

idé | pro



FUNCTIONAL PROTOTYPES & ON-DEMAND MANUFACTURING

Your partner from **idea** to **product**

YOUR PARTNER FROM IDEA TO PRODUCT

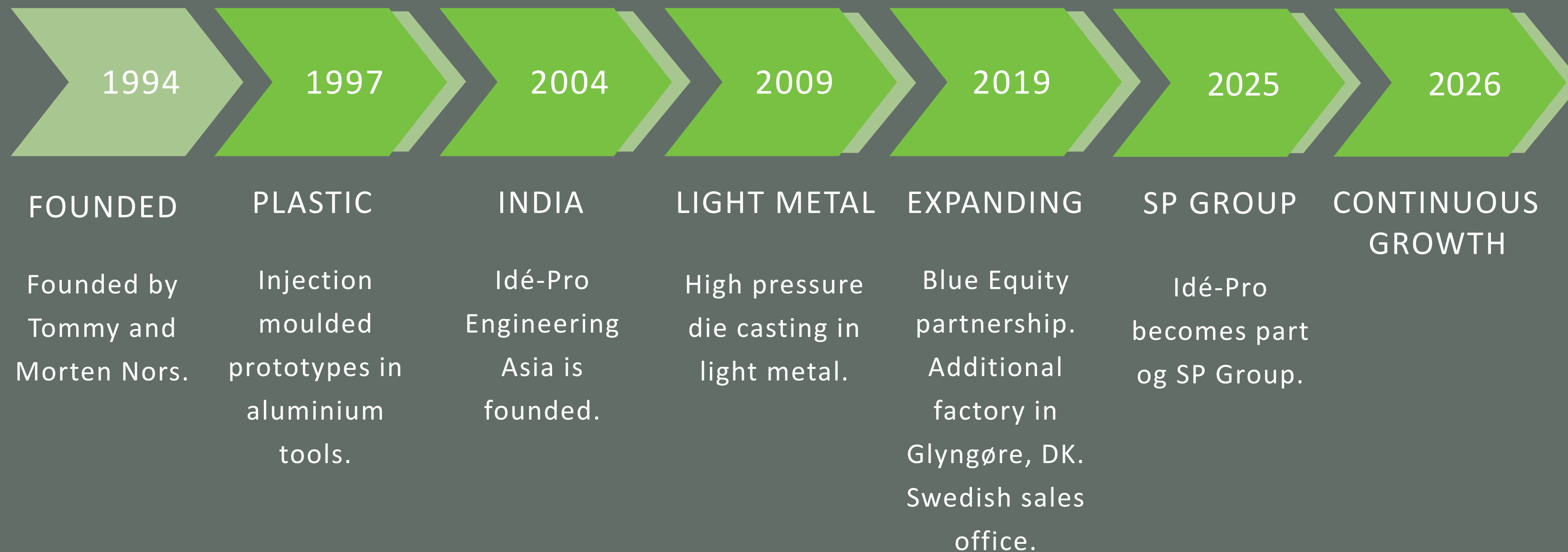
Idé-Pro is one of Europe's leading suppliers of functional prototypes and on-demand parts.

We strategically focus on plastic (injection moulding), light metal (HPDC), and EPS/EPP (shape moulding) for:

- **Prototypes and pre-series**
 - All parts – to all segments
- **On-demand manufacturing**
 - Functional/structural parts
 - To industry segments

TIMELINE

Idé-Pro has experienced rapid growth since the beginning.



LOCATIONS NEAR YOU

SKIVE, DENMARK

16.200m² - 170 employees

Administration, tool manufacturing, plastic, light metal and EPS/EPP foundries, measuring lab, assembly, warehouse.

GLYNGØRE, DENMARK

10.600m² - 70 employees

Plastic foundry, plastic compounding, assembly, warehouse.

GOTHENBURG, SWEDEN

4 employees

Sales office.

BENELUX

1 employee

Sales.

DACH REGION

3 employees

Sales.

BANGALORE, INDIA

5.000 m² - 110 employees

100% owned subsidiary, DFM, mouldflow, CAD/CAM, tool design, sales backup.

TECHNICAL PARTS

Technical parts for several industries and customers around the world.

ENERGY

- Inverter houses
- Insulation cases
- windmill parts
- Window parts
- Charger parts

HI-TEC

- Packaging trays
- Pump housings
- Meditec components
- Device components
- Pneumatic components
- Lightning cases
- Controllers
- Lab equipment
- Housing/covers

FOOD/AGRICULTURE

- Farming equipment
- Venting systems
- Cleaning devices
- Control units
- Fans
- Housing/covers

CONSUMER

- Baby chair parts
- Lamp housings
- Cleaning devices
- Speaker components
- Fans
- Cooker hoods
- Fans

AUTOMOTIVE

Interior (plastic):

- Connectors + busbars
- Electrical chargers
- Instrument panel
- Hydraulic systems
- Crashpad
- Energy absorbers
- Airbag covers (SAB/DAB)

Exterior (plastic):

- Front grills
- Mudguard
- Side skirt
- Fan shroud
- Impellers

Light metal:

- Boarding steps
- Gear housing
- Inverter housings
- Electrical motor housings
- Brackets
- Oil sumps

IN-HOUSE FROM IDEA TO PRODUCT

A one-stop shop with all competencies in-house, ensuring a short lead time, flexibility, high quality and competitive prices.



PRODUCT DEVELOPMENT

Your consulting partner during R&D phase.

Extensive knowhow and experience:

- Part design
- Materials
- Manufacturing processes
- Tool construction

Mouldflow simulations incl. warpage simulation.

