



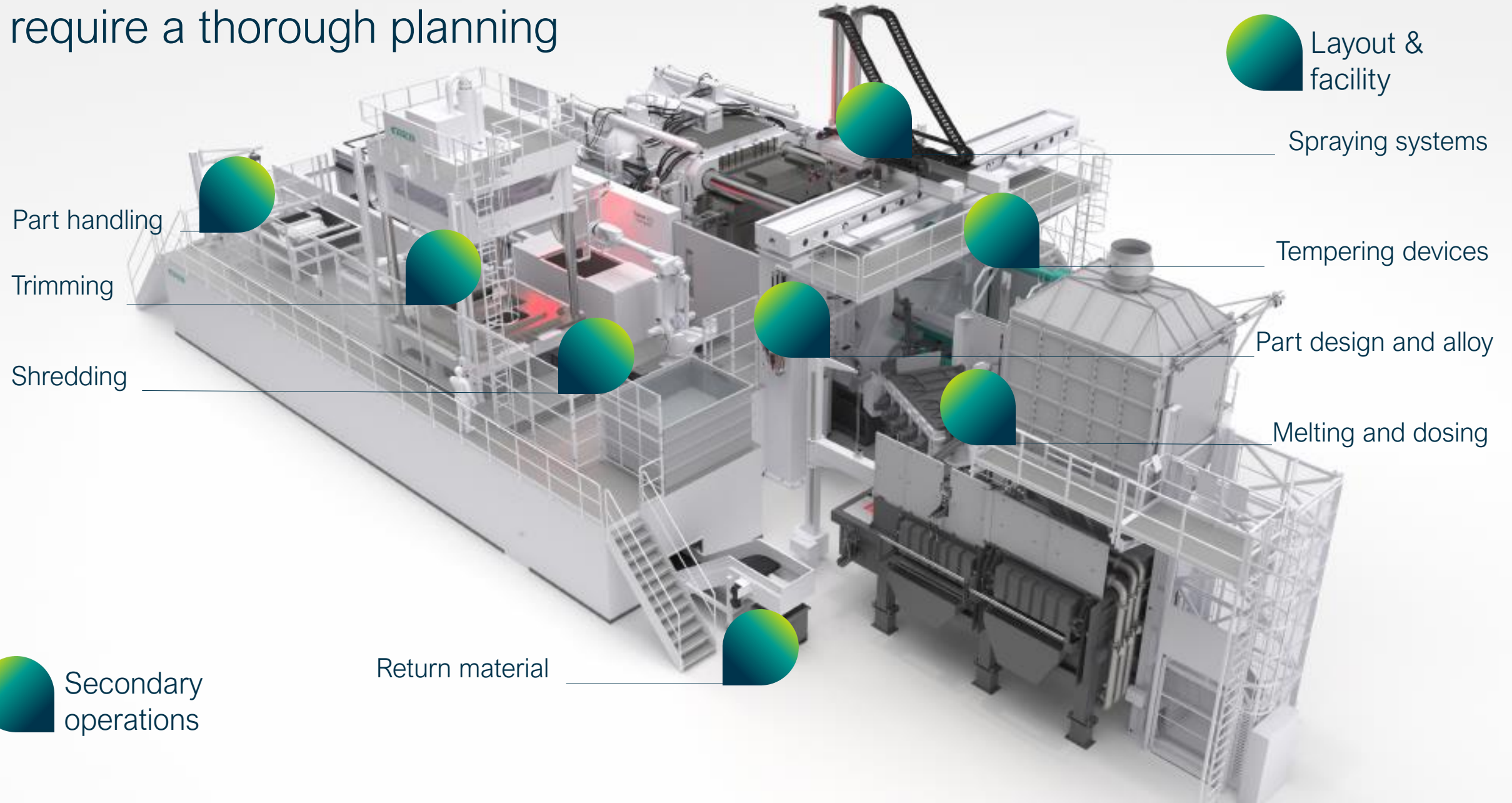
Large die-casting cells for megacasting production in the spotlight

Questions?

