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DYMET Spray-on solutions

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Repair and modification of aluminium moulds / Prototyping

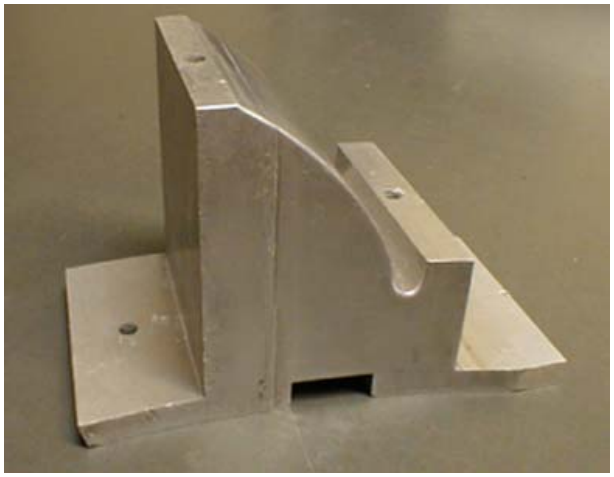
Dymet Case Studies:
Repair and modification of aluminium moulds

Repair of damaged aluminium moulds

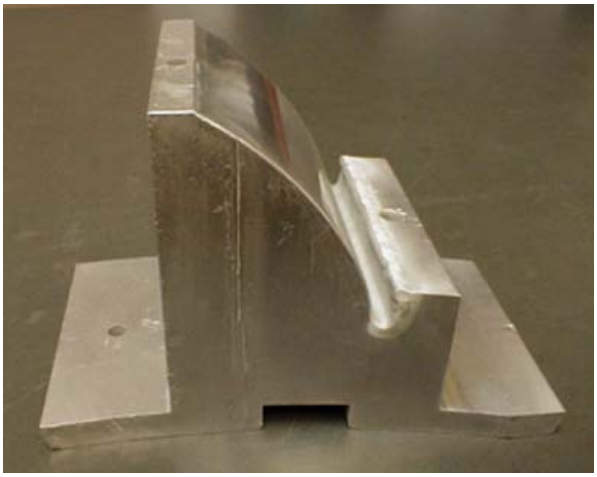
An aluminium mould for manufacturing of wax patterns is shown in the left picture. It was damaged by accidental impact.

The damaged area was first blasted with abrasive powder, and then the mould shape was restored by depositing an aluminium powder. Some sizing and finishing are? required.

Modification of aluminium moulds



The left image shows a ready aluminium mould used for the manufacture of wax patterns. It is required to correct its geometrical dimensions??



Aluminium powders are used to build up an additional volume. Prior to spraying aluminium, an abrasive blasting of the process surface may be required on large areas. The reconstructed mould (right image) required some sizing and finishing

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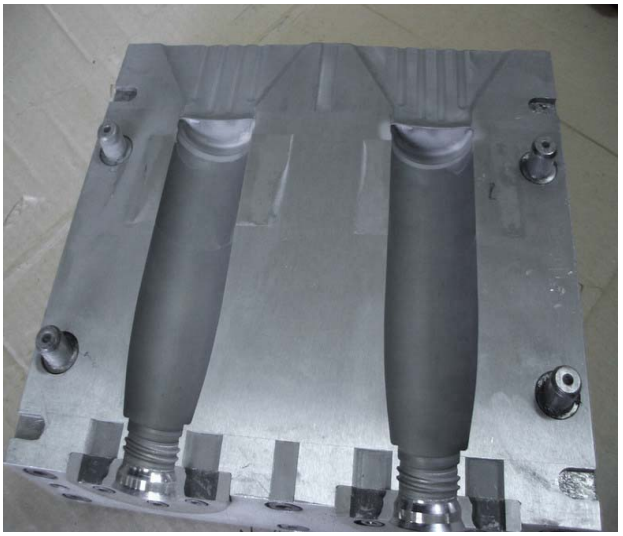
Elimination of defects of steel moulds

Defects were found in a steel mould for blow moulding of plastic bottles. Because of the defects the quality of the bottles was reduced.

The temperature and pressure of the blow moulding process are not so high. It is possible to apply a copper powder for repair. A preliminary surface blasting with an abrasive powder is required.

The excess of the deposited material is removed manually. Then the surface is grinded and polished.



To ensure consistency of the surface roughness of the repaired area and all surface of the mould it can be treated with a fine abrasive powder.

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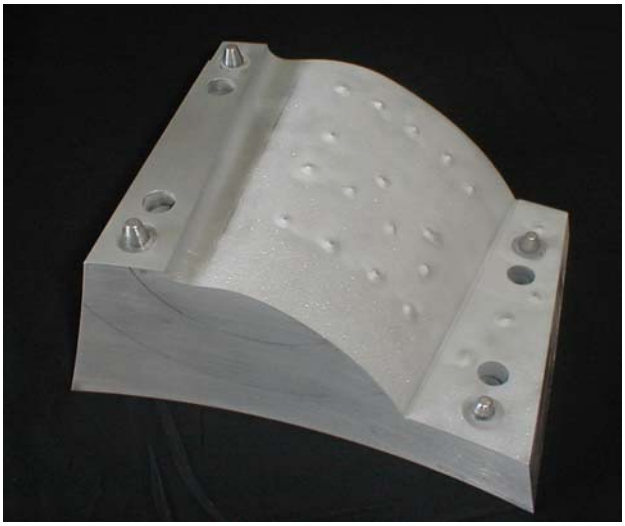
Modification of the mould surface profile

It was necessary to modify a surface profile of the mould for investment patterns. The thickness of the coating to be built up was 2 mm. Taking into account a subsequent machining of the coating, its thickness had to be increased by 0.5 – 0.8 mm.

The area of the surface to be modified was 300 x 300 mm^2. To ensure reliable adhesion of a thick coating on such area the surface was blasted with an abrasive powder to develop its roughness.



An aluminium powder was sprayed-on at temperature mode 4. To simplify the control of coating thickness several hillocks were deposited on the original surface as reference points. The hillocks' height was adjusted by mechanical grinding.

During the spraying process it was sufficient to make sure that the coating thickness reaches the height of the reference points. An accurate spraying allows quite high precision of the coating thickness control.

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