Design for manufacturing (DFM).



TOOL MANUFACTURING

In-house tool manufacturing

- Aluminium and steel tools

Fully automated 24/7.

Tooling capacity up to 20 new tools per week.

21 high-speed milling machines (3 to 6-axis).

Tooling parts up to 2100x4000x1200 mm (up to 20T).

Fast and flexible tool modifications.



INJECTION MOULDING PLASTIC

Over 25 years experience with injection moulding.

- Prototypes
- On-demand manufacturing

59 injection moulding machines (6 T to 4.000 T).

Technical plastic parts from 0,01 g to 41,5 kg.

Various complex moulding techniques.

Over 2.000 thermoplastic types in stock.

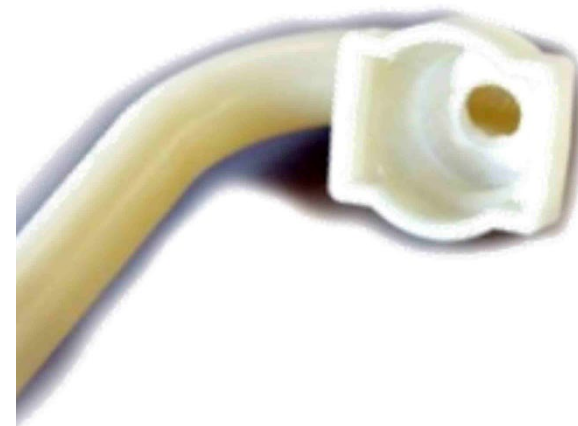


COMPLEX MOULDING TECHNIQUES

In-mould labelling



Gas injection moulding



2K pick and place moulding, in-moulded metal bushings



Impeller with complex geometry



Physical foaming (Ku-Fizz)



Compression injection moulding

2K moulding PA6/TPU



4K moulding for chrome plated parts



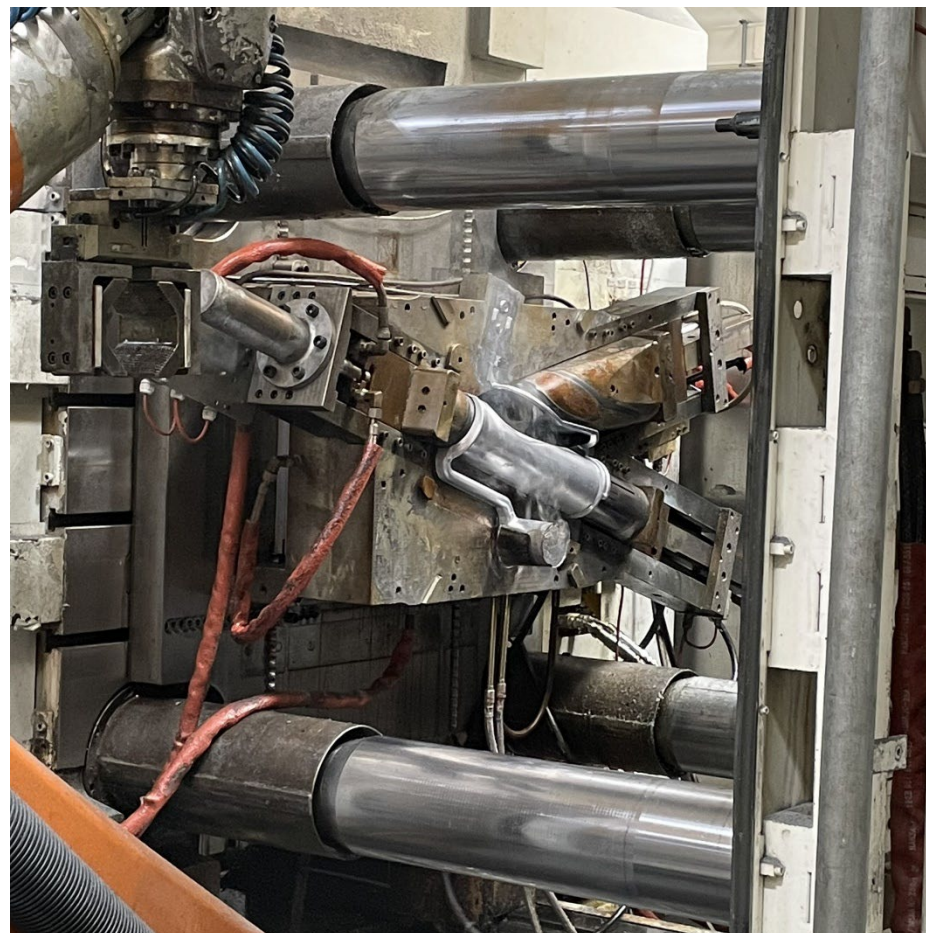
HPDC LIGHT METAL

Complex part design by high pressure die casting finished with machining or other post processes.

Prototypes and on-demand manufacturing:

- HPDC machines up to 1.350 T (21,8 kg).
- Aluminium, magnesium and zinc alloys.

We stock a variety of light metal alloys.



