

Studying the Effects of Quenching Mediums on the Mechanical Properties of EN8 Steel

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Presently, EN8 steel is widely used for induction hardened gear wheels due to its superior mechanical properties which are essential for gear wheels. This project focuses on achieving the required level of mechanical properties for a gear wheel of a starter motor using a low-cost quenching medium.

Specimens of EN8 alloy steel were examined after heating between 800°C-850°C using an Induction Furnace and quenched in different quenching mediums such as natural oils and heavy vehicle radiator coolants.

The mechanical properties such as hardness and impact toughness are determined using the micro hardness tester and Charpy impact testing machine respectively. When replacing the AH Metalworking Fluid (Active Heavy duty) which is the industrially used quenching medium, with above-mentioned low-cost quenching medium, soaking time and temperature at the metal surface during induction hardening need to be varied in order to obtain the required level of hardness and impact toughness. The micro hardness of the case was measured as per the linear point system across the center point of the cross section of the samples. The basic properties of the quenching mediums such as viscosity, heat capacity, water content and flash points were measured and compared with the presently used oil.

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