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Expansion of the quality level: Induction hardening and tempering up to 100 mm round

LSV Lech-Stahl Veredelung GmbH (LSV) shows several decades of experience in the production of bright steel and the refinement of low-alloyed round steel. The wide-ranging product portfolio is complemented by expertise and many years of practical experience in the induction hardening and tempering of individual bars. As a wholly owned subsidiary of the only steelworks in Bavaria, Lech-Stahlwerke, LSV also offers in-depth knowledge of materials, which benefits customers in terms of applications.

LSV can offer the right heat treatment for each steel application to the metalworking industry. The targeted adjustment of microstructural properties ensures the best machinability and optimum component properties of the steel bar. State-of-the-art inductive hardening and tempering devices enable heat treatment to a low residual stress level and high reproducibility. The two process areas of hardening and tempering are carried out completely inductively. Inductive single-bar tempering allows precise parameterisation and, as a result, the generation of closely tolerated mechanical properties in the tempering process. Comparatively high hardening temperatures allow the potential of the materials and bright steel products to be fully utilised in terms of chemical analysis and the resulting mechanical-technological properties. LSV utilises the profound know-how gained from years of practical experience in induction hardening and tempering to expand the range of dimensions from a maximum of 70 mm to a diameter of 100 mm.



Figure 1: Bar in the single-bar tempering system

As induction hardening and tempering enables the exact reproducibility of the attributes, the customer receives the required properties consistently and precisely for each individual bar, even for large diameters.

From a technological point of view, the expansion of induction hardening and tempering up to a dimension of 100 mm round is quite challenging, as all process parameters have to be redetermined. The dimensions of the induction coils are matched to the diameter of the steel bar in order to optimise the efficiency of the heating process. This also contributes to greater energy efficiency.

LSV's expertise benefits the processing customer, as they receive a semi-finished product that already has some of the component properties ultimately required for the finished components. This can lead to a cost advantage when considering the entire value chain and thus contribute to maintaining the competitiveness of the LSV customer.





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Figure 2: The single bar moves through the system

Compared to conventional annealing methods, inductive processes also enable CO2 emissions to be saved. LSV sees enormous potential here for further measures in terms of sustainability. LSV customers can, of course, obtain a product carbon footprint on request.

As a certified automotive supplier, LSV also uses its understanding of quality to the advantage of the wind energy sector. LSV is already a steel supplier for the manufacture of components and parts for wind power. The steel bars are used, for example, to produce bolts and anchor systems for rotor connections and tower segment connections. The expertise in inductive heat treatment is TPG-certified and contributes significantly to the wear resistance and service life of the components, particularly in the offshore sector. As an APQP4Wind qualified company, LSV will help to minimise the risks within the supply chains in the wind industry. LSV sees its reliability paired with the quality of the automotive standard as a guarantee for establishing itself as a supplier of global wind energy.

The customers' demands are the incentive for LSV Lech-Stahl Veredelung to push the boundaries of steel.



Figure 3: Logo membership APQP4Wind

Image credits: LSV Lech-Stahl Veredelung GmbH



LSV Lech-Stahl Veredelung GmbH

Justus-von-Liebig-Str. 41 • 86899 Landsberg am Lech

Kontakt: Andrea Günaydin

E-Mail: andrea.guenaydin@lech-stahlveredelung.de

Internet: www.lech-stahlveredelung.de

Telefon: +49 8191 3205-0

Telefax: +49 8191 33070



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About the company LSV Lech-Stahl Veredelung GmbH

The company was founded in 2012 from two traditional bright steel companies at its headquarters in Landsberg am Lech. With around 300 employees, the company produces around 110,000 tonnes of bright steel annually at three locations. As a wholly owned subsidiary of Lech-Stahlwerke GmbH, the company belongs to the Max Aicher Foundation. More than 4,000 employees in 18 countries work in the Max Aicher Foundation with passion and technological expertise on high-quality products as well as intelligent industrial processes and services for sustainable progress. The Max Aicher Group generates an average annual turnover of around 1 billion euros and produces around 1.0 million tonnes of steel throughout the year in Bavaria and Hungary alone. The business segments today are as follows: Steel & Production, Environment & Recycling, Real Estate & Projects, Building & Construction, Leisure & Tourism.



LSV Lech-Stahl Veredelung GmbH

Justus-von-Liebig-Str. 41 • 86899 Landsberg am Lech

Kontakt: Andrea Günaydin
E-Mail: andrea.guenaydin@lech-stahlveredelung.de

Internet: www.lech-stahlveredelung.de

Telefon: +49 8191 3205-0
Telefax: +49 8191 33070