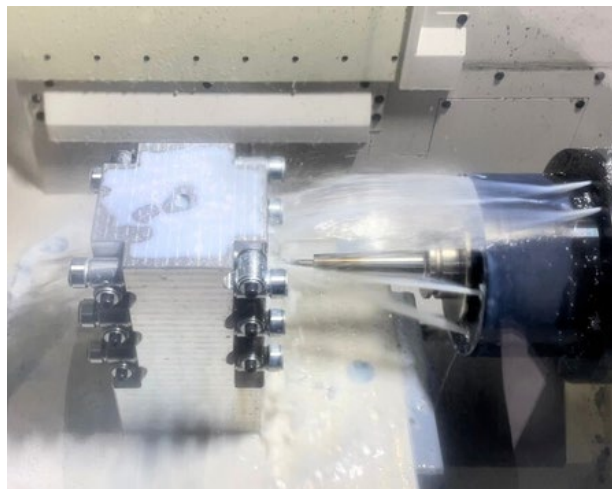
HPDC - POST PROCESSES

Heat treatment
(T5)



Ultrasonic
washing

Assembly



Leak test



Impregnation

Post machining
(6 milling
machines)

Surface
treatment



SHAPE MOULDING EPS/EPP

Specialised in technical EPS/EPP items:

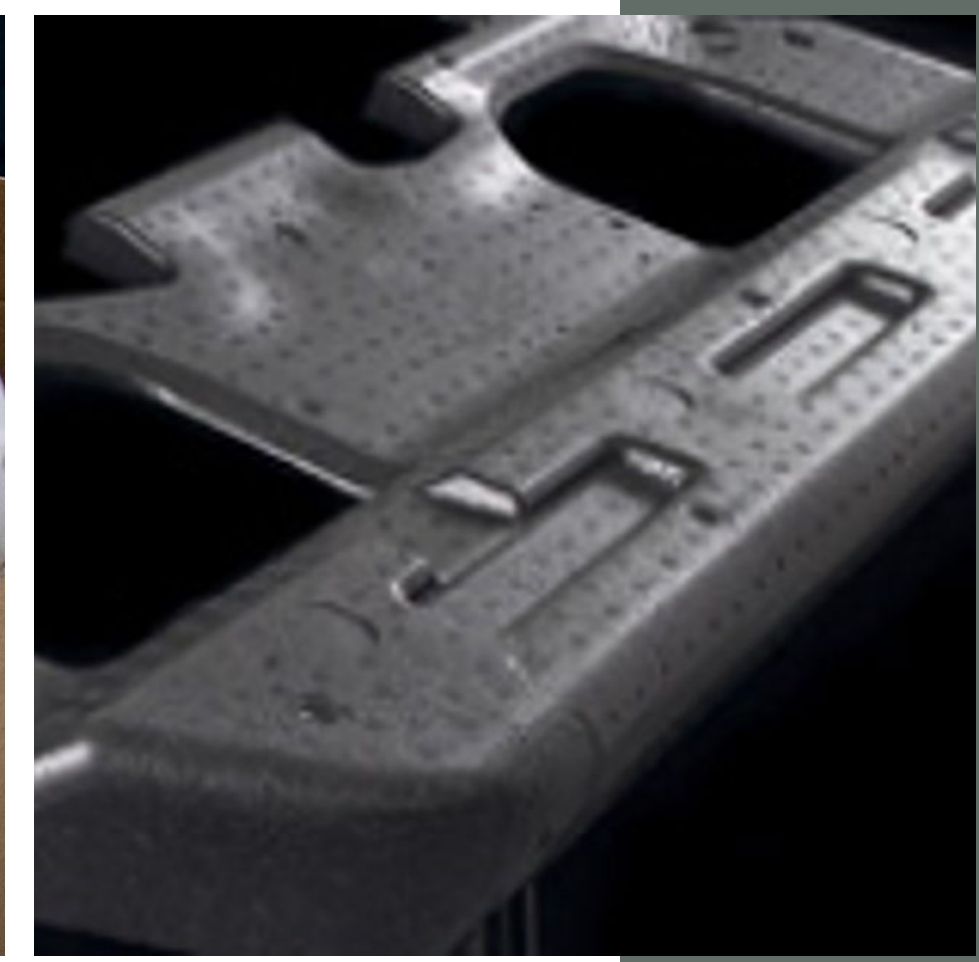
- On-demand manufacturing
- Prototypes MFB

EPP – Energy absorber

EPS – Insulation parts

Capacity for EPS/EPP shape moulding:

