



TPI<sup>®</sup>

# THIXOMOLDING ON CONVENTIONAL DIE CASTING MACHINES

2025 82<sup>nd</sup> Annual IMA World  
**Magnesium**  
Conference  
11-13 May 2025 | Salzburg, Austria



International  
**Magnesium**  
Association

2025.05.12  
[www.tpi-technology.com](http://www.tpi-technology.com)

# TPI COMPANY INFORMATION

## Key Facts

---

- Name: Thixotropic Piston Injection Technology GmbH
- Foundation: 2019
- Location: Austria, 8403 Lebring
- Website: [www.tpi-technology.com](http://www.tpi-technology.com)
- Employees: 21 (+ 18)

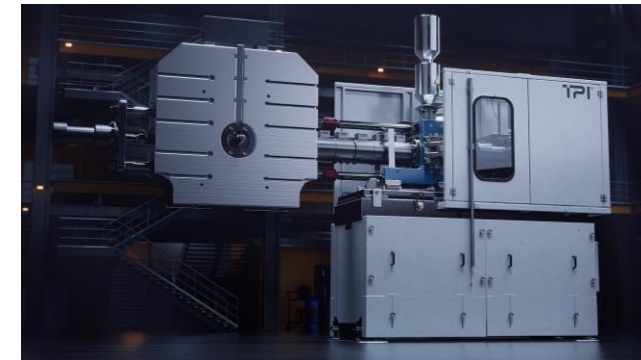
## Share Holders

---



## Product

---



## Current Situation

---

After a 5 years R&D phase TPI has succeeded in developing an industry changing method to cast Magnesium alloys. The technology is providing customers the benefit to cast Magnesium with zero CO2 footprint at highest precision and cost efficiency.

# WHY MAGNESIUM NEVER WILL BE A RELEVANT MATERIAL:

- **MAGNESIUM IS TOO EXPENSIVE**

**SOLVED** - Already now in China Mg is lower in cost than Aluminum per kg.

- **MAGNESIUM IS TOO DANGEROUS IN PRODUCTION**

**SOLVED** – TPI is a closed process with just-in-time melt preparation, flame retardant alloys are available.

- **MAGNESIUM HAS A TOO BIG CO2 FOOTPRINT**

**SOLVED** – TPI is a CO2 neutral process, Mg from sea water or modern processes have lower CO2 emissions than Aluminum.

# WHY MAGNESIUM IS A HIGHLY RELEVANT MATERIAL:

- **MAGNESIUM IS CHEAP**

**SOLVED** - Already now Mg in China is lower in cost than Aluminum per kg.

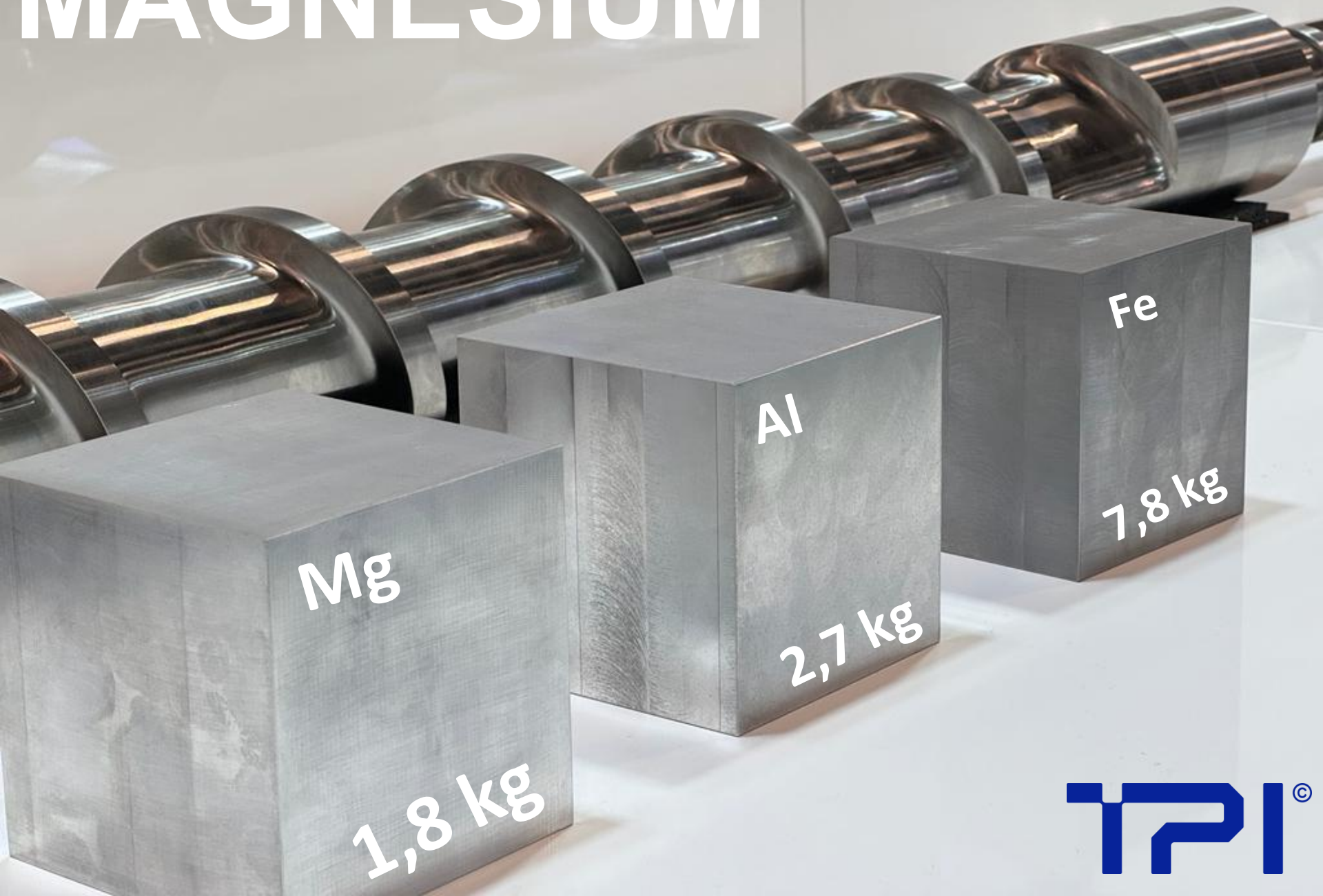
- **MAGNESIUM IS SAFE IN PRODUCTION**

**SOLVED** – TPI is a closed process with just-in-time melt preparation, flame retardant alloy MgCarbonite.

- **MAGNESIUM HAS THE LOWEST CO2 FOOTPRINT**

**SOLVED** – TPI is a CO2 neutral process, Mg from sea water or modern processes have lower CO2 emissions than Aluminum.

# MAGNESIUM



Mg

1,8 kg

Al

2,7 kg

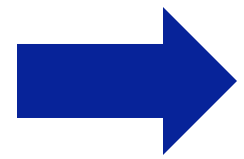
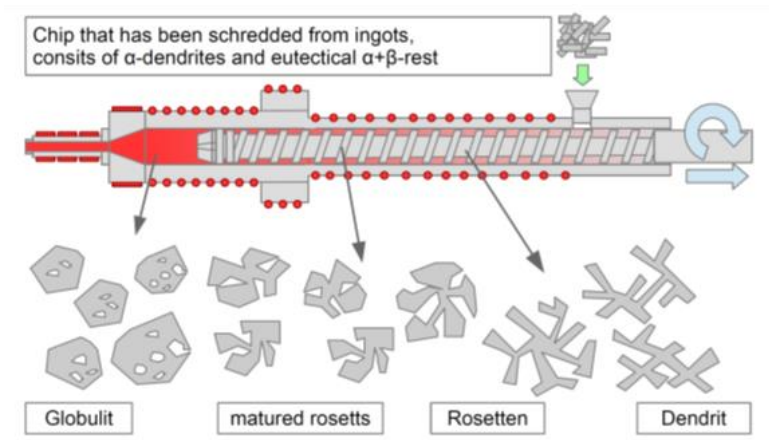
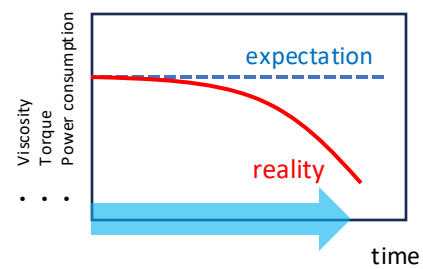
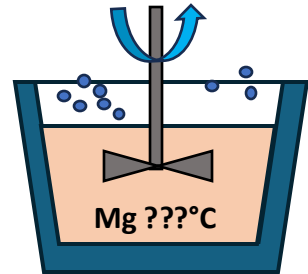
Fe

