

Fatigue and life-time prediction resistance of low-alloy mould steels

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Fatigue resistance is an essential property to consider in the design of a plastic injection mould. During plastic injection, certain parts of the mould can reach temperatures between 100 and 300°C and be subjected to high pressures of around 300 – 600 bar during holding. Therefore, moulds must withstand a large number of injection cycles, from thousands to millions, depending on the required number of injected parts. For low-alloy steel, to ensure a great microcleanliness property is not sufficient to guarantee high fatigue resistance. The homogeneity of the steel grades in terms of microstructure and mechanical properties is also important. In this study, research work was carried out on 1.2714 steel and a proprietary grade to demonstrate how the service life of a mould can be improved. By proper selection of the steel fatigue resistance and the design of the parts, the right amount of steel can be adjusted to expected level of production runs and overall lifetime of the mould.

Speaker Country

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Primary authors: Ms LACHAL, Marine (ArcelorMittal Industeel); Mr GUATTERI, Maxence (ArcelorMittal Industeel); Dr QUIDORT, David (ArcelorMittal Industeel); Mr HONEKER, Cédric (ArcelorMittal); Dr KUSAKIN, Pavel (ArcelorMittal); Dr MUNIER, Rémi (ArcelorMittal); Dr MACHEFERT, Jean-Michel (ArcelorMittal Industeel)

Presenter: Ms LACHAL, Marine (ArcelorMittal Industeel)

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