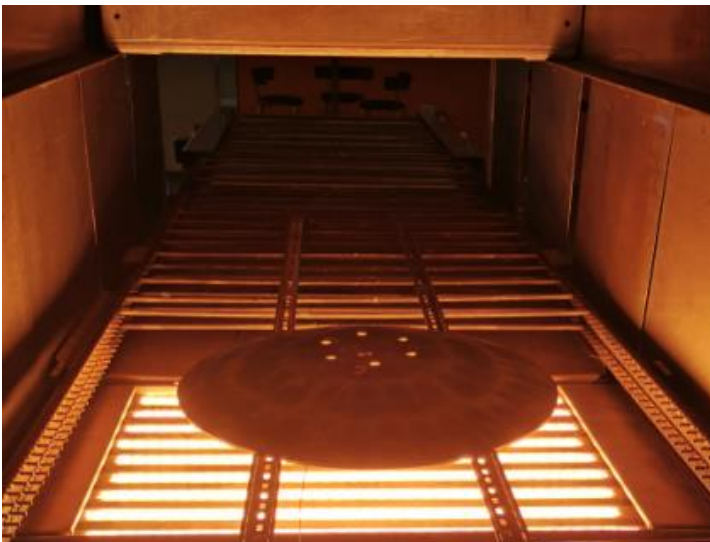


Infrared heat adjusts material properties for applications in agricultural machinery

Heraeus Noblelight enabled the wear protection specialist FRANK Walz- und Schmiedetechnik GmbH to adjust the material properties of quenched and tempered steels in an energy-efficient manner. Decades of experience with radiation systems, process excellence and practical laboratory-scale trials at Heraeus Noblelight's customer application centre formed the basis for the exemplary collaboration.

Soil cultivation tools for agricultural and farming technology have to withstand harsh and highly variable working conditions. The critical factors are robustness and durability. For this reason, special, press-hardened and heat-treated steels from FRANK Walz- und Schmiedetechnik GmbH are used in the professional sector. They are characterised by an excellent combination of wear and impact resistance. A disadvantage is the relatively time-consuming thermal treatment to adjust the desired material properties. For this reason, FRANK Walz- und Schmiedetechnik GmbH contacted Heraeus Noblelight. The exchange of experience between the two companies and practical trials resulted in the first improved press-hardened steel components with excellent material properties and a very good energy balance. Based on proof of basic technical feasibility, a broad research project was initiated at FRANK in order to make optimum use of the potential of the structural changes that occur during press hardening. The corresponding project was supported by EU funding from the European Regional Development Fund (ERDF) 2014 to 2020 (IWB-EFRE program) - "Investment for Growth and Jobs".

As a result, the project led to the development of an innovative infrared tempering process and a calculation model. This can calculate the minimum heating and holding times required to achieve the desired material properties for different steels.



Features

- Development of an innovative infrared tempering process for press-hardened steel components
- Optimization of energy efficiency

Technical Data

- Short-wave infrared emitters with up to 100kW/m²

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