7,8 kg

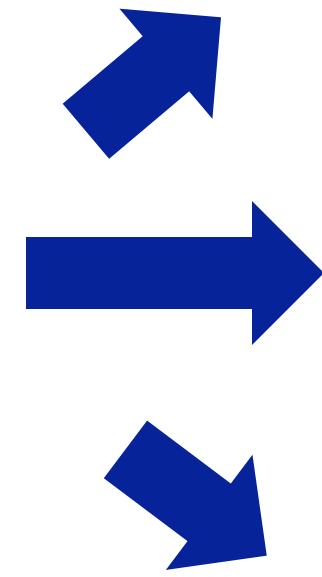
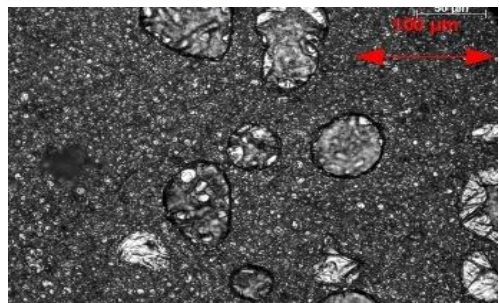
**TPI**®

# THIXOMOLDING

M.I.T. University ~1990



**Thixomat**  
IP Licensing



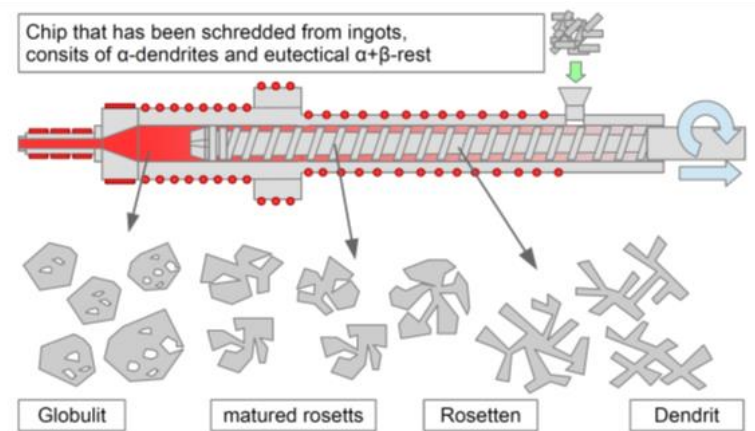
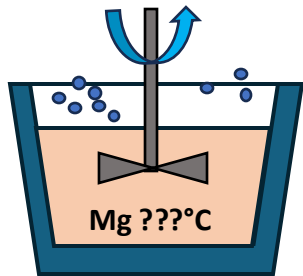
Based on Plastics  
Injections Molding  
Machines

**THIXOMOLDING**

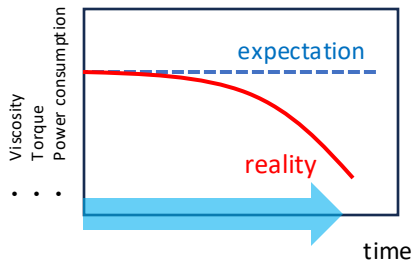
Basic patents expired in  
2010

# THIXOMOLDING

M.I.T. University ~1990



## WHY IS STILL „NOBODY“ DOING THIS?

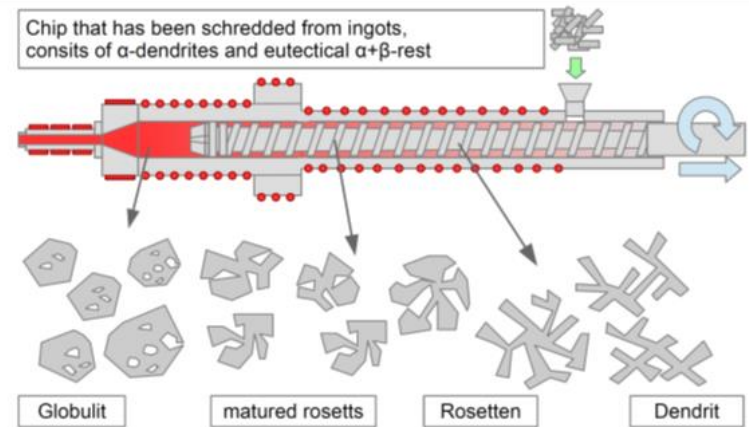
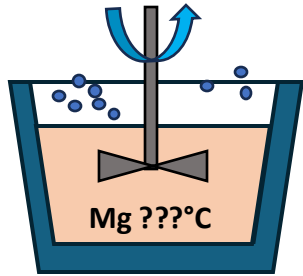


- Safety
- Flexibility
- Energy saving
- Inline Recycling

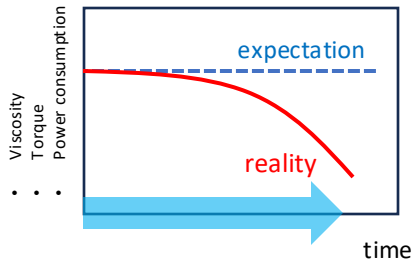
- Maintenance
- Semi-solid
- Cycle Time
- Direct Injection

# THIXOMOLDING

M.I.T. University ~1990



**WHY IS STILL  
 „NOBODY“  
 DOING THIS?**

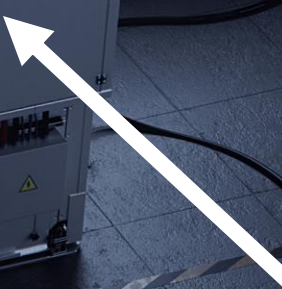


- Will Magnesium be a relevant material?
- Will my investment in a new production cell pay off?
- Will I be able to get a full machine booked?

**ALUMINUM  
COLD CHAMBER  
DIE CASTING MACHINE**

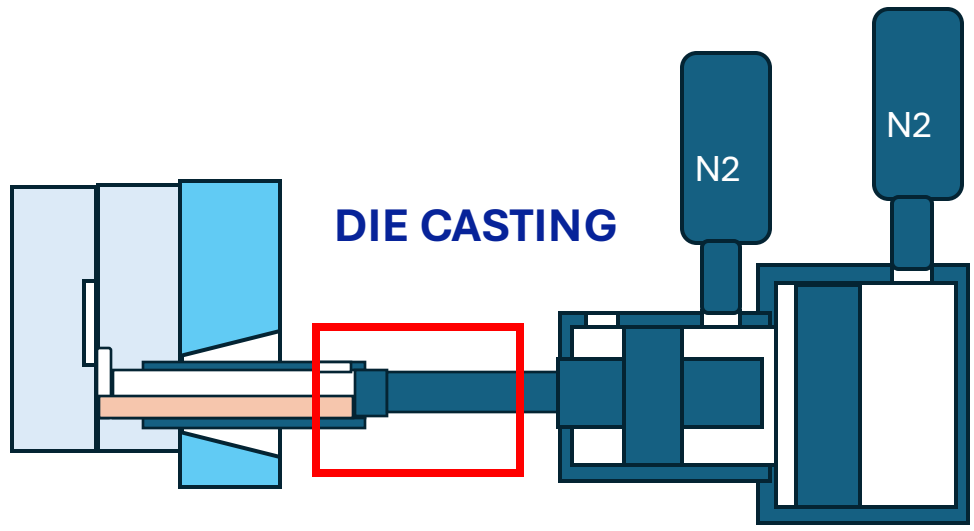
A white arrow pointing from the text to the main machine.

**>60.000  
OF THESE MACHINES ARE  
IN OPERATION GLOBALLY**

A white arrow pointing from the text to a control cabinet on the machine.

