PREDICTING THE BEHAVIOUR OF ADVANCED HIGH-STRENGTH STEELS BY MATHEMATICAL MODELLING

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Abstract

Advanced high-strength steels are sought after for the manufacture of automotive components due to their enhanced resistance and ductility achieved by complex microstructures composed of a variety of hard and soft components obtained by tailoring their chemical composition and processing conditions. But such mixture of structures may be prone to failure during the manufacture of structural components. Therefore, the use of mathematical modelling offers the opportunity to get a better understanding of the phenomena taking place during production of the steels and while being manufactured. This work presents a series of analyses carried out to determine the causes behind the failure of various advanced high-strength steels during forming with the demonstration of how mathematical models were used to present alternatives and solutions to avoid incidents while processing.