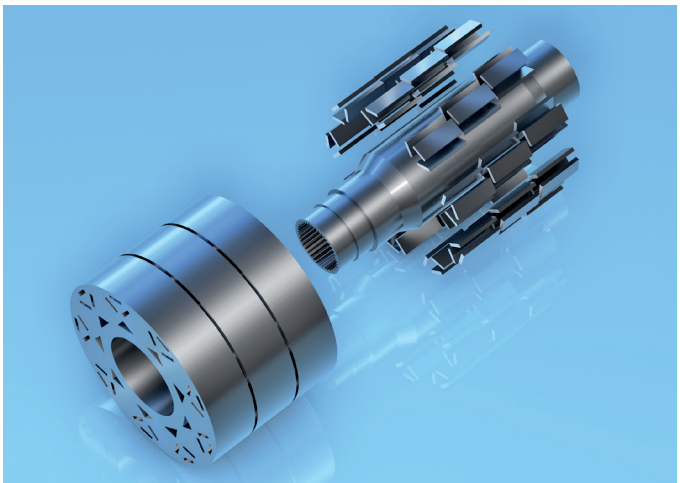
Mannesmann Precision Tubes manufactures seamless and welded cold-drawn precision steel tubes in accordance with standards including DIN EN 10305-1 and EN 10305-2. The materials and tube properties can be specifically adapted to the requirements of subsequent customer-specific manufacturing processes and optimized for the rotor shaft product.

Product properties

- Tight geometry, shape and position tolerances
- Minimal imbalance and excellent dynamic properties
- High strength and low weight
- High fatigue strength

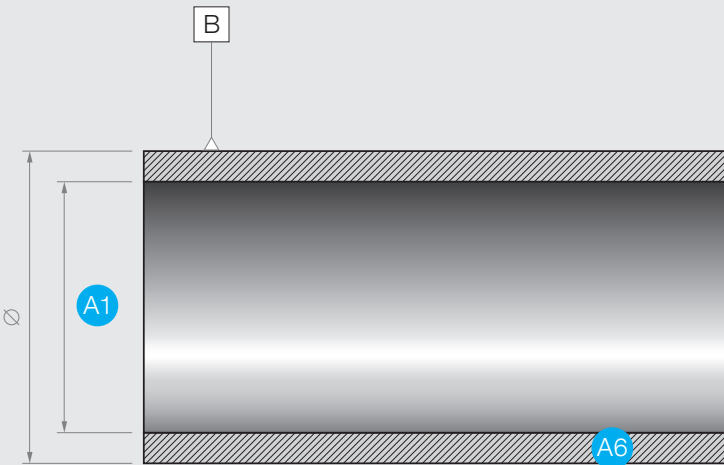
Processability

- Homogeneous microstructure
- Machinability
- Formability
- Hardenability
- Weldability



Close tolerances

Rotor shafts for electrically driven vehicles are components with highest requirements for dimensional and geometric tolerances. To maximize customer benefit, we offer specially machined tubes with very tight tolerances.



A1 Precise diameter tolerance

A2 Minimal coaxiality tolerance

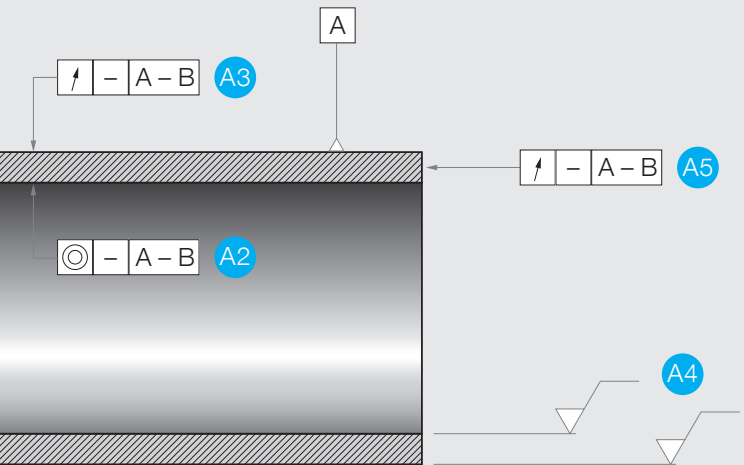
A3 Exact concentricity tolerance

Cold-drawn precision steel tubes

for highest requirements

Customer benefits

- Minimized imbalance for very high rotational speed
- Reduction of air gap between rotor and stator
- High efficiency and reduced noise emission of the electric motor