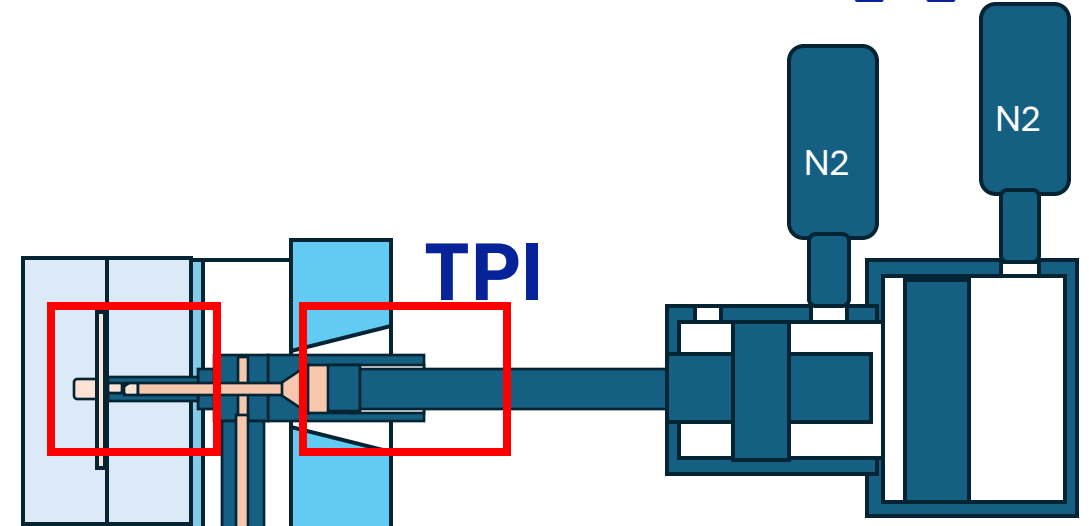
**TPI  
TPI MODULE FOR  
MAGNESIUM  
THIXOMOLDING  
PRODUCTION**

**A MORE FLEXIBLE, SUSTAINABLE AND SAFER WAY OF CASTING  
MAGNESIUM. THIXOMOLDING 2.0.**



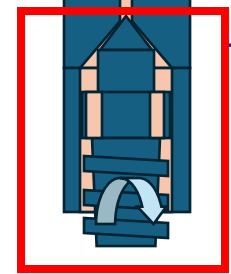
**DIE CASTING**

- side view -