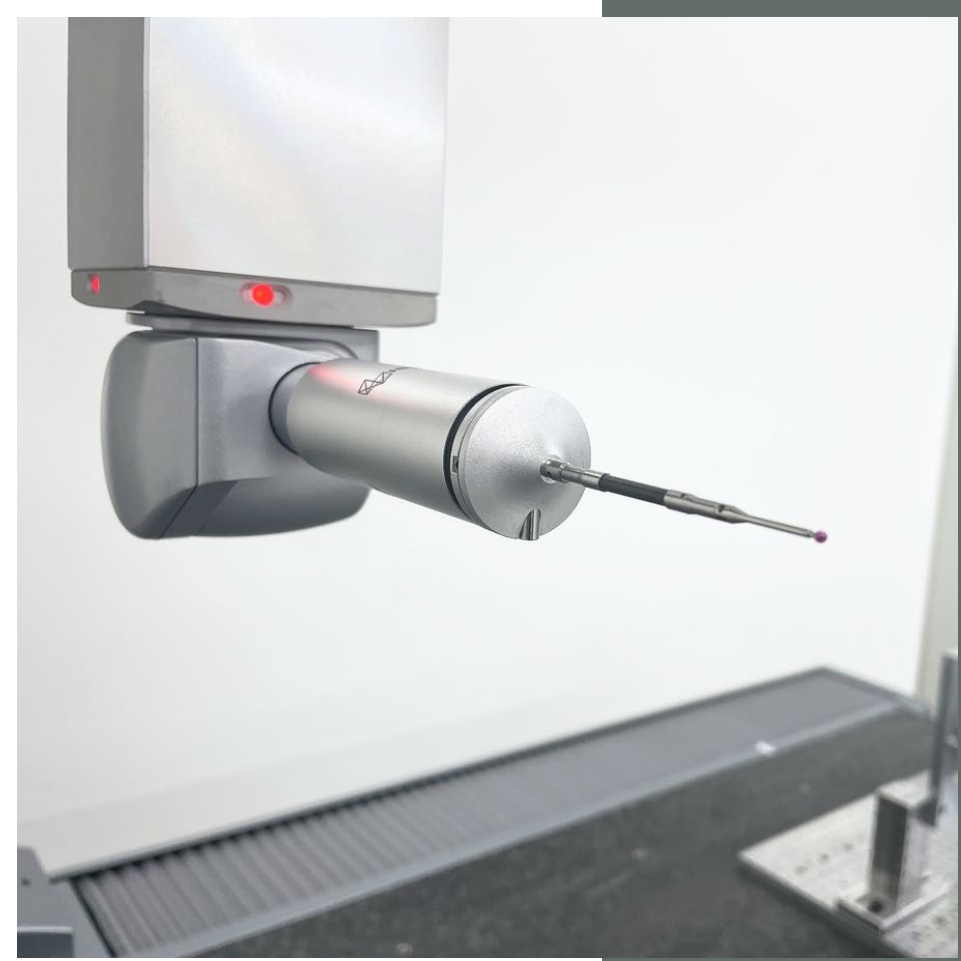
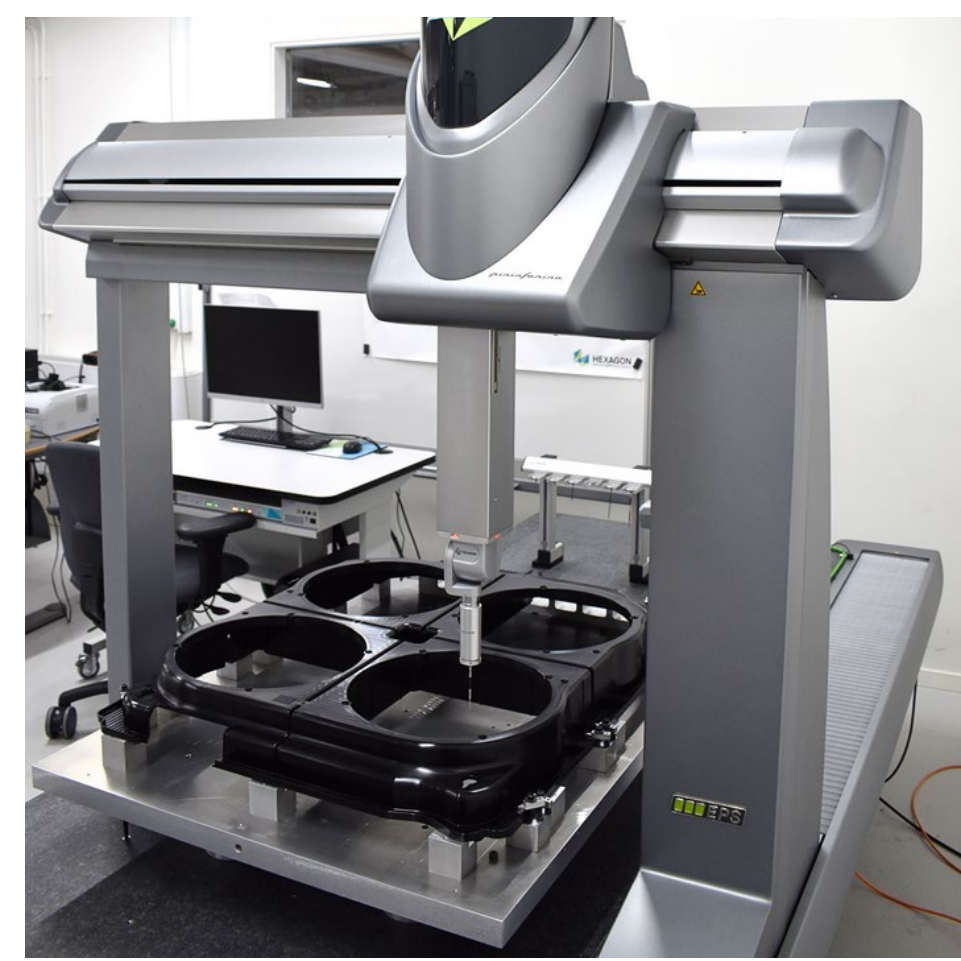
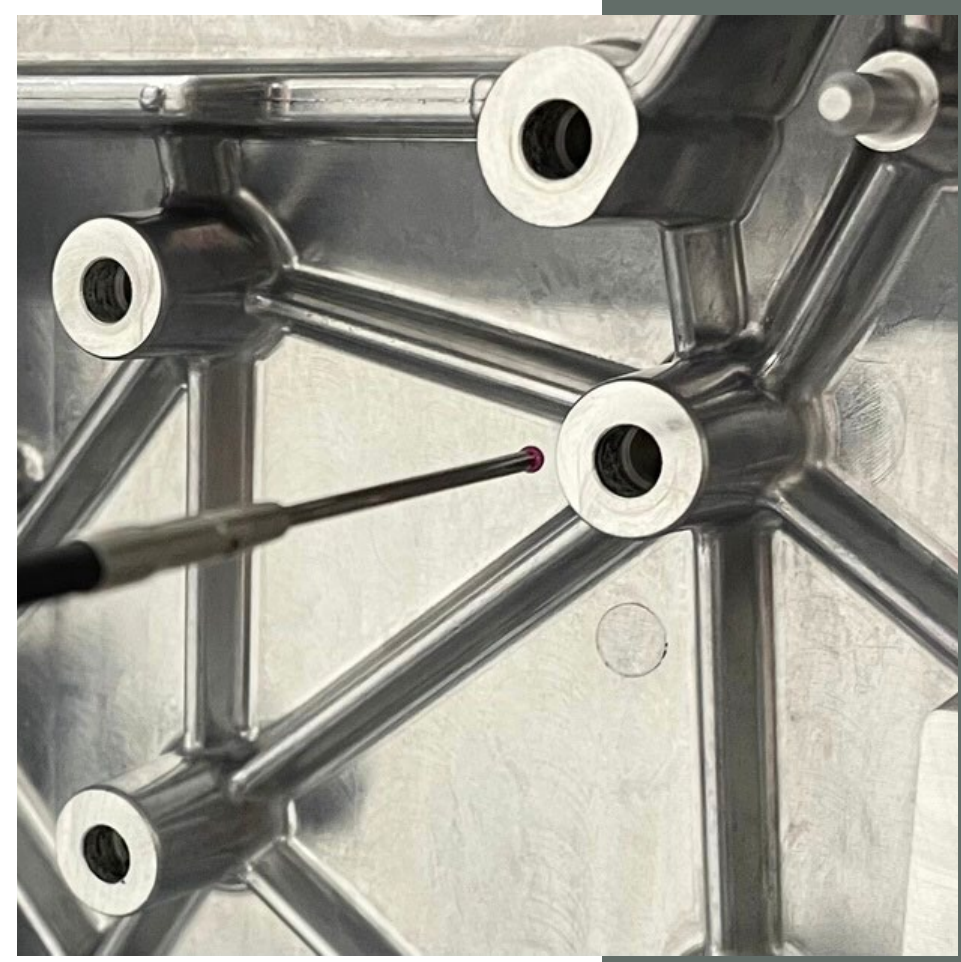
- Sizes up to 1.300 mm x 800 mm x 700 mm
- Density from 15 to 100 g/l.
- Wall thicknesses from 6 to 100 mm