Contact us:

largecells.events@buhlergroup.com

Larger die-casting cells require a thorough planning



Part design and alloy specification in the focus

Casting structural parts without heat treatment is crucial

Design parts for die-casting process

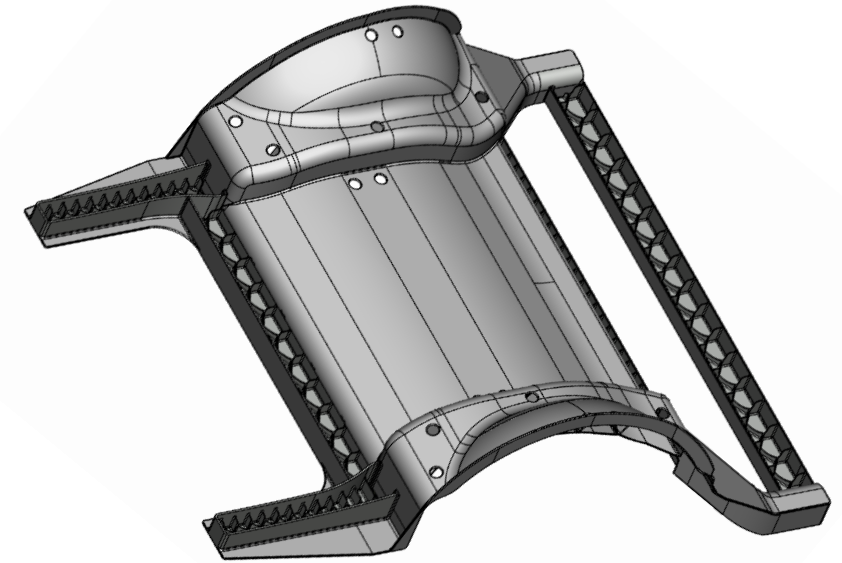
- Wall thickness 2-5mm, smart rib structure
- Do not copy sheet metal design
- Casting design from scratch is mandatory

Avoid heat treatment

- Mechanical properties can be reached "as cast"

Use self hardening alloy compositions

- AlSi7MnMg and similar types
- Other types possible, for example AlMg4Fe2



Composition							
Si	Fe	Cu	Mn	Mg	Zn	Ti	Sr
6.5-7.5	0.15-0.2	0.02	0.45-0.55	0.15-0.25	0.03	0.1	0.03

Mechanical properties			
As cast	Yield strength	Tensile strength	Elongation
✓	135N/mm2	200N/mm2	8%