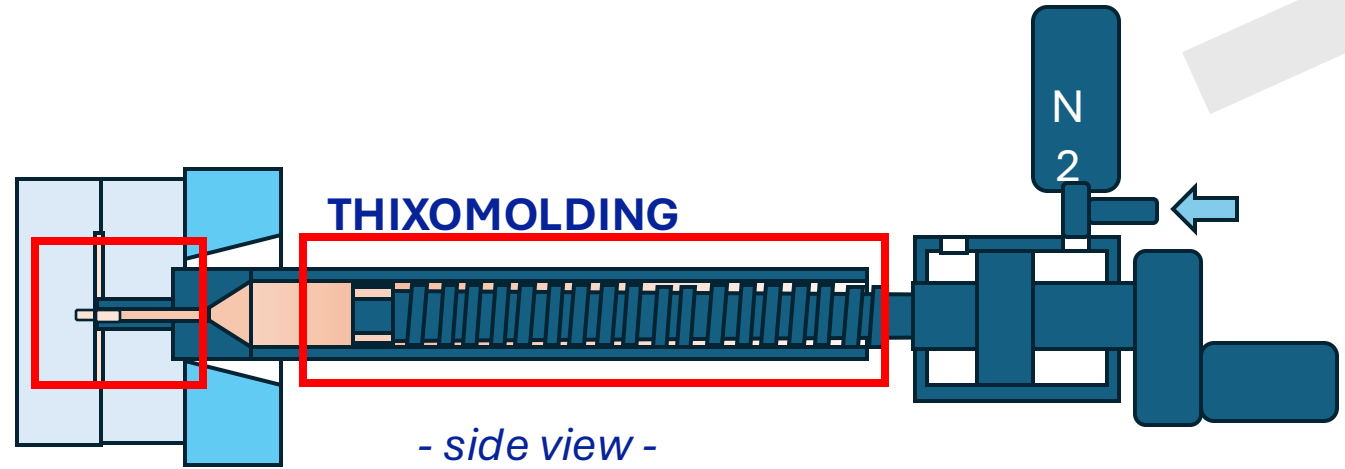


**TPI**

- side view -

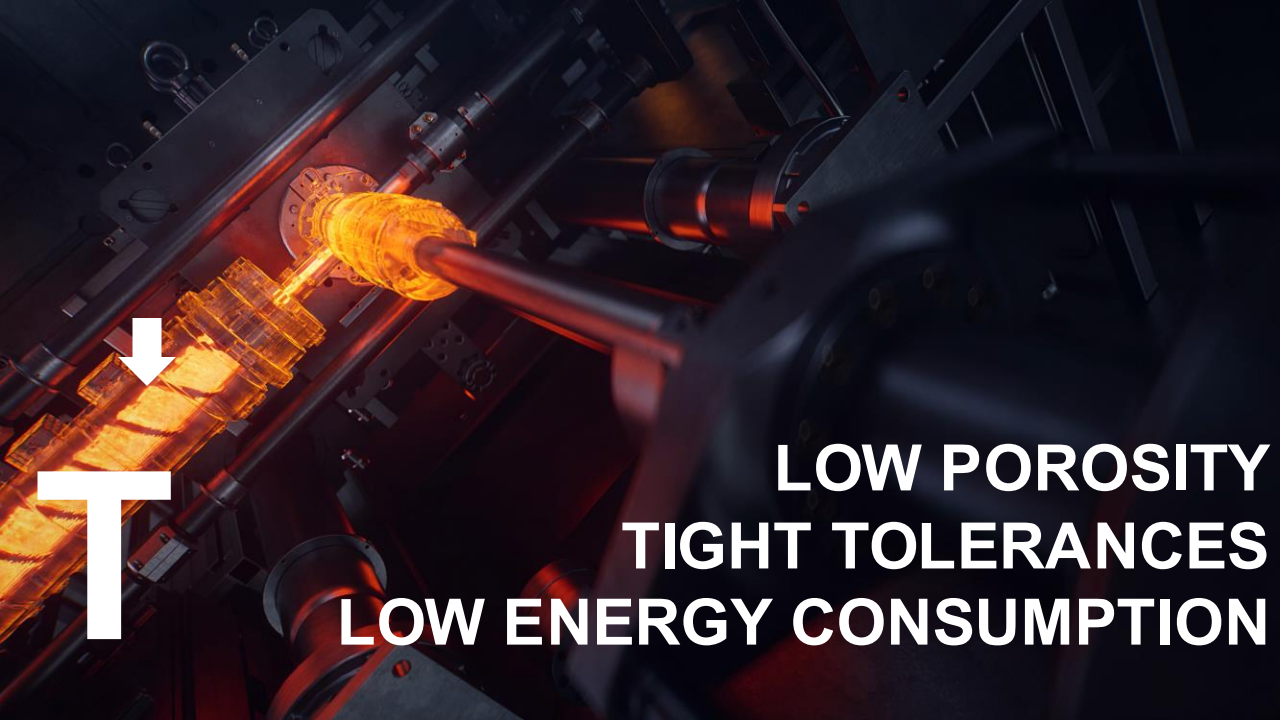


- top view -



**THIXOMOLDING**

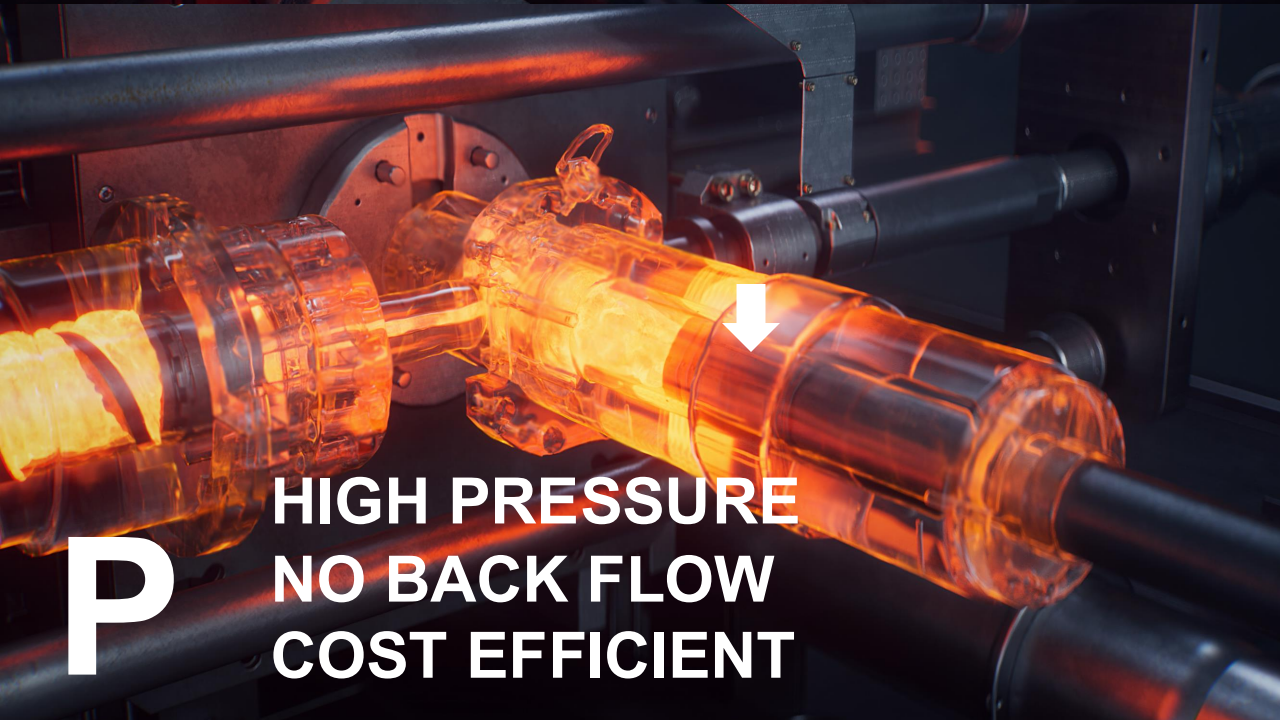
- side view -



**T**

**LOW POROSITY  
TIGHT TOLERANCES  
LOW ENERGY CONSUMPTION**