MEASUREMENT & VERIFICATION

Several methods:

- 3D measuring (CMM)
- Surface Scanning (colour mapping)
- Leak testing
- X-ray / CT scanning
- Surface crack detection (penetration test)



ASSEMBLY & PACKING

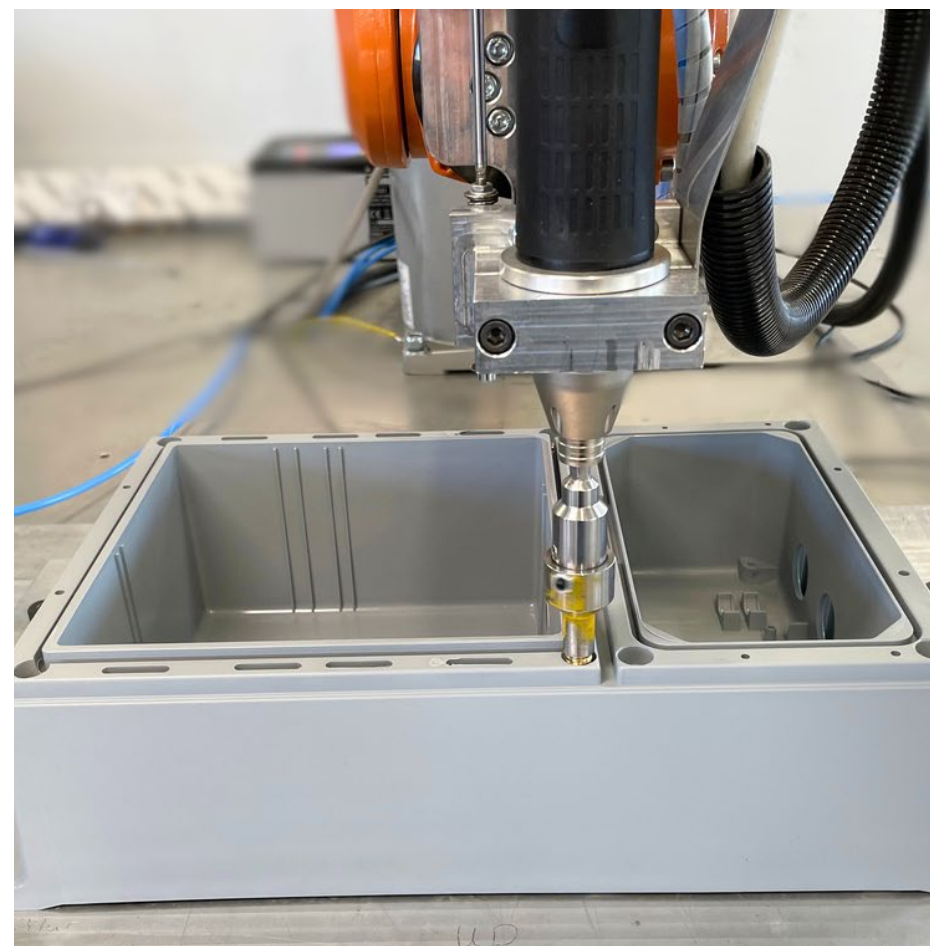
Sub assembly of few parts/components.

Assembly and finalize end-product.

Automated complex assembly process.

Manual assembly.

Packing/labelling.