Building requirements

Separate die-casting building from secondary operations building

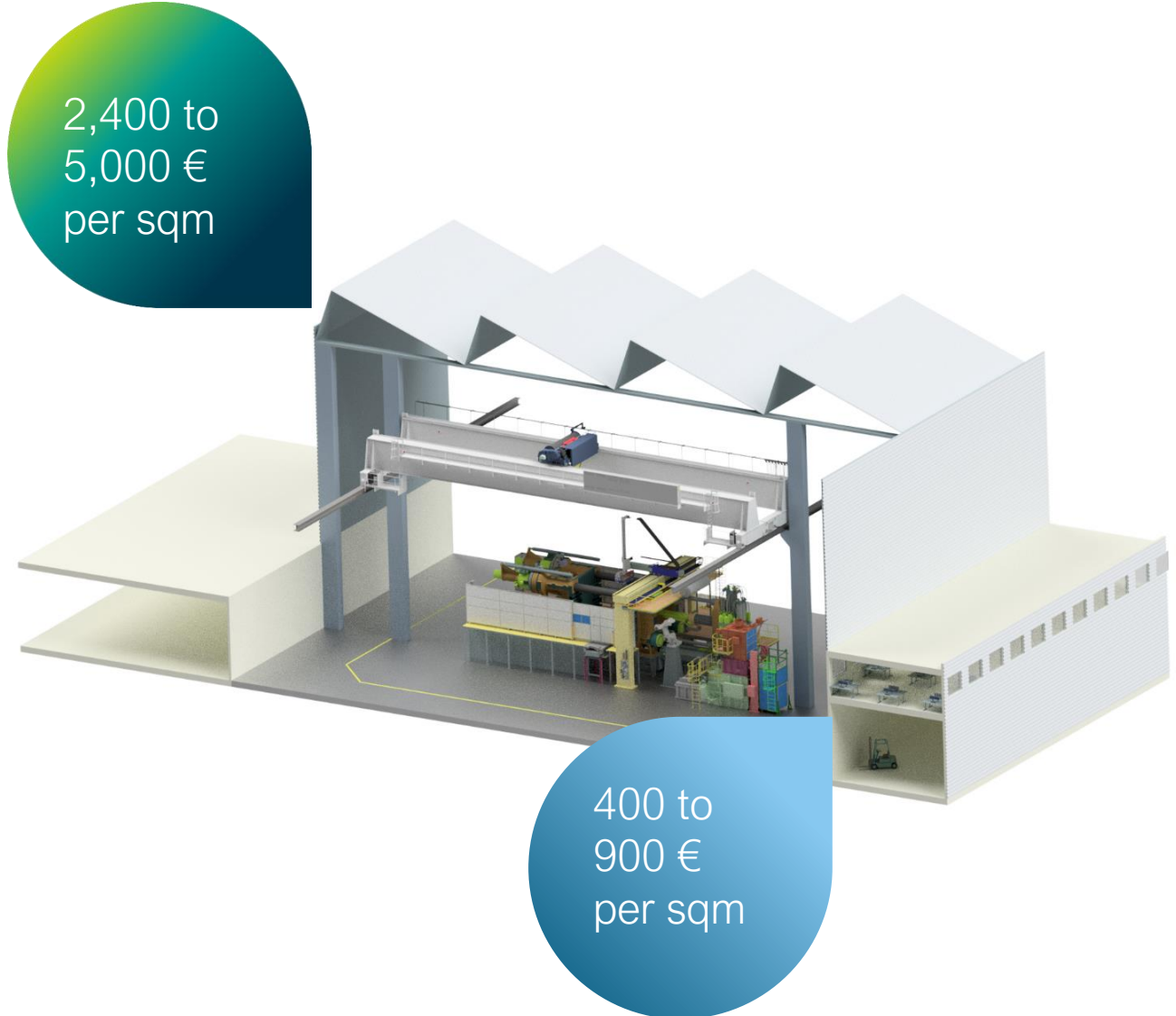
Heavy industrial building

Die casting	61,000 kN	84,000 kN
Crane hook height	13 m	15 m
Foundry facility height	18 m	20 m
Crane lifting weight	125 tons	160 tons
Foundation for	400 tons	600 tons
Required space (including melting furnace)	23 m x 23 m	30 m x 30 m

Light industrial building for secondary operations

Facility height	8 m
Crane lifting weight	10 to 30 tons
Crane hook height	6m
Foundation for	25 tons

2,400 to
5,000 €
per sqm



400 to
900 €
per sqm

Spraying process

Twin spray unit for shorter cycle time

Spray device 1	30 sec for movable platen
Spray device 2	20 sec for fixed platen
Total spray time	30 seconds

Microspraying
fast, stable process,
energy efficient

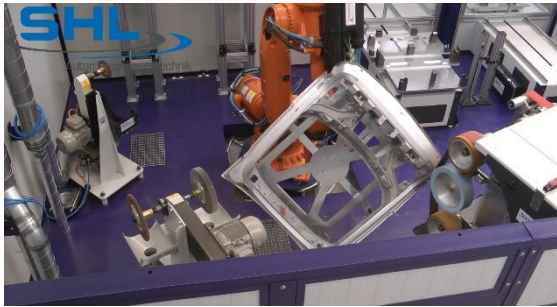
Linear or robot
range, speed, tool
change

Thermal balance is crucial for microspraying
Tempering circuits: Up to 100 --> use multi zone devices
Monitoring: measurement of flow and temperature difference recommended



Secondary operations

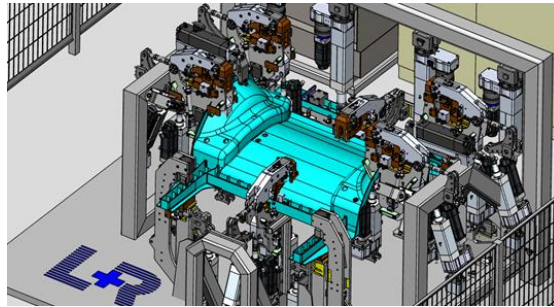
Value stream up to body shop



Deburring

Fully automated

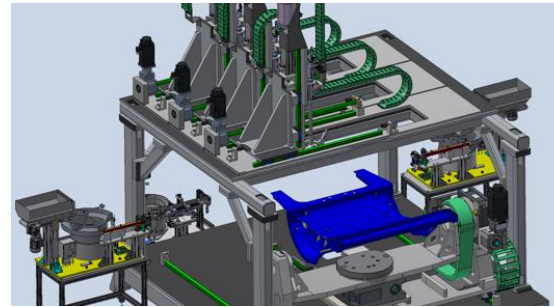
- Smooth edges
- Contact surface treatment



