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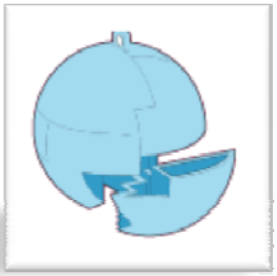
REPAIR OF PLASTIC INJECTION MOULDS



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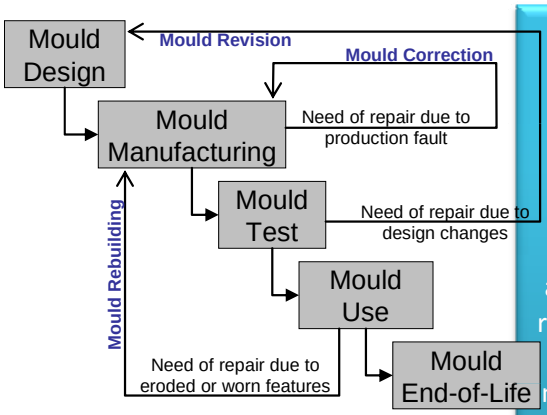
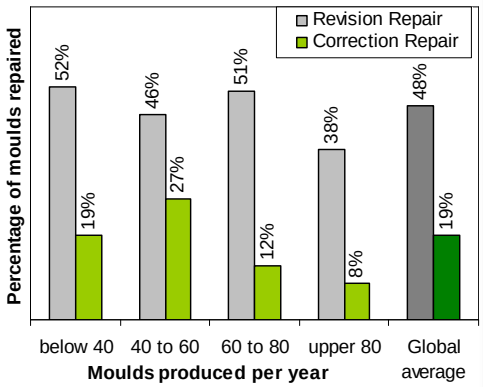


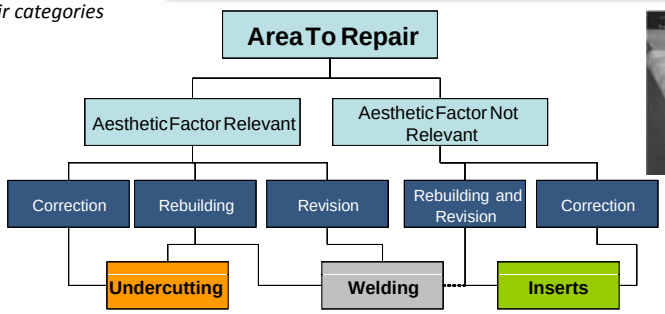
The repair categories during the mould life cycle

The research reported in this paper aims to contribute to increase the knowledge related with injection moulds repair. The types of moulds repair are identified and characterized in terms of the reasons for repair, the repair's duration and quality related requirements and the mould's geometrical and dimensional constraints. The techniques used in injection moulds repair (undercut, inserts and metal deposition by welding processes) are also identified and characterized. A strong emphasis is given to the repair by welding, namely in the comparison of the suitable welding technologies. Furthermore, in order to understand how mould makers and mould users are repairing their moulds, a survey to the industrial companies was conducted and the results are presented and discussed. Taking advantage of the systematization of the moulds repair framework several objective conclusions were withdrawn from the survey, namely as regards the incidence of each type of repair and of each repair technique, the frequency of use of each welding technology and the influence of related technological and business factors. Additionally, a specific analysis of the welding technologies suitable for injection mould repair is presented. They were compared based on eight different repair scenarios characterized by different factors: mould dimension, repair geometry, repair access point and repair visibility. As main achievement, the paper presents the specific fields of application (repair scenarios) of the analyzed welding technologies



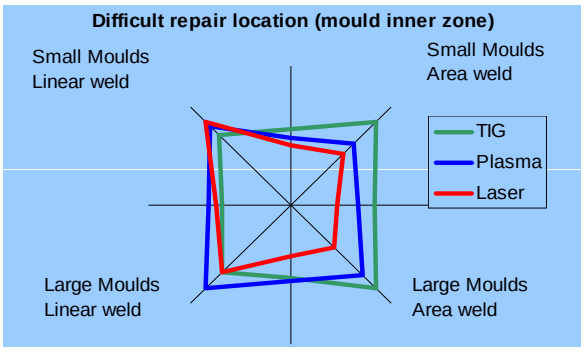
Percentage of moulds submitted to Revision and Correction repair categories

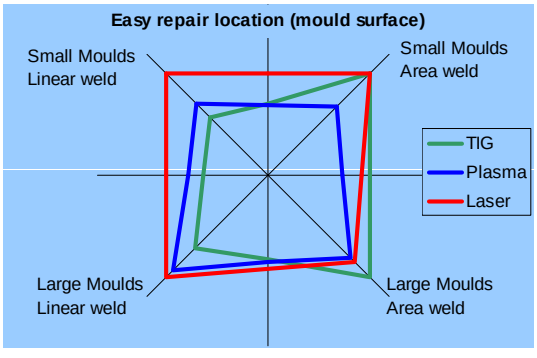
Laser welding equipment



Techniques of mould repair vs. repair categories

Laser and Plasma welding samples





Processes performance in the several scenario s: mould inner zone or mould surface; small or large moulds; linear or area type welding