FUNCTIONAL PROTOTYPES

We manufacture prototypes in the right material and right process.

PROPERTIES LIKE END-PRODUCTS

- Fully functional
- Properties like end-products
- Serial material & Serial process

AUTHENTIC TESTING

- Prototypes for authentic test-results and verification
- Design modifications can be done before investing in large scale serial production

USE FOR START-UP PRODUCTION

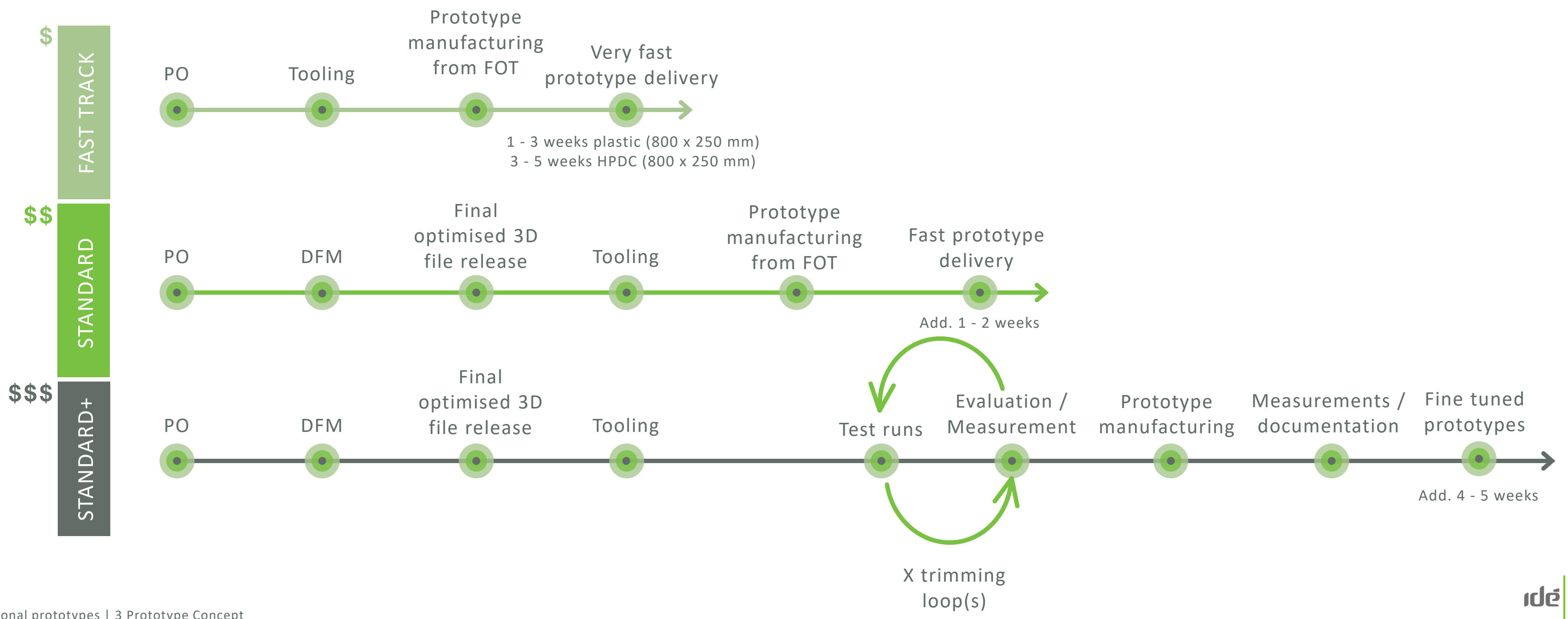
- Design verification
- Prototype - A, B & C samples
- Function testing (e.g. crash test)
- Run in of production/assembly lines etc.
- Marketing purposes / market feedback

SOFT TOOLING

- Faster and cheaper than serial tooling
- Injection moulded prototypes in aluminium tools
- HPDC prototypes in soft steel tools designed for prototyping

3 PROTOTYPE CONCEPTS

We offer various prototype concepts to support you in terms of time, costs and quality - manufactured directly in the right material and in the right process.



RAPID PROTOTYPING

Various options, when you only need a few prototypes.

FAST TRACK

- 3D file ready for tooling
- Right material and right process
- Extra short lead time
- Dimensions: 300 mm x 250 mm

HPDC delivery: 3 - 5 weeks

Injection moulding delivery: 1 - 3 weeks

MACHINED FROM BLOCK

- Light metal prototypes
- Machined directly from block
- Complicated parts
- Fine tolerances

Delivery 1 - 3 weeks

3D PRINT

Plastic:

- SLS - Function parts
- SLA - Fine tolerances
- FDM

Aluminium:

- 3D print aluminium

Delivery 1 - 5 days

SUSTAINABILITY & QUALITY

ISO 14001
ISO 9001
ISO 50001



Recycled plastic
in production –
saves up to 75%
CO2e/kg



Recycle our CNC
aluminium chips



Geothermal
cooling and
energy and
re-use heating



Secondary
aluminium alloys
- saves up to 90%
CO2e/kg

IN-HOUSE COMPOUNDING

We value sustainability and as a plastic manufacturer, we recycle plastic again and again.

We grind and compound surplus plastics and old items.