Straightening

Measuring, straightening

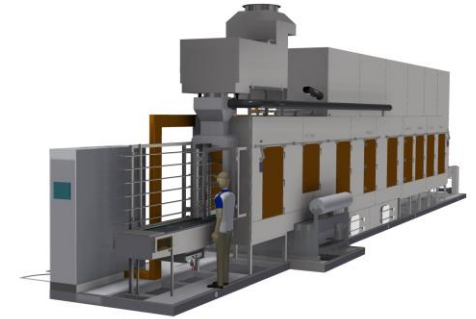
- Incl. traceability
- Adjusting final shape



Machining / assembly

1st machining, then assembly

- Rivets, press nuts, heli coil
- All kind of assembly



Part cleaning

Before handover to body shop

- According to cleanliness levels
- Coating, if required



Larger die-casting cells

Important process steps in the focus

Part handling
No more manual
operation

Shredding
Payback <2 years

Trimming
Press vs. laser

Secondary operations
To be considered in
planning

Return material
Short loop
to melting

Layout &
Facility
Split foundry from 2nd
operations

Spraying systems
Twin spray device

Tempering devices
Multi zone devices

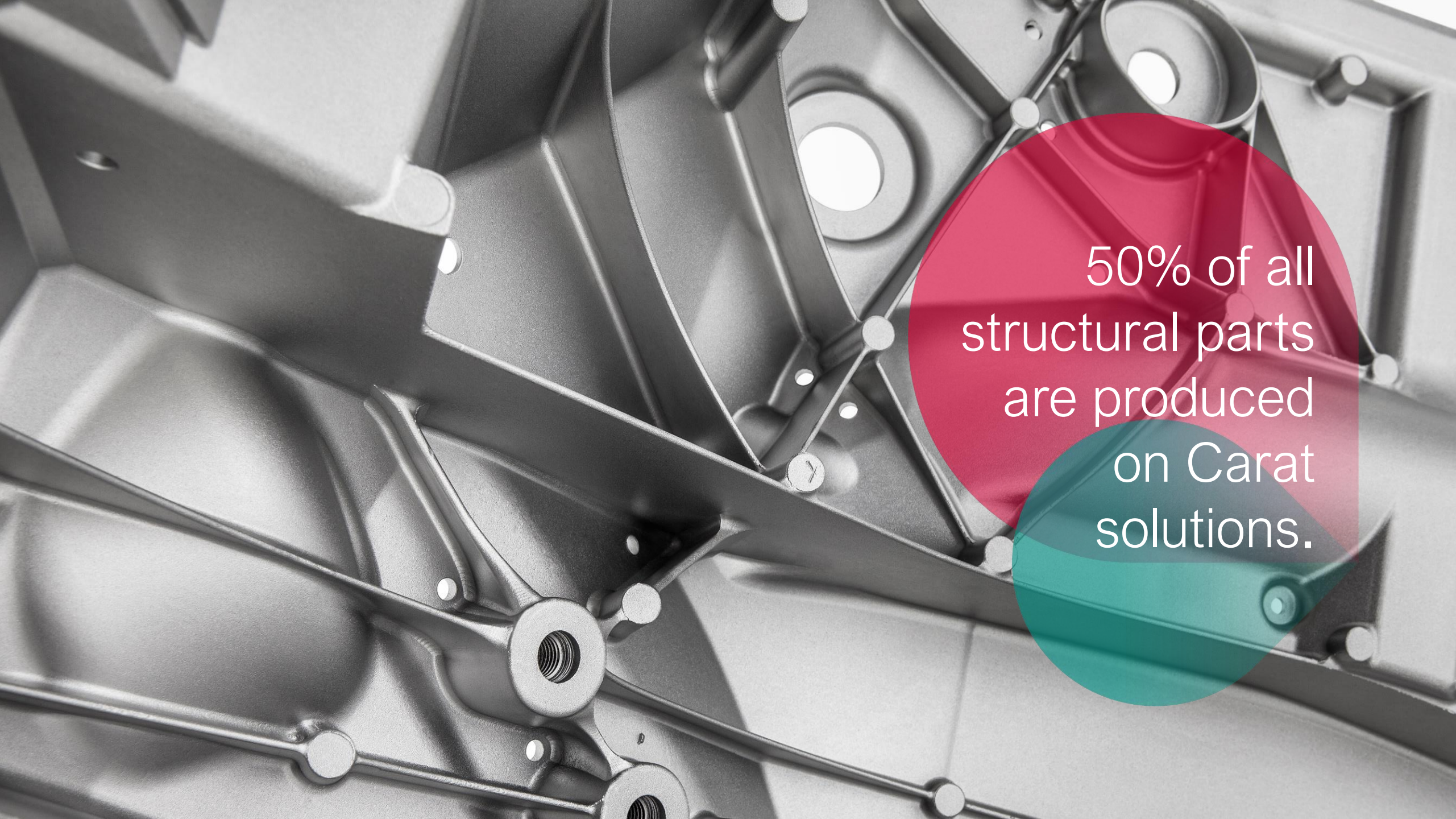
Part design and alloy
No heat treatment

Melting and dosing
Melting furnace
integrated in cell

Together with partners we support the
complete value stream from the ingot
to the body shop!

A large industrial machine, possibly a CNC lathe or mill, is shown in a factory setting. The machine is primarily blue and white, with various pipes, cables, and mechanical components visible. A person in a dark shirt and pants stands next to the machine, providing a sense of scale. The background shows a large industrial space with high ceilings, structural beams, and other equipment. A red circular graphic is overlaid on the left side of the image, containing the text.

800 Carat
solutions in
action around
the globe



50% of all
structural parts
are produced
on Carat
solutions.

Bühler unique shot-control system for consistent & high quality

Bühler SC **real-time** and **closed-loop** shot control:

- 210 bar system pressure for highest dynamics for optimum filling & process control.
- Reduced masses for high acceleration & fast deceleration ramps.
- Bühler real-time control allows maximum process consistency for stable shot weights up to 236kg.
- Independent from external influences (e.g. dosing fluctuations).



Bühler shot control combined with DataView's intuitive operation for highest reproducibility, flexibility and accuracy