# **T HIXOTROPIC P ISTON I NJECTION**



**P**

**HIGH PRESSURE  
NO BACK FLOW  
COST EFFICIENT**



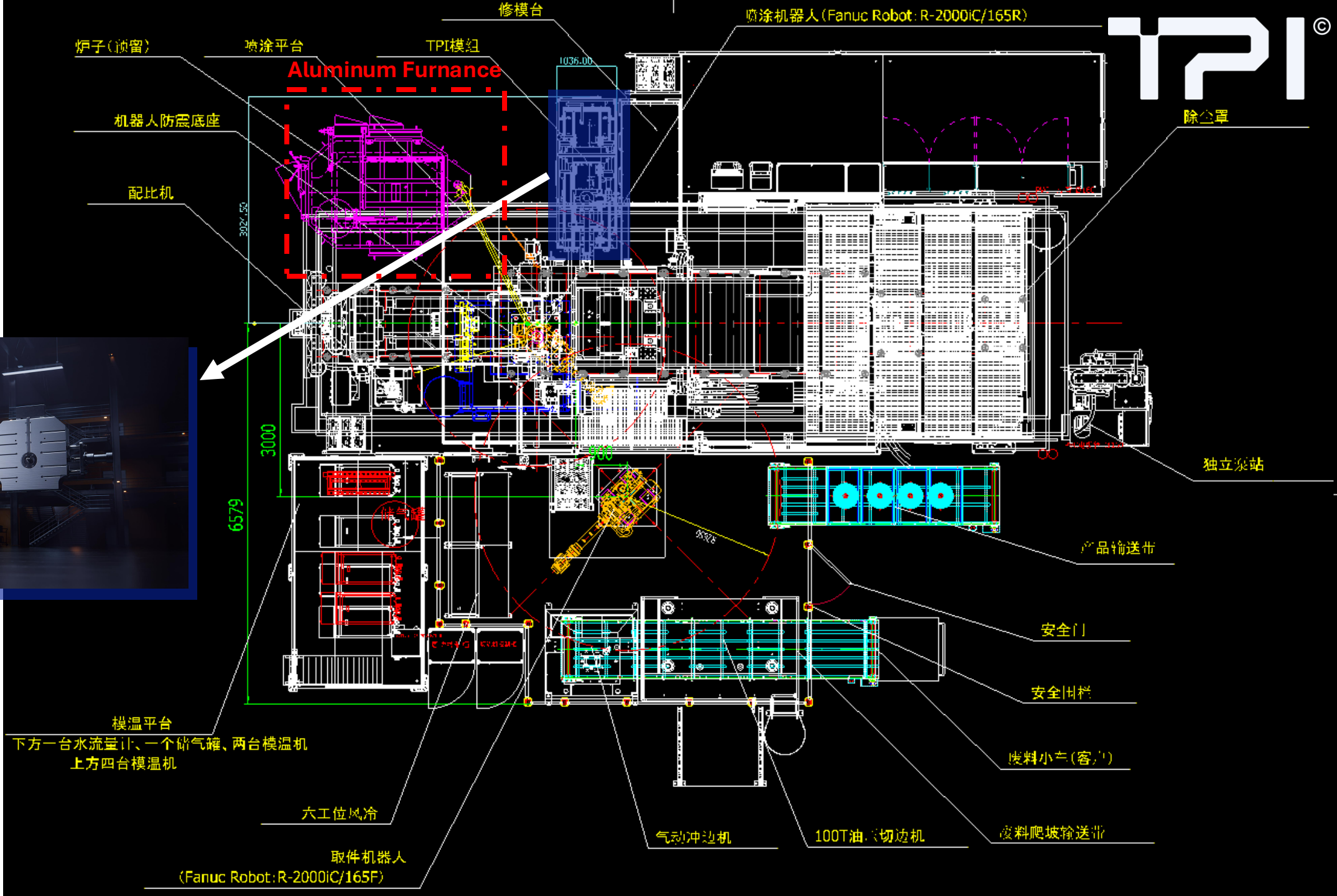
**I**

**DIRECT GATING  
LESS SECONDARY MATERIAL  
CLOSED PROCESS**

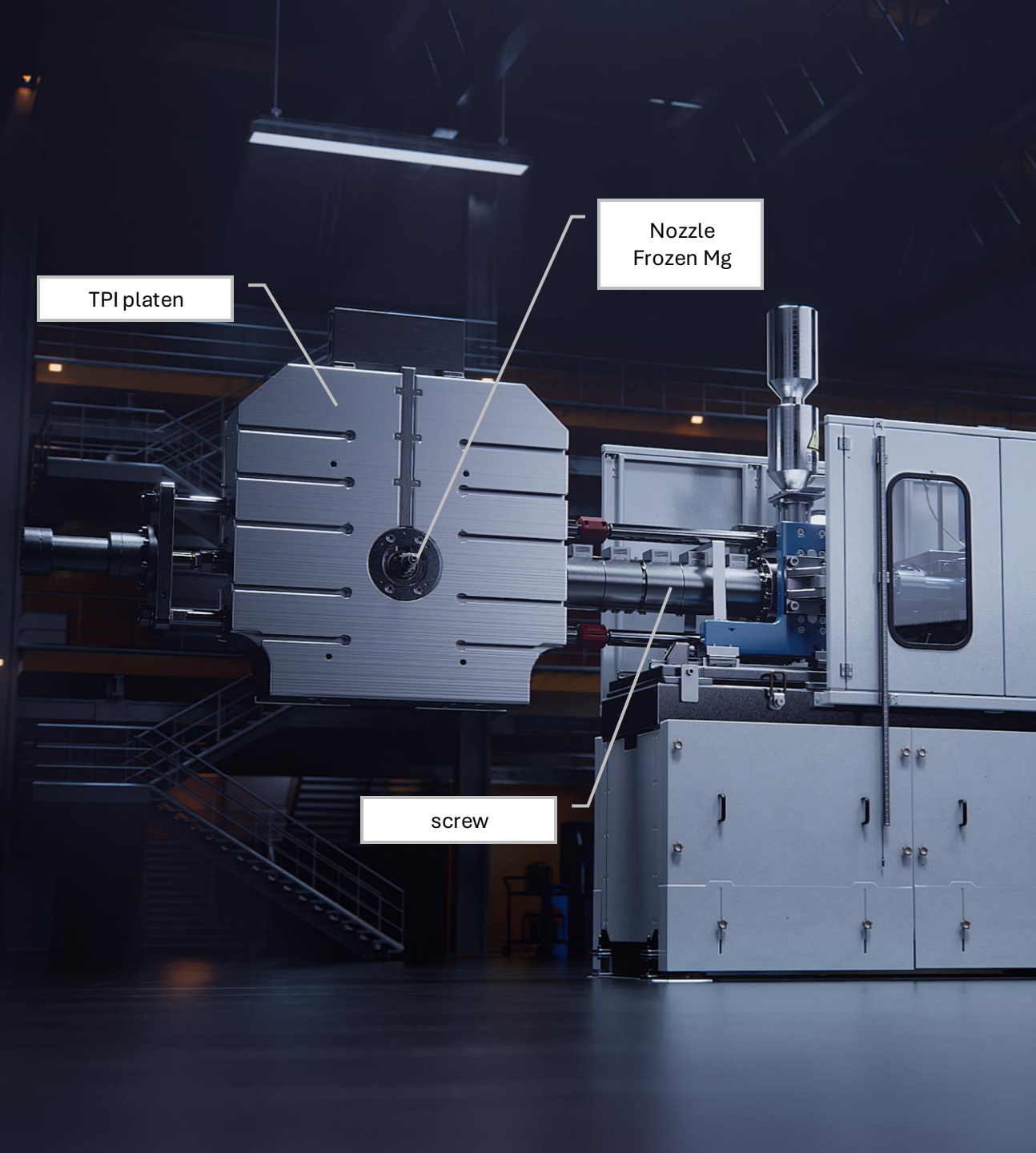
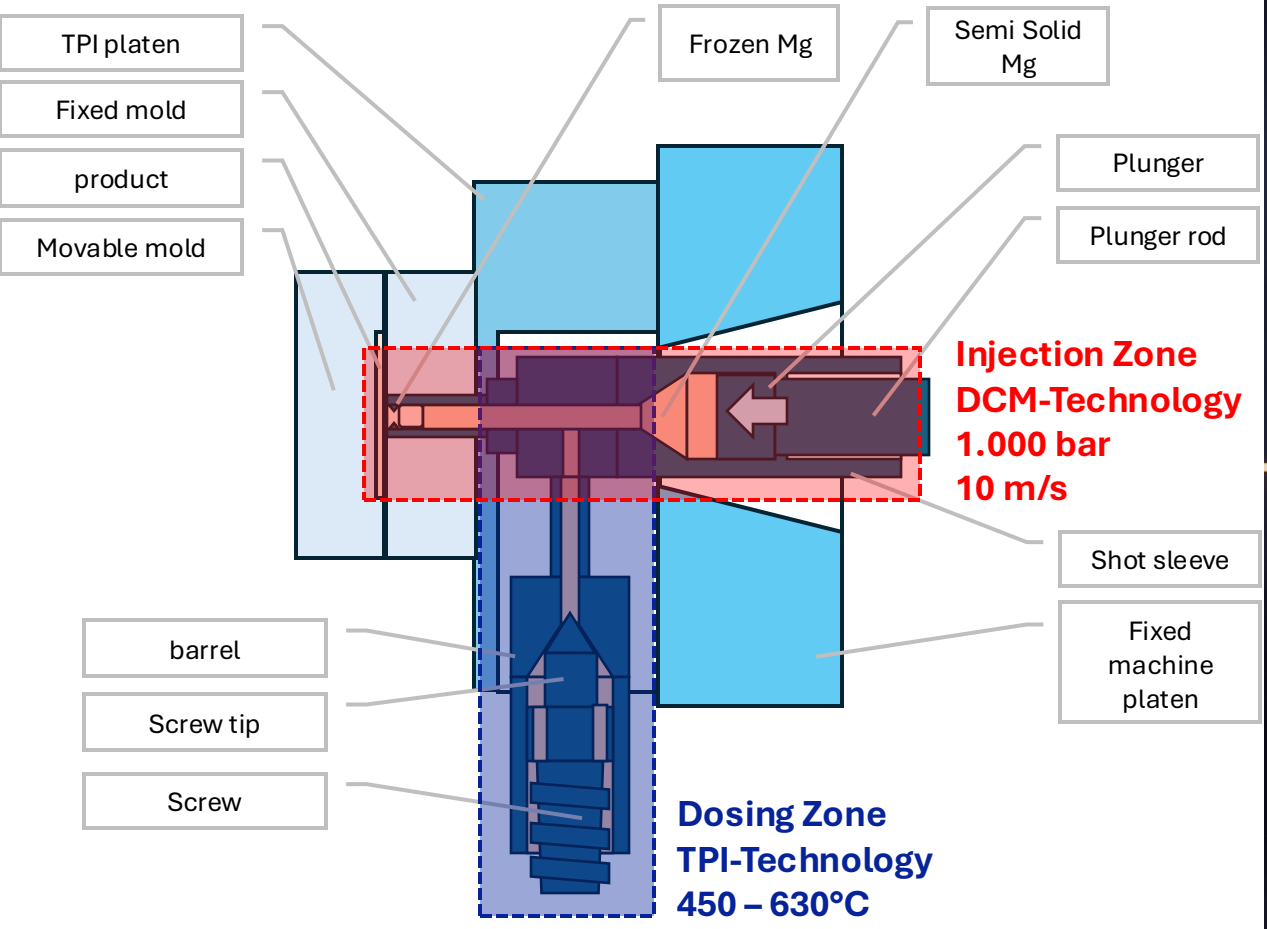
# REFERENCE LAYOUT