Mechanical properties are tested in our in-house lab:

- Impact test
- Tensile test
- Melt index
- UV test
- UL94 test



IN-HOUSE COMPOUNDING

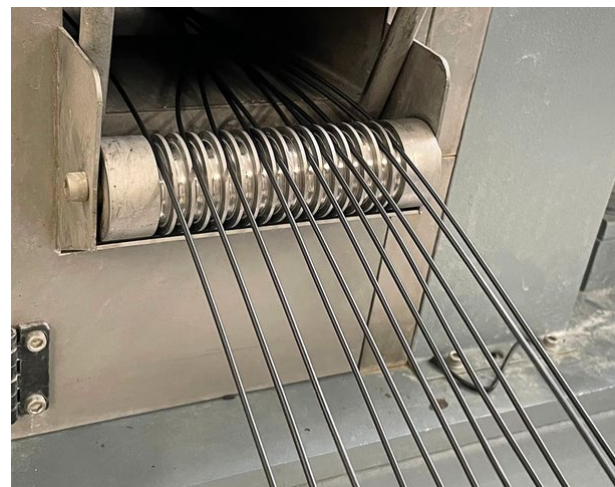
Recycling material in production



In-house laboratory for verifying properties



Side feeder for fibre



Twin screw extrusion machines



Side feeder for talcum powder



In-house plastic compounding incl. additives



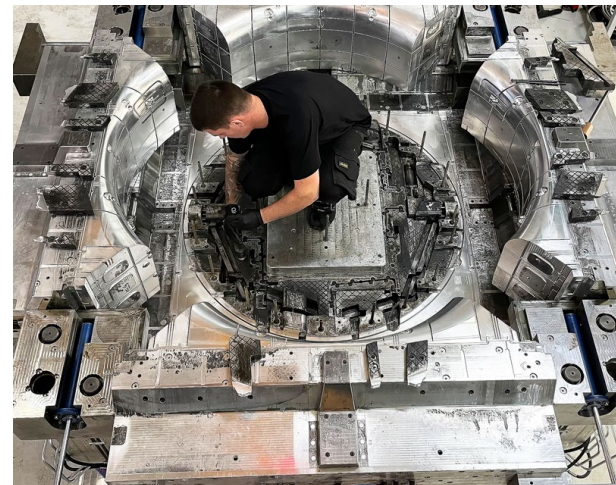
Gravimetric dosing of additives



New plastic granules with desired properties

SUMMARY

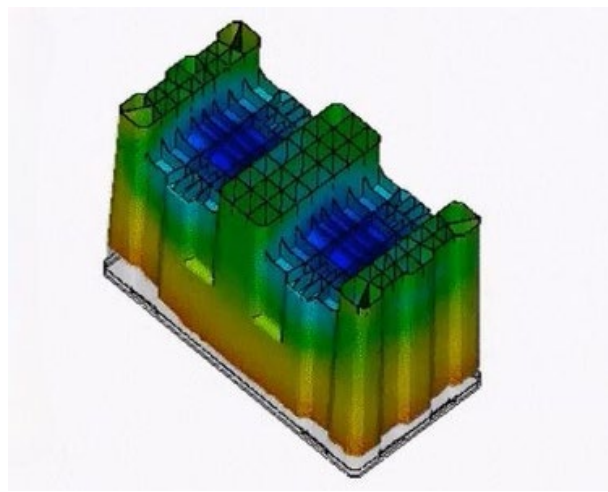
Functional prototypes in the right material and right process



On-demand manufacturing



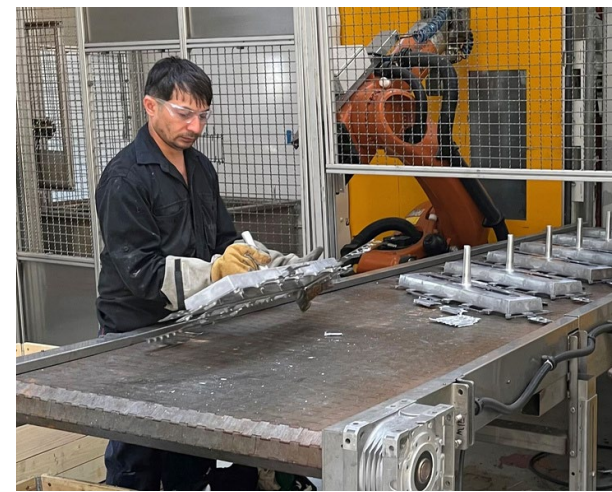
Short time to market



Plastic
Light metal
EPS/EPP



One-stop shop



All competencies in-house



Partner from idea to product



High flexibility

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Extended information on next slides.

MACHINES FOR TOOLING

- YCM DCV2018A, 5-axis (X2200mm x Y2400mm x Z762mm)
- Makino Slim3n, 3-axis (X500mm x Y396mm x Z400mm)
- 3x Makino Slim3n, 3-axis (X450mm x Y324mm x Z400)
- Makino F5, 3-axis (X840mm x Y490mm x Z600mm)
- Makino F3, 3-axis (X570 x Y490mm x Z600mm)
- Makino F9, 3-axis (X1600mm x Y800mm x Z900mm)
- Makino EDAF3 Sinker EDM (X450mm x Y350 x Z350)
- Makino V90S, 5-axis (X2200 mm x Y1500 mm x Z700 mm)
- Haas UMC-750, 5-axis (X558mm x Y488mm x Z508mm)
- Haas VF9, 3-axis (X2134mm x Y1016mm x Z762mm)
- Doosan NHP 8000, 4-axis (X1400mm x Y1200mm x Z1370mm)
- Doosan DHF 8000, 5-axis (X1450mm x Y1200mm x Z1500mm)