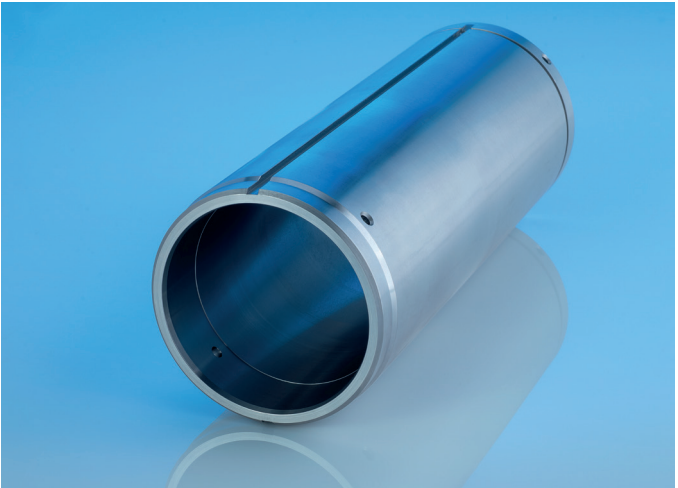
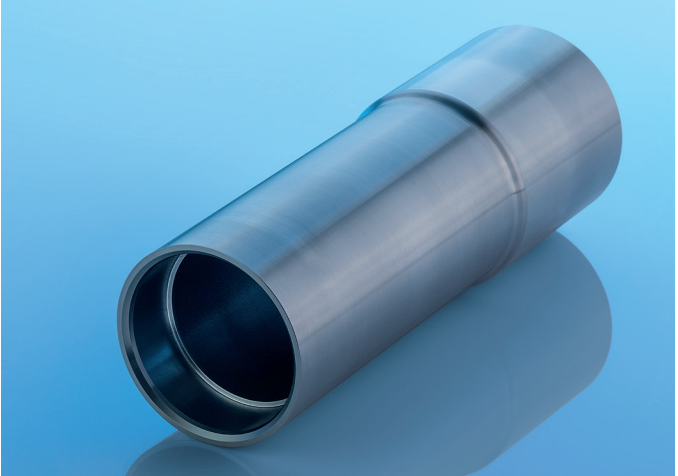
A4 Finest surface roughness

A5 Optimum axial runout tolerance

A6 Suitable material selection/heat treatment

with further tube processing steps

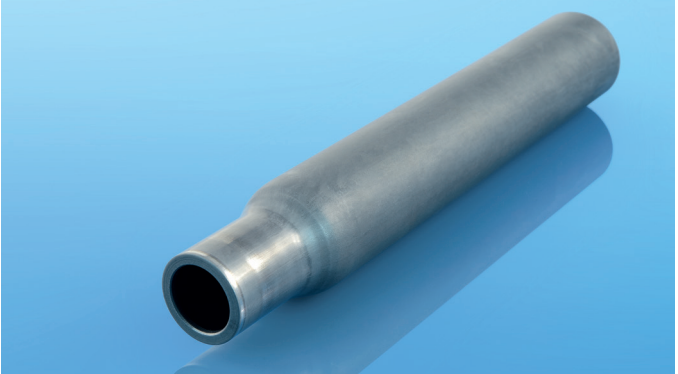
Shaping, heat treatment



Machining

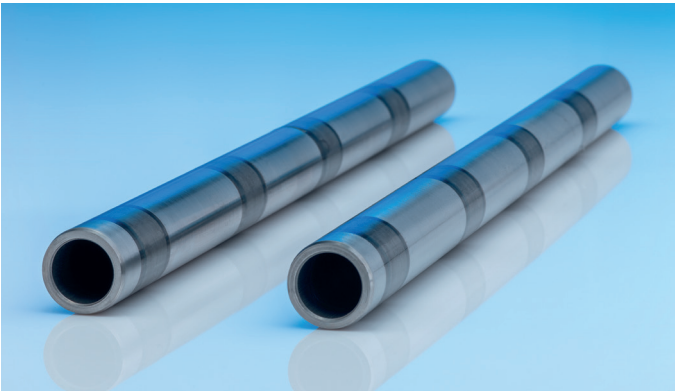
- Machining on high-performance turning machines
- Precise geometric dimensioning and tolerancing
- Insertion of fits, grooves and bores