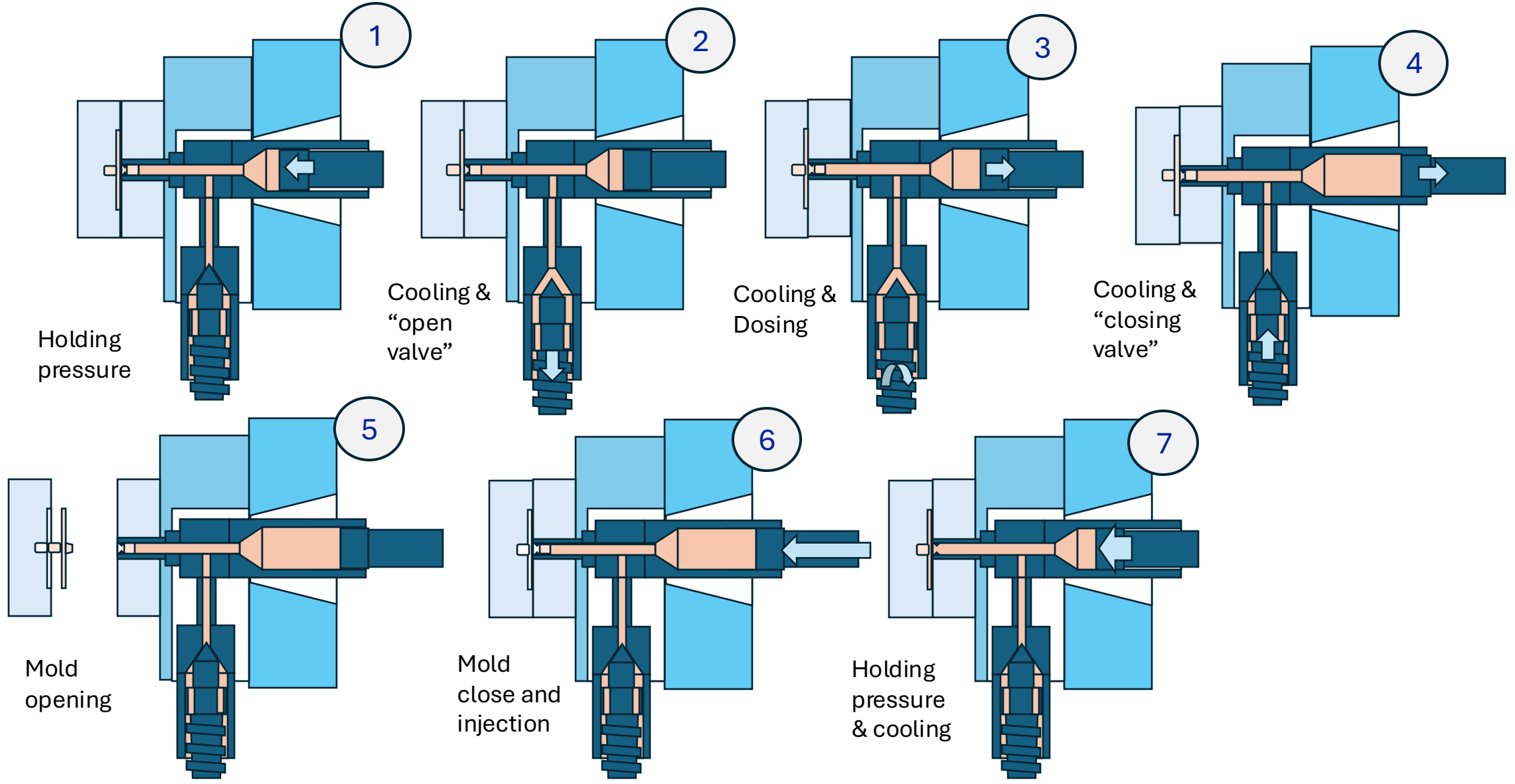
1.600 T  
3 KG SHOT



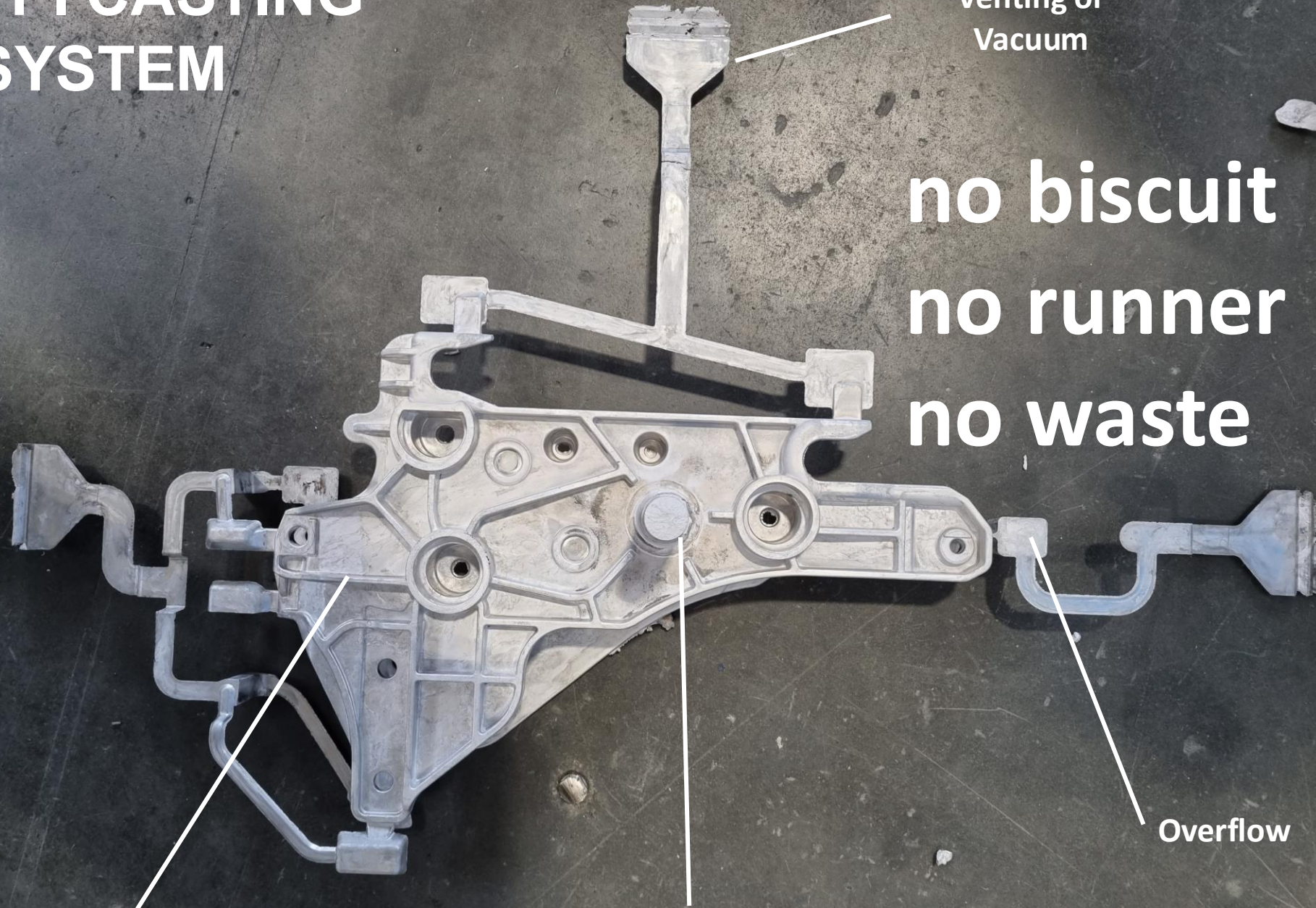
# DEFINITIONS



# SERIES CYCLE



# TPI CASTING SYSTEM



Venting or Vacuum

no biscuit  
no runner  
no waste

Overflow

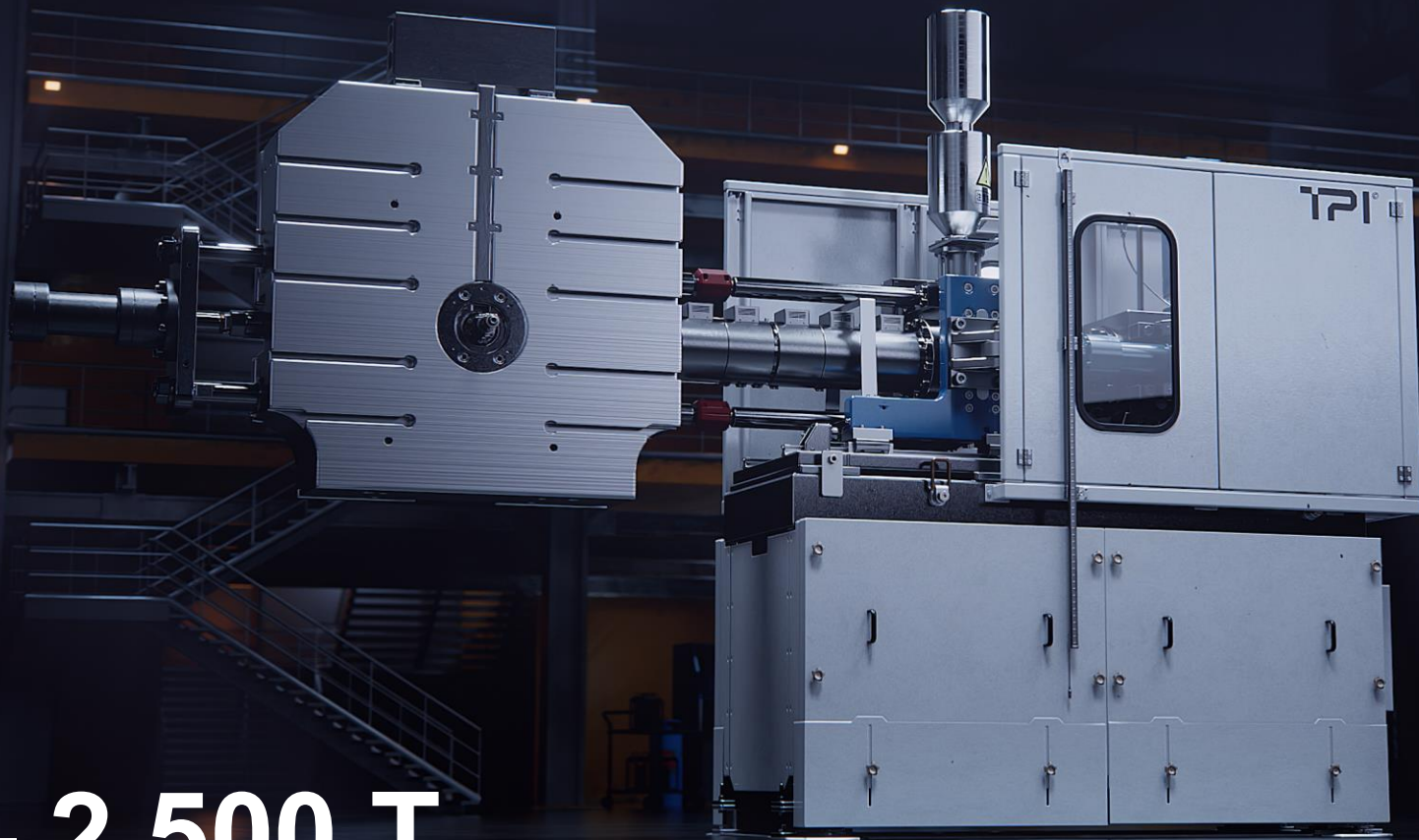
