

# IMPETUS Rapid Tooling

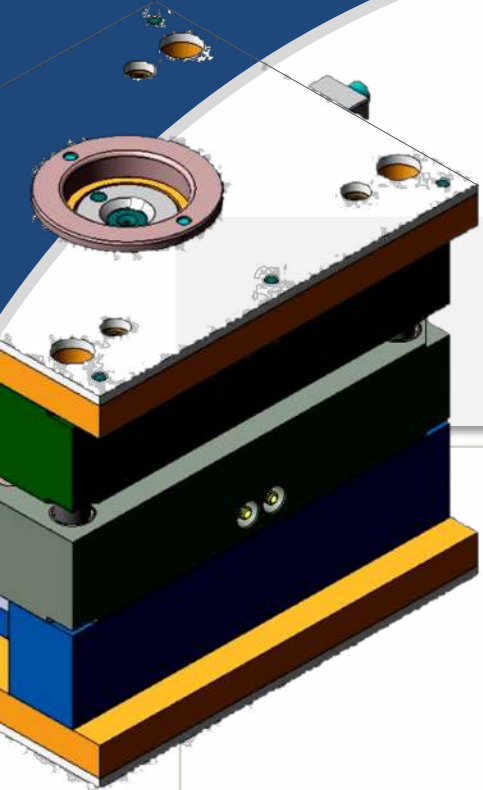
## Close-to-production parts from steel-mould within 4 weeks<sup>1</sup>

Original material prototypes and small series

- >> Design check by plastic technology experts and advice for optimization
- >> Close-to-production mould concepts
- >> Manufactured in serial process
- >> Faster and more cost-effective by using master mould systems



<sup>1</sup>Regular delivery time



Original material prototypes and small series

**We use IMPETUS master mould systems and the injection moulding process. Why?**

**To deliver our customers high quality injection moulded prototypes and small batches fast and cost-effectively.**

- + Close-to-production mould concepts
- + Serial materials
- + Minimized mould costs
- + Fast delivery
- + Reducing time-to-Market

Premium prototypes and small series from steel mould cavities within 4 weeks<sup>1</sup>

### **Rapid tooling**

For the production of high-quality small batches, the result-oriented testing of mechanical loads or limited installation dimensions, prototypes that must be very close to the series.

Impetus Plastics is specialized to deliver such parts fast and in serial materials in master moulds, manufactured in the injection moulding process.

# IMPETUS-master moulds with steel cavities



Original material prototypes and small series

**We use master moulds with steel cavities.  
Why?**

**To assure that our customers get serially identical parts in a premium quality.**

- + Serial identical cooling conditions for close-to-production properties
  - Crystallisation
  - Sink marks
  - Mechanical properties
  - Glance etc.
- + Processing of e.g. glass fiber reinforced materials
- + Significantly longer service life than with aluminium moulds
- + Larger quantities also with glass fiber reinforced materials (lot sizes > 1000)
- + Robust handling in production



Premium prototypes and small series from steel mould cavities within 4 weeks<sup>1</sup>

## **Steel inserts pay for themselves**

Our choice for the mould material is also often steel in rapid tooling.

Aluminium inserts are mostly cheaper and easier to manufacture. The benefits in the project through the injection moulded parts, in combination with the steel cavities, directly balance the higher costs of the steel processing.

# Usage of injection moulded prototypes



## When do injection moulded prototypes pay off?

3D printed Prototypes	Injection moulded premium prototypes	
+ Protection Development	+ Protection Development	+ Protection Serial mould
<ul style="list-style-type: none"> <li>+ Design prototypes</li> <li>+ Complex conception models</li> </ul>	<ul style="list-style-type: none"> <li>+ Functional testing with parts made from the serial material mechanical tests, complex assemblage tests etc.</li> <li>+ Assessing materials optically and haptically</li> <li>+ Life-cycle tests</li> </ul>	<ul style="list-style-type: none"> <li>+ Mould concept</li> <li>+ Runner system</li> <li>+ Mould cooling</li> <li>+ Cycle time</li> </ul>
<ul style="list-style-type: none"> <li>- Limited function tests</li> <li>- Rare original material</li> </ul>	<ul style="list-style-type: none"> <li>- Smaller lots of pieces lead to higher costs than 3D prototypes but: + Cost reduction and reducing risk in the series</li> <li>- Longer delivery time than 3D printing</li> </ul>	

Premium prototypes and small series from steel mould cavities within 4 weeks<sup>1</sup>

### Closest to series

The product developer has to decide how close-to-production the prototype must be in relation to the test environment and specific requirements to the prototype.

