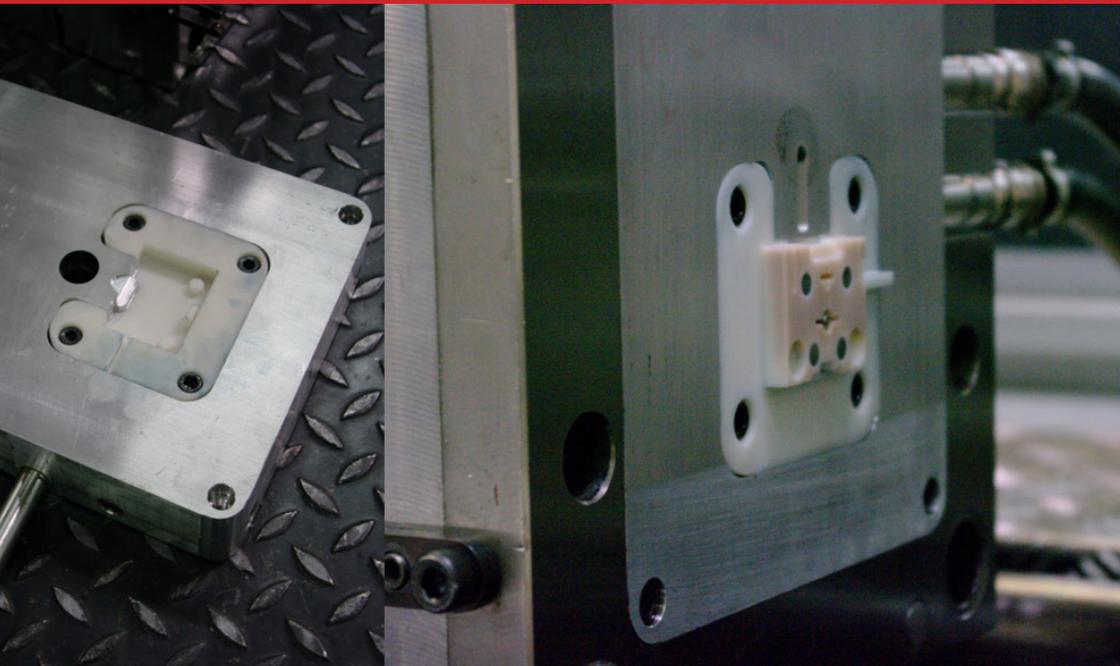


INJECTION MOLDING



3D PRINTING - MOVINGLIGHT®

Plastic injection - which consists in injecting polymer material into the cavity of a mold - is the process most commonly used to manufacture plastic parts. It is perfect for producing large series of parts, especially when the parts are large in size and have complex designs.

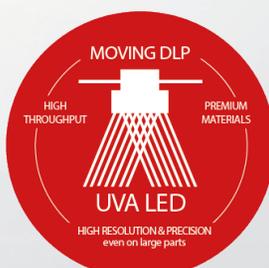
Injection molds are produced by machining a block of metal, which is a process that can be very expensive, costing up to tens of thousands of US dollars per mold, and very time consuming - from 1 week to several months - which limits the number of possible iterations when designing parts.

THE CHALLENGE

Currently, manufacturers need to accelerate the launch of new products and reduce their time to market in order to stay competitive. To achieve this, R&D departments must produce their prototypes faster and with as many iterations as they need and carry out functional tests using the final production material before moving on to mass production.

Parallel to all this, increasing customization requirements and shorter product life cycles are generating increased demand for the production of short and medium series of customized parts at affordable costs.

Today, Prodways' exclusive MOVINGLight® technology has opened up new possibilities for eliminating the costs and delays involved in traditional metal tools, making it possible to inject up to several hundred final parts in the production material in just a few days.



TECHNOLOGY

MOVINGLight® - Photo-polymerization

MATERIAL

PLASTCure Rigid10500 - Liquid resin

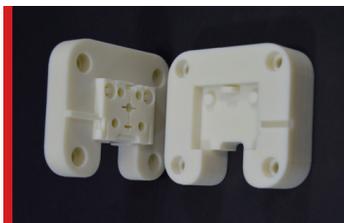




SOLUTION IMPLEMENTED

MOVINGLight® : THE IDEAL SOLUTION FOR INJECTION MOLDS

Prodways' exclusive MOVINGLight® liquid resin photo-polymerization technology uses a moving DLP to build parts across the entire build platform quickly and with very fine detail, offering unrivaled resolution and productivity for industrial applications.



INJECTION MOLDS PRINTED IN JUST A FEW HOURS

Using its moving DLP, MOVINGLight® technology offers very high printing speeds to print injection molds in just a few hours. Injection molds printed using MOVINGLight® can then be placed in mold bases with minimal adjustments, making it possible to produce parts in a few days instead of a few weeks using metal molds.



HIGH-QUALITY INJECTED PARTS WITH COMPLEX TEXTURES

MOVINGLight® technology's 42 µm resolution is ideal for printing molds with thin walls, sharp corners, and complex textures that are difficult to achieve using other 3D printing technology. Furthermore, the PLASTCure Rigid 10500 material delivers excellent mold surface quality, making it easy to polish or sand to optimize the quality of the injected parts.



STRONGER MOLDS FOR MORE INJECTED PARTS

The silica-filled PLASTCure Rigid 10500 composite material prints rigid and pressure-resistant molds that can be used to inject a wide range of plastics such as: PP, POM, PE, PS, ABS, TPE, POM, PC+ABS or filled materials. The molds have a longer life cycle because conformal cooling channels can be added, thereby making it possible to produce several hundred final parts with each mold.

RESULTS

Injection of 250 textured parts in PP and POM for a consumer product.

	Traditional aluminum mold*	Printed mold using MOVINGLight®**
Final part size	48 x 36 x 8.5 mm 1,890 x 1,417 x 0,335 inches	
Insert size	87 x 77 x 20 mm 3,425 x 3,031 x 0,787 inches	
Insert print time	-	3,3 hours
Total production time (inserts adjusted and ready for injection)	3 weeks	2 days
Number of injected parts / mold	250	250
Total cost (mold/adjustments/injection)	4375 €	930 €

* Costs and lead times provided by an injection contractor in May 2016
** Injection tests carried out by a contractor in May 2016

MOVINGLIGHT® BENEFITS

Time saving

- High productivity on large platforms
- 3D printed molds in just a few hours
- Direct insertion into the mold base

Cost reduction

- No metal tooling costs
- Complex textures at no extra cost
- Up to several hundred parts per mold
- Reduced costs for small series

Ideal for

- Prototypes or small customized series
- Frequent design adjustments
- Press types: 50 to 300 tonnes