Product

Ingate  
On the product – or conventional



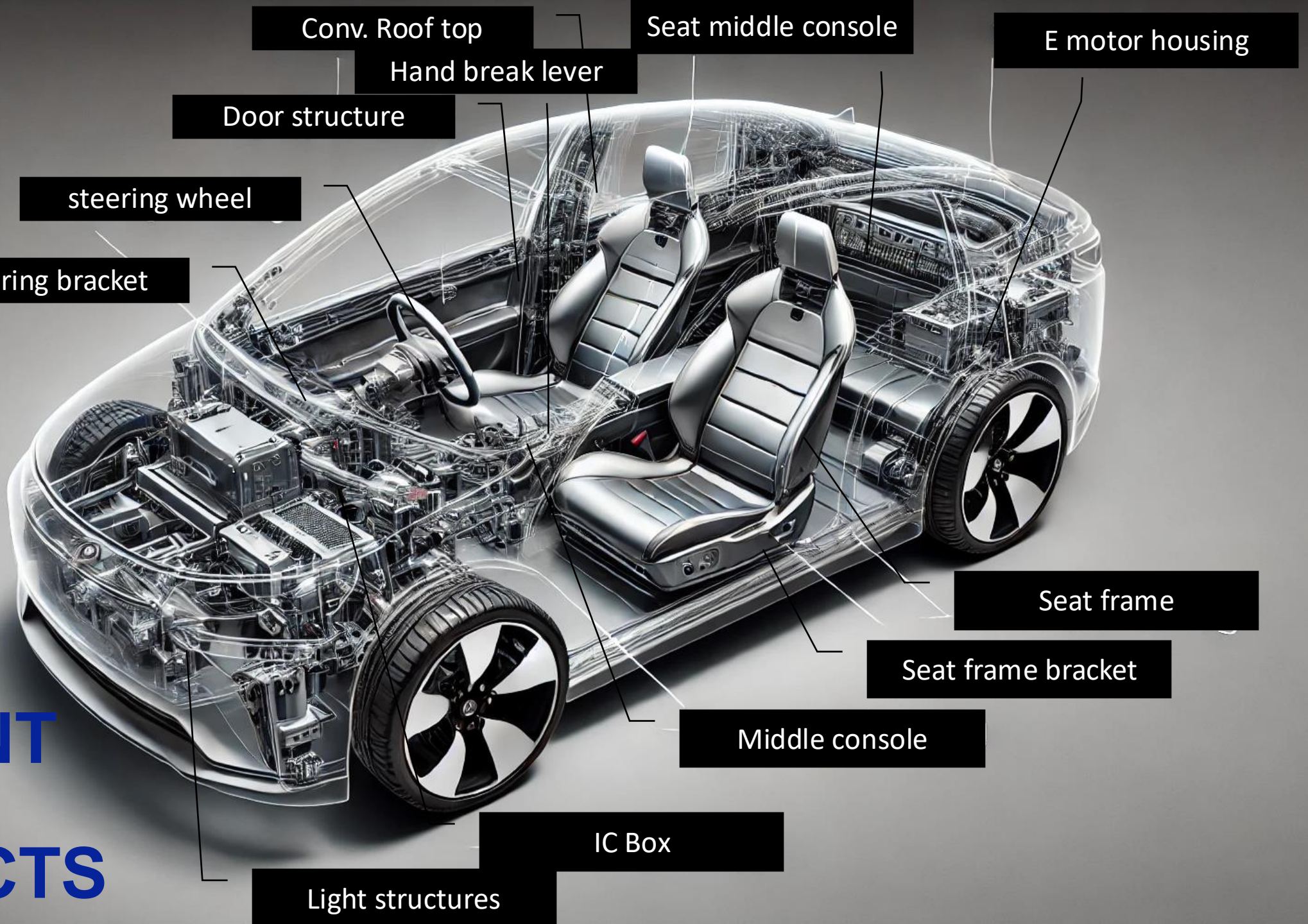
# SUPERPLAST

FIRST SERIES IN MARKET



700 T – 2.500 T

SCREW D84, D100, D130

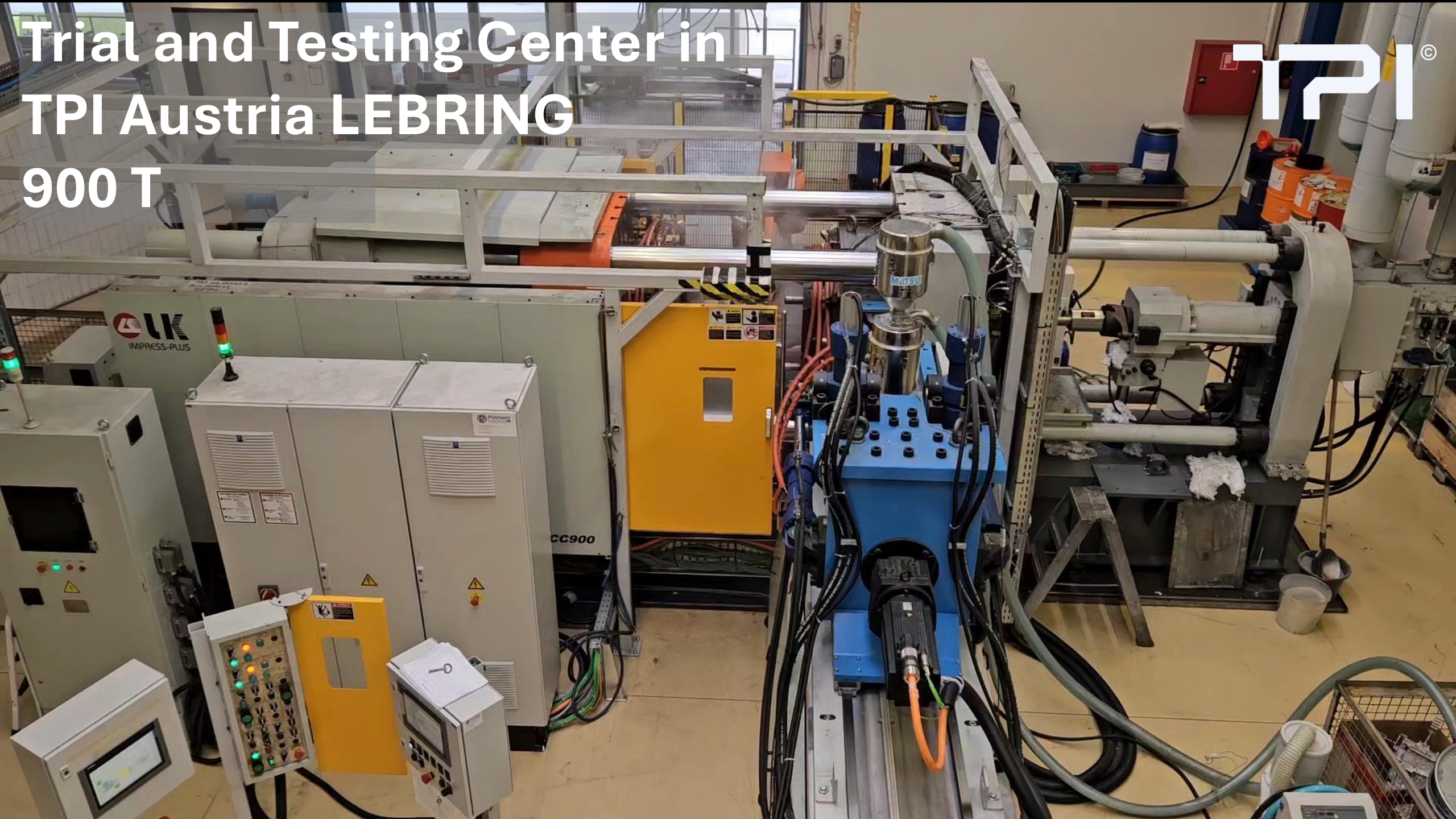
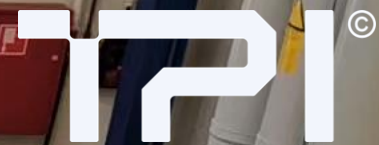


