ANALYZE OF THE OPPORTUNITIES OF THE COATING OF THE ACTIVE ELEMENTS OF THE HIGH PRESSURE DIE CASTING MOLDS

GRAMA Lucian, PETI Ferencz, POP Liviu Dorin
University of "Petru Maior" Târgu-Mureş, Technological and Managerial Engineering Department, SC CIEMATRICON SA, Târgu-Mureş, University of "Petru Maior"
lgrama@engineering.upm.ro; petiferencz82@yahoo.com; popliviudorin@yahoo.com

Keywords: high pressure die casting, mold, coating

Abstract

The coating of the active elements of the molds is one of the methods which helps to reduce the material sticking on active elements of the molds.

1. Introduction

Titanization is a coating method, applied on steel in order to increase it's surface durity, and to improve the properties of the mold steel when it gets in contact with the molten aluminium under pressure.

2. Experimental researches

The main problem of the sticking appeard in the area in the mold where the lubrification of the mold is not effective due to the shape of the part wich is going to be casted. In this case the problem of sticking appeard in the core used to precast a hole in the aluminum part.

In the figure 2 is presented the section of the part casted with the core with usual properties. The material has been sticked on the core and inside the precasted hole is visible the missing of material. The material has been sticked on the core after aproximative 500-550 shots.

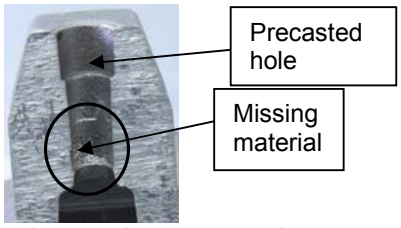

Fig. 2 – The shape of the precasted hole after the aluminium has been sticked on the insert.

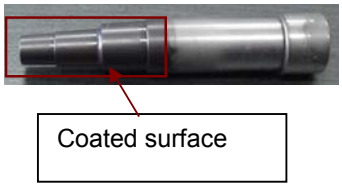

Fig. 4 – Coated insert with TiAlN

Figure 6. The precasted hole obtained by using the coated insert

The research concerning the improvement of the surface of the core has taken in consideration the actual technologies of coating. The coating used to improve the inserts surface properties was TiAlN. In the figure 4 is shown the coated insert with TiAlN. In the figure 6 is presented the surface of the precasted hole of the diecasted aluminium part after 6000 shots.

3. Conclusions

The high hardness and outstanding thermal and chemical stability of the coating improve profitability and productivity, even under the most demanding conditions of use.

The coating protects cores, mould inserts and cavities against wear and corrosion. Longer service lives, less machine down-time, lower tool costs and minimised cleaning and maintenance expenses reduce manufacturing costs.

The coating reduces the sticking and surface alloying of the melt to the tool.

4. References

[1] Street, Arthur, The diecasting handbook, Portcullis Press LTD, 1977
[2] http://www.buhlergroup.com
[3] http://www.oerlikon.com