adapted to your production



Cold forming

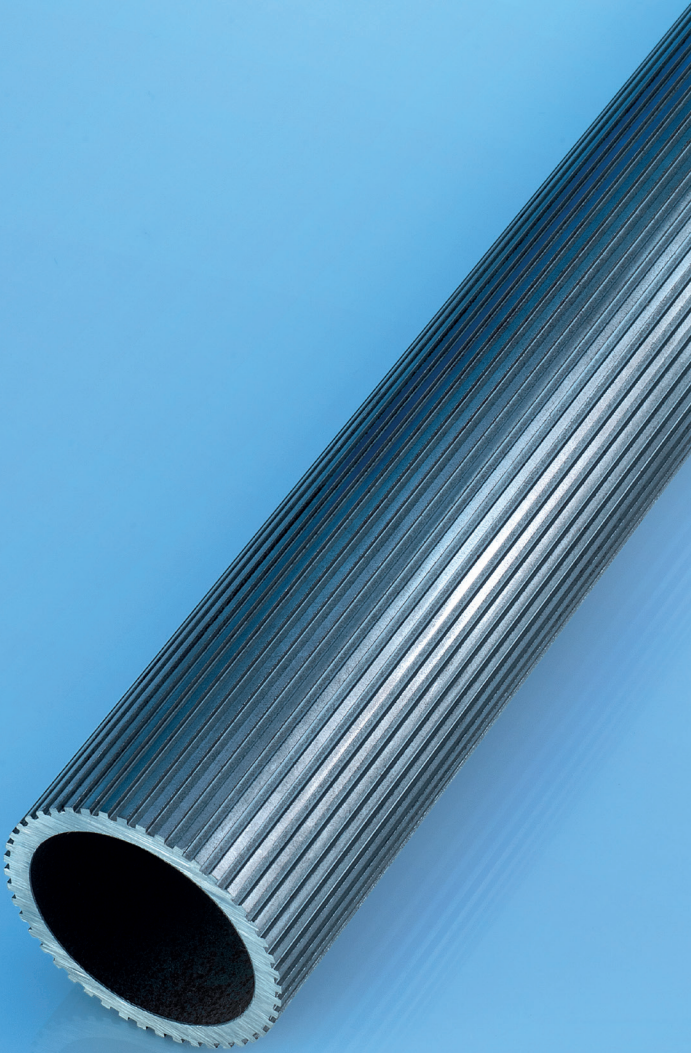
- Reducing
- Expanding



Heat treatment

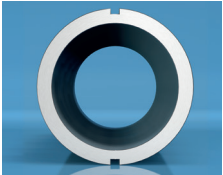
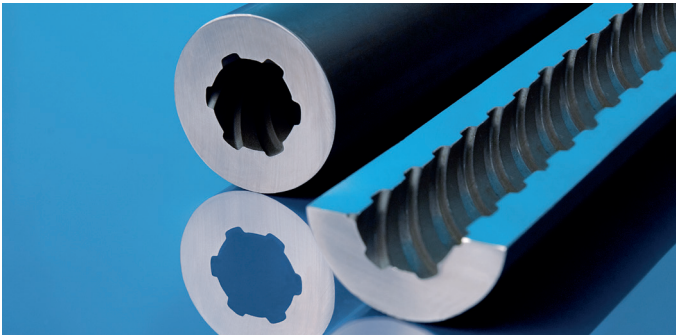
- Partial quenching and tempering
- Fully quenched and tempered tubes (+QT)

Cold drawn special shapes

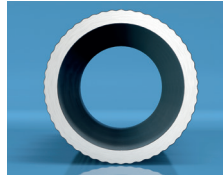


for complex geometries

The manufacturing process for precision steel tubes from Mannesmann allows complex contours to be produced directly during cold drawing. This can eliminate the need for subsequent processing steps and opens up additional possibilities in the design of rotor shafts.



Grooves inside and outside



Grooves or flanks inside and outside



Internal and external splines

External shaping

- Stub shaft spline, e.g. for connection to the laminated core
- Complex machining steps for generating the splines can be reduced or even avoided

Internal shaping

- Spiral or rectilinear shape
- For example for internal cooling channels

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