Magnesium Academy in collaborazione con

Magnesium Alloy Casting
innovative | cost effective
environmentally responsible
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innovative | cost effective | environmentally responsible
View the T-Mag Process video

To view a 4 minute video of the latest machine trials for production of a motor cycle wheel.

See Downloads
15 Kg machine in operation

T-Mag is a fully enclosed melting and easy to use casting solution.

T-Mag is a fully enclosed melting and easy to use casting solution:

• Flux-less metal preparation
• Minimal cover gas usage
• Small machine footprint
• Environmental advantages over other casting processes
Recent Trials

T-Mag is a fully enclosed melting and easy to use casting solution.

T-Mag is successfully casting Motor Cycle wheels with hollow internal features using silica sand cores and standard binders.
The T-Mag Process

Enclosed Steel Retort

Furnace & Press Pivot Point

T-Mag Press & Die Assembly

Top die

Die Cover Gas and Die Venting Valves

Bottom die

Resistance Heated Transfer Pipe

Molten Magnesium

Cover Gas

Resistance Heated Furnace

New Patented Magnesium Casting Process
Example of T-Mag Capability

T-Mag participated in the USCAR/HIMAC project and produced a permanent-mould lower control arm,

This was ranked (USCAR Program) as being in the top two casting processes.

Subsequently the other process has been discarded.
Example of Wheel Casting

A large range of products can be cast using T-Mag's patented technology.

Large products – up to 15 Kg can be cast in the machine, situated in Adelaide, Australia.
Magnesium Benefits

- Reduce vehicle weight saving running costs and reducing CO₂ emissions
- Strength, impact resistant, damping, heat transfer capability, and machinability
- Only 5% wastage in production and fully recyclable.
- Fully integrated and self contained.
- Environmentally friendly cover gas
Magnesium Specifications

The attraction of magnesium (alloys) to customers is the lower density compared to other materials. This means:

Lighter parts, as the required mechanical properties are met.

Aluminum alloys are the obvious material to beat. Magnesium alloys (e.g. AZ91):

≈ 1810 kg/m³ Aluminum alloys (e.g. 601):
≈ 2690 kg/m³. Mg is 66% the density of Al on a volume basis.
## T-Mag Cost Comparison

<table>
<thead>
<tr>
<th>ATTRIBUTE</th>
<th>SAND CASTING</th>
<th>GRAVITY PM CASTING</th>
<th>T-Mag *</th>
<th>LOW PRESSURE PM CASTING</th>
<th>HIGH PRESSURE DIE CASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castable Surface Detail</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Sand Cores for Hollow Features</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tooling Cost</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Potential Casting Soundness</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Heat Treatable Castings</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Weldable Castings</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Casting Yield %</td>
<td>50% Typical</td>
<td>60% Typical</td>
<td>90% Typical</td>
<td>90% Typical</td>
<td>90% Typical</td>
</tr>
<tr>
<td>Plant Cost</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Medium / High</td>
<td>High</td>
</tr>
<tr>
<td>Cover Gas Management</td>
<td>Difficult</td>
<td>Difficult</td>
<td>Easy</td>
<td>Difficult</td>
<td>Easy</td>
</tr>
</tbody>
</table>

New Patented Magnesium Casting Process
Trials + Viewing

The T-Mag machine is available for casting trials and demonstration at T-Mag premises in Adelaide, South Australia

We welcome your enquiry.....

New Patented Magnesium Casting Process
Collaboration

T-Mag is actively seeking collaboration partners to take advantage of this NEW high yield, cost effective, semi-permanent mould casting process for magnesium.

T-Mag has a green footprint and will assist companies to meet carbon targets.
Contacting T-Mag

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New Patented Magnesium Casting Process