

## OP 405

### Investigations of welded joint properties of 1200M steel by laser beam welding

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The emergence of modern, high-strength automotive steels necessitate the development of novel welding processes for their joining. Since the weldability study of these steels is increasingly important for their intended use in the automotive sector, laser beam welding (LBW) is considered one of the most sophisticated, versatile, and evolving processes for joining very thin sheets to thicker plates using various unique types of lasers. LBW process has significant capability to weld thin sheet metal with lower linear energy resulting narrow weld, lower deformation with higher productivity as compared to arc welding processes. However, the high strength steels (HSSs) are more prone to hardening and softening so the main aim is to analyse this behaviour of the heat affected zone (HAZ) and strength characteristics of the welded joint. In this study, a disk laser has been used to evaluate the microstructure and mechanical behaviour of the DOCOL 1200M martensitic steel with a thickness of 1 mm. The butt-welded joint configuration was used with full penetration depth and optimal parameters. Microstructure and the various mechanical tests were performed to evaluate the behaviour of HAZ and weld.