**Non-Automotive**

- Motorcycle battery case
- Bicycle frame
- Drone components
- Medical equipment

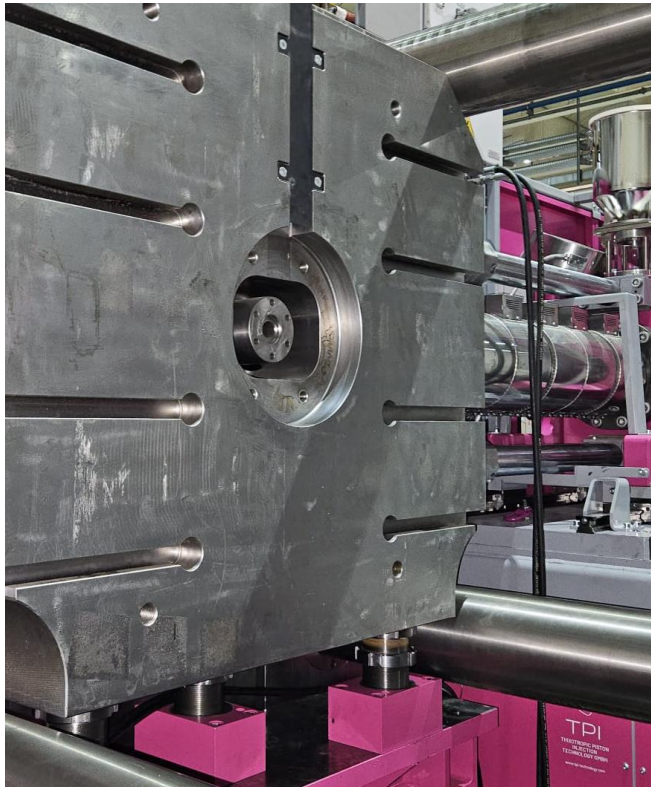
**CURRENT  
THIXO  
PRODUCTS**

# Trial and Testing Center in TPI Austria LEBRING 900 T

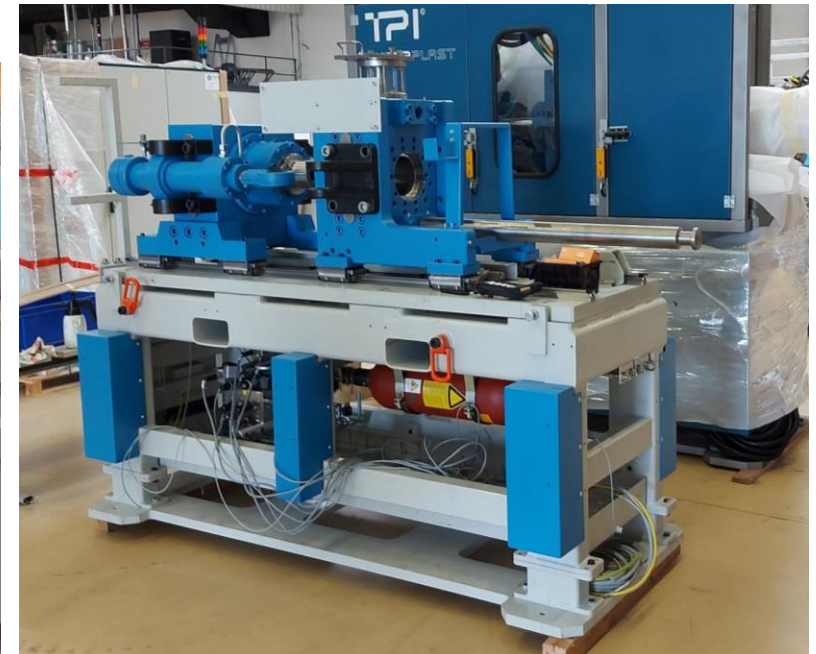


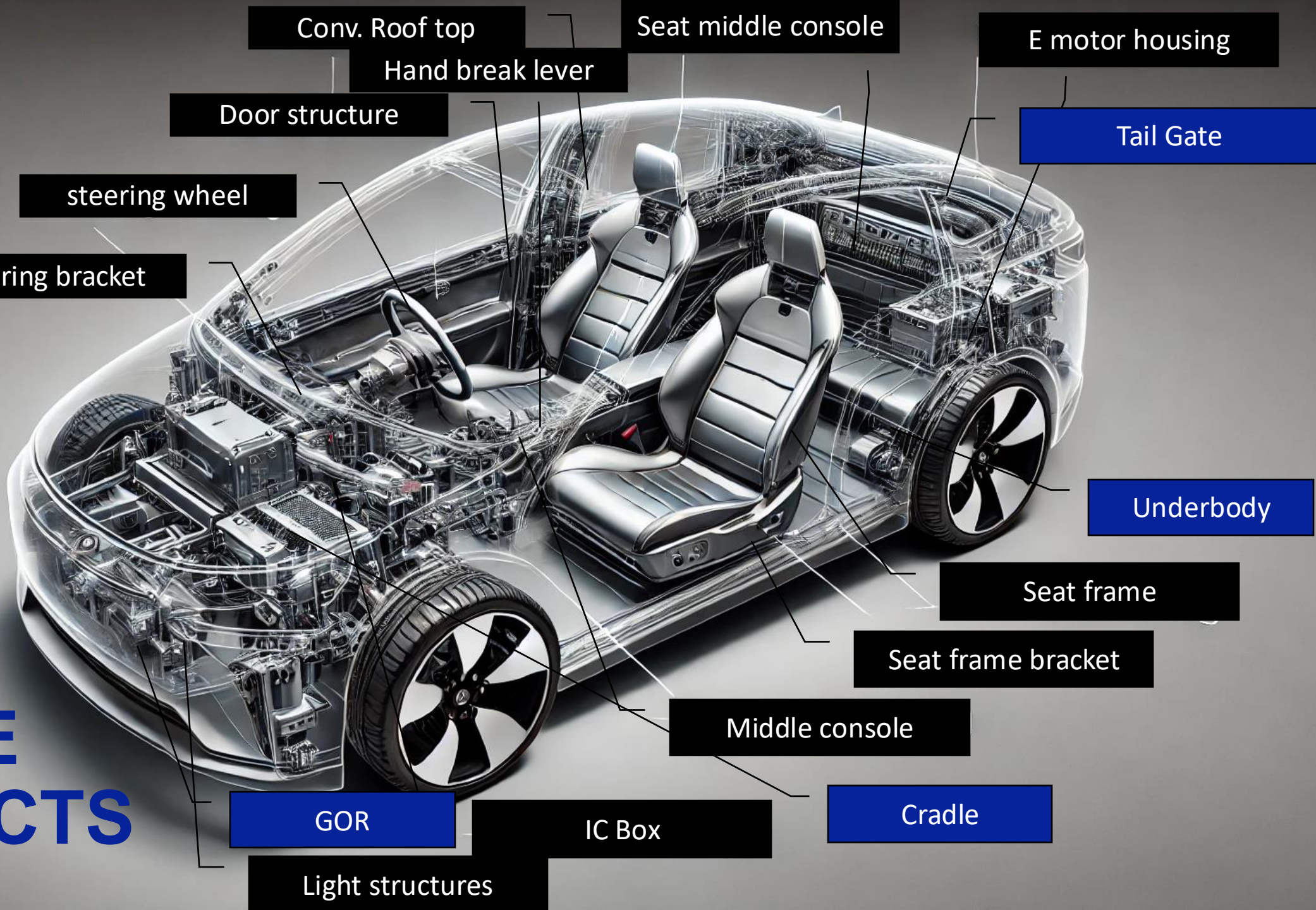
# Trial and Testing Center in China Ningbo 1.600 T





# CUSTOMER SITE



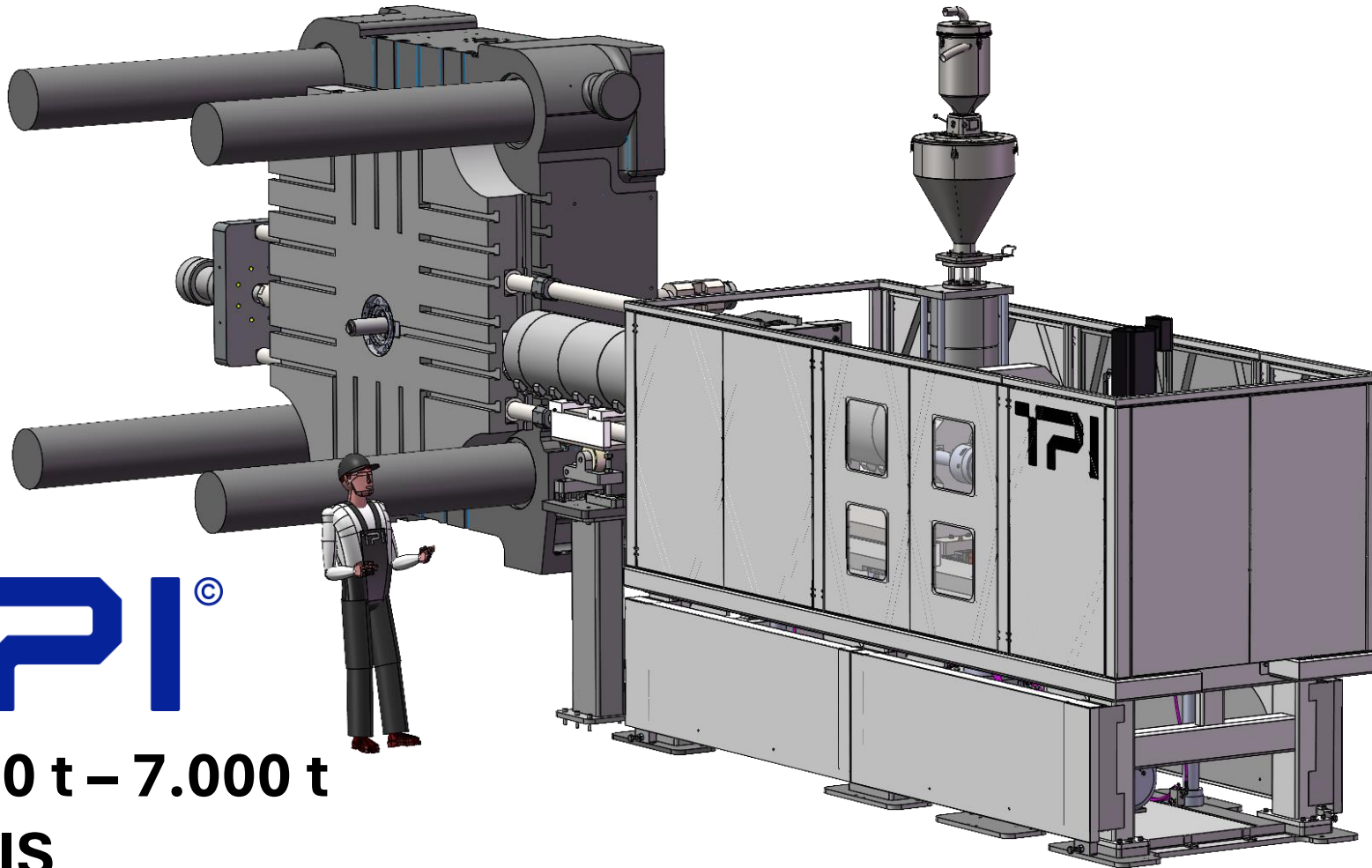


**Non-Automotive**

- Battery Housings
- Passenger Drone

# FUTURE PRODUCTS

# GIGAPLAST



**screw**  
**D 200 mm**  
**L 5 m**

→ **Currently in  
production**

**Target:**  
**20 kg 1 screw**  
**40 kg 2 screws**

**TPI**®

**4.000 t – 7.000 t**  
**BASIS**

**SUSTAINABILITY TPI<sup>®</sup>**

**FLEXIBILITY**

**BIG TONNAGE**

**COST OF OWNERSHIP**

**WORKER SAFETY**



**THANK YOU  
VERY MUCH  
FOR YOUR  
INTEREST**

[sales@tpi-technology.com](mailto:sales@tpi-technology.com)