If you need a serial-like prototype, it is recommended to use the same materials, the same conditions and processes to produce the parts. Especially when testing mechanical loads or difficult assemblage situations. In addition, this way ensures that serial moulds are best secured.

Protection of the serial process



**es with premium quality**



**Do you need a small series of 100, 1000 or several 1000 injection moulded parts as soon as possible ?**

**A serial mould is not economical?**

**Do you need an interim mould until the serial one is ready for production?**

**Premium prototypes and small series from steel mould cavities within 4 weeks<sup>1</sup>**

**Impetus delivers small premium quality batches fast and cost-efficiently.**

- + Production on conventional injection moulding machines
- + Usage of serial materials, also glass-fiber reinforced ones
- + Production in steel-cavities in the IMPETUS master mould systems for serial-identical properties
- + Cost- and time-effective through the usage of master mould systems
- + Easy changes to the mould or part dimensions
- + Specialized processes possible (Overmoulding of inserts, 2K...)

**Small series fast and cost-efficient in premium quality**

In order to provide our customers with small series of high quality in the shortest possible time, we rely on the Rapid Tooling Process and our modular IMPETUS master mould system.

We will happily advise you through the design phase of your components regarding plastic-compatible component design and production.

# Fast injection moulding parts from original material



## SO SIMPLE

You send us your data or tell us your wishes.

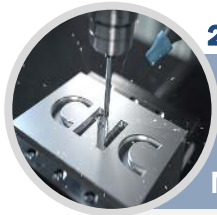
Original material prototypes and small series



1.

### Design

■ Our plastics engineers check your 3D designs or implement your ideas into qualified 3D designs. In addition, we secure the design with process simulations and, if necessary, submit suggestions for optimization.



2.

### Milling

■ Rapid Tooling requires the routine and fast implementation of design in milled parts and tools - of course with technically and economically convincing concepts.



3.

### Process

■ Prototypes and small series are produced by injection moulding from original material. We support our customers in the selection of materials and material procurement, so that they receive products of the highest product quality in a very short lead time.

Premium prototypes and small series from steel mould cavities within 4 weeks<sup>1</sup>

### Possible injection moulding materials

- + All commercially available thermoplastics
- + Thermoplastic elastomers

We deliver optimal prototypes and small series.

# Rapid Tooling — our services at a glance



## **IMPETUS services for injection-moulded premium components from master mould systems**

Original material prototypes and small series

### ■ For prototypes and small series

- ✓ Design check by plastics experts with optimization suggestions
- ✓ 3D moulding constructions
- ✓ Protection by process simulation
- ✓ Definition of suitable tool concepts
- ✓ Tool design and construction
- ✓ Tool spreadsheets
- ✓ Construction of master mould systems with associated inserts
- ✓ Production of original material components in IMPETUS master moulds

### ■ Additionally for the series

- ✓ Derivation of part changes based on component tests
- ✓ Selection of competent series suppliers
- ✓ Supervision of the production of tools
- ✓ Procurement of innovative tool technology

**Best cost-benefit aspects, high flexibility and a convincing timing**

Premium prototypes  
and small series from  
steel mould cavities  
within 4 weeks<sup>1</sup>



### Industry sectors

Electronics  
Medicine  
White goods  
Casing  
Heating/sanitary/air condition  
Automotive  
Packaging  
Optics

Engineering

Production

Consulting



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**We gladly consult you  
and create a free offer.**

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### References excerpts



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<sup>1</sup>Regular delivery time