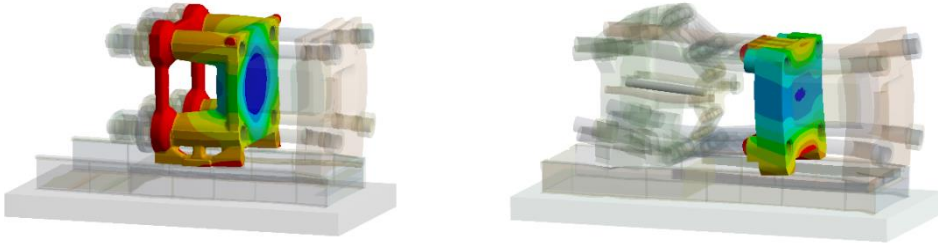
- 20 program points in injection curve settings.
- Availability of 1st phase optimization algorithm to prevent porosity.
- High process flexibility due to free choice of filling and final pressure profile.
- All process relevant data available and stored.
- Integrated peripherals in separate masks.
- Individual and customized diagnosis diagrams for process optimization.



Two-platen technology

Superior for structural castings

- Patented and stiffened platen design
25% less platen deflection, high degree of dimensional accuracy of the castings
- Uniform locking force application
7% more contact pressure on die side, no splashing, compensation of “unparallel” dies



- Highest reliability and reproducibility
lowest costs per part produced
- 10% shorter footprint



Better part
quality

Less
machining
time

Lower
production
costs

A photograph of two men in a factory setting, working on a large, complex industrial machine. One man, wearing a teal and black shirt, stands with his arms crossed, looking at a laptop held by the other man, who is wearing a dark blue shirt. They are positioned in front of a large, grey, cylindrical machine component. The machine is surrounded by a complex network of metal frames, pipes, and cables. The background shows a typical industrial environment with yellow walls and various equipment. A large, semi-transparent red circle is overlaid on the right side of the image, containing white text. The overall scene conveys a sense of modern industrial technology and collaborative work.

Designed with usability, maintainability and uptime in mind

Easy and safe
access with new
platform system.

A global team effort Making big things possible

Switzerland



China



USA



Bühler Die Casting

A futuristic, illuminated display of a car body made of liquid metal, representing die casting technology. The car is encased in a glowing blue, hexagonal-patterned structure, set against a dark background with bright, glowing light sources.