MACHINES FOR TOOLING

- Doosan NHP 8000, 4-axis (X1400mm x Y1200mm x Z1370mm)
- Doosan DHF 8000, 5-axis (X1450mm x Y1200mm x Z1500mm)
- Trimill VU4021, 6-axis (X4000mm x Y2100mm x Z1500mm)
- Rödgers RFM 1000, 3-axis (X1000mm x Y800mm x Z500mm)
- Rödgers RFM 760, 3-axis (X760mm x Y550mm x Z300mm)
- Rödgers RXP 601, 5-axis (X540mm x Y635mm x Z400mm)
- Rödgers RXU 1201, 5-axis (X1000mm x Y1050 x Z600)
- 2x Rödgers RXP 800, 3-axis (X800mm x Y600mm x Z460mm)
- Mazak FJV-20, 3-axis (X560mm x Y410mm x Z410mm)
- Sandstorm glassblastmaschine
- SODICH wire sparks
- SODICH spark erosion



INJECTION MOULDING MACHINES

- 6 T BOY
- 35 T Demag x 3
- 40 T Haitian/Zhafir
- 50 T Demag x 3
- 60 T Haitian/Zhafir x 2
- 60 T Zeres
- 75 T Demag
- 80 T Demag x 2
- 90 T Haitian/Zhafir
- 100 T Haitian/Zhafir
- 100 T Demag x 3
- 120 T Haitian/Zhafir x 2
- 120 T Demag
- 125/2K Demag
- 150 T Haitian/Zhafir
- 150 T Zeres
- 160 T Demag
- 210 T Demag
- 230 T Haitian/Zhafir
- 250 T Demag
- 280 T Demag
- 350 T Demag x 2
- 360 T Haitian/Zhafir x 2
- 380 T Haitian/Zhafir
- 420 T Demag x 3
- 450 T Haitian/Zhafir x 3
- 450 T Demag
- 500 T Demag
- 550 T Haitian/Zhafir x 3
- 650 T Demag
- 750 T Haitian/Zhafir
- 800 T Demag
- 900 T Haitian/Zhafir x 2
- 1000 T Demag
- 2000 T Demag
- 2100 T Haitian/Zhafir
- 2700 T Demag
- 4000 T Haitian/Zhafir

HPDC MACHINES

- W125 125T Frech (hot chamber)
- 350T Itaipresse (cold chamber)
- 500T Frech (cold chamber)
- 1.350T Itaipresse (cold chamber)

SHAPE MOULDING MACHINES EPS/EPP

- EPS Hirsch HS 1300
- EPS Hirsch HS 1350
- EPP/EPS Kurtz K1214 HP5
- EPP shape moulding machine Sutuan x 2

MILLING MACHINES

- Mazak VTC – 800/30SR, 5-axis, x2
- Makino a61nx, 4-axis
- Haas UMC-500SS, 5-axis
- Makino a40SE, 3-axis, x2



3 PROTOTYPE CONCEPTS

We offer various prototype concepts to support you in terms of time, costs and quality - manufactured directly in the right material and in the right

	DESCRIPTION	ADVANTAGES	DISADVANTAGES
FAST TRACK	<ul style="list-style-type: none"> • Take customer 3D file directly into tool manufacturing (Customer file includes draft angles etc.) • Only design optimization needed to be able to manufacture is made • Prototypes manufactured from first out of tool (FOT) 	<ul style="list-style-type: none"> • Extremely fast prototypes <ul style="list-style-type: none"> ◦ 1-3 weeks – plastics ◦ 3-5 weeks – HPDC • Low investment costs 	<ul style="list-style-type: none"> • No design for manufacturing (DFM)
STANDARD	<ul style="list-style-type: none"> • DFM included • Technical consulting based on mould flow simulation • Final 3D file released • Prototypes manufactured from first out of tool (FOT) • Agreed measuring documents • Optimizations (more test runs) may be offered later 	<ul style="list-style-type: none"> • Very fast prototypes • Design optimized for serial production • Verify if deviations could be acceptable <ul style="list-style-type: none"> ◦ to keep serial cost low (avoid over-specification) 	<ul style="list-style-type: none"> • Some deviations to specifications/tolerances may occur
STANDARD+	<ul style="list-style-type: none"> • DFM included • Technical consulting based on mould flow simulation • More test-runs set up needed to secure tolerances • Manufacturing of prototypes after several test runs • Agreed measuring documents 	<ul style="list-style-type: none"> • Few or no deviations to specifications • Design optimised for serial production 	<ul style="list-style-type: none"> • Longer lead time • More test runs (costs) • Higher tooling costs

PLASTIC MATERIALS

- PS - Impact-modified polystyrene (HIPS)
- ABS - Acrylonitrile-butadiene-styrene
- PC/ABS
- PP - Polypropylene
- PA6 - Polyamide
- POM - Polyoxymethylene
- TPE - Thermoplastic elastomer

HPDC LIGHT METAL ALLOYS

Aluminium:

- EN AC 44300 AlSi12 (Fe) (a)
- EN AC 46000 AlSi9Cu3
- EN AC 47100 AlSi12Cu1 (Fe)
- EN AC 42100 - AlSi7Mg0,3

Magnesium:

- Magnesium AZ 91

Zinc:

- ZA 8 ZnAl8Cu1

Duralcan

Aluminium alloy with high durability



EPS/EPP MATERIALS

EPS

- White
 - 25 gr/L
 - 50 gr/L
 - 75 gr/L
- Light grey
 - 25 gr/L
 - 50 gr/L
 - 75 gr/L

EPP

- Black
 - 40 gr/L
 - 60 gr/L
 - 80gr/L
- Recycled black
 - 40 gr/L
 - 60 gr/L
 - 80gr/L