Bühler Die Casting is part of Bühler's Advanced Materials business. As a partner for the mobility industry our solutions help move 1 billion people every day.

We offer efficient solutions for aluminum and magnesium lightweight die casting. Based on your individual needs we customize solutions, offer integrated project handling, top quality, fast response times, and global availability - from a single die-casting machine to a greenfield plant.

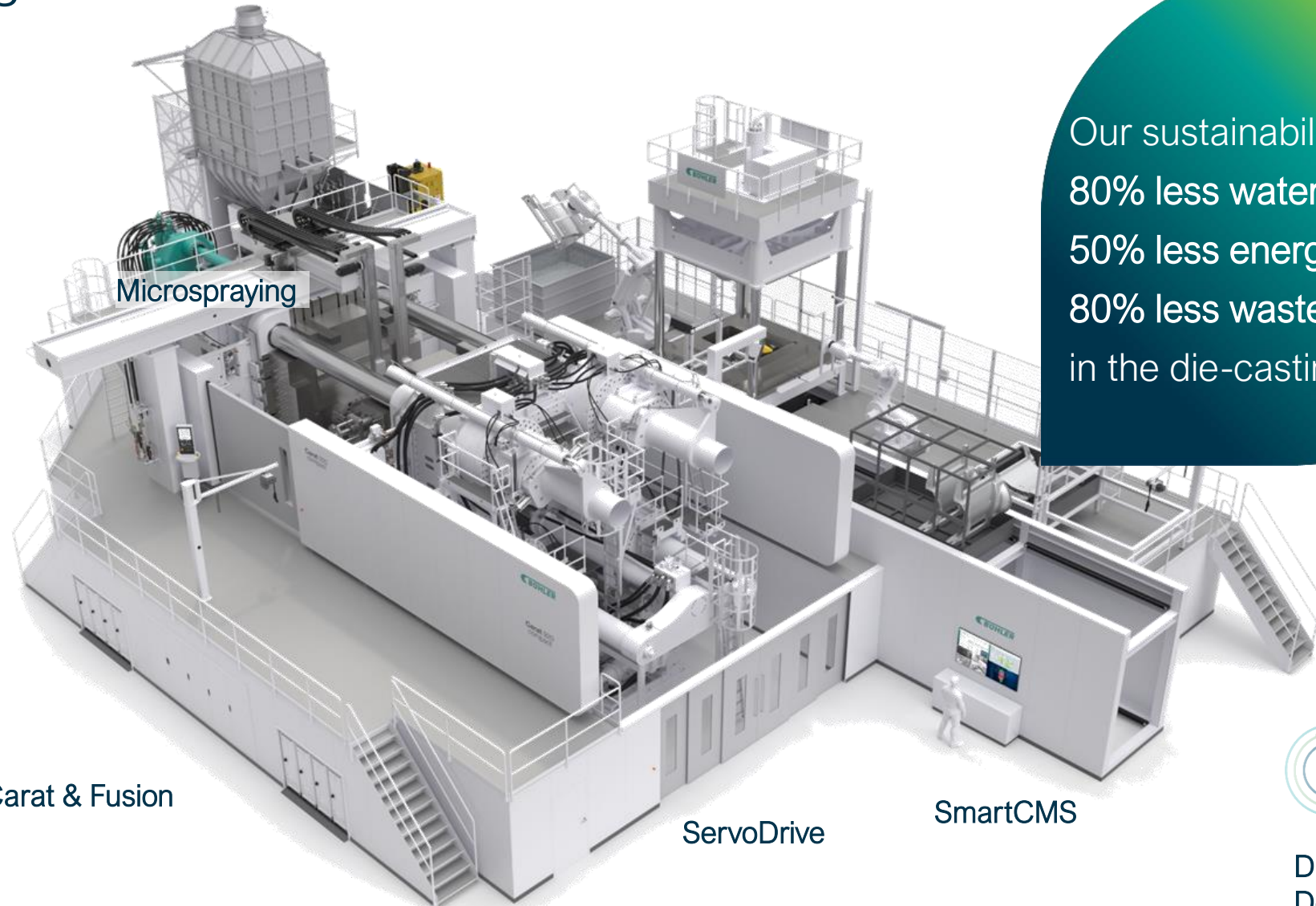
Our vision for a successful and sustainable future for die casting.

We are working towards...

- 40%
Cycle time

24/7
Availability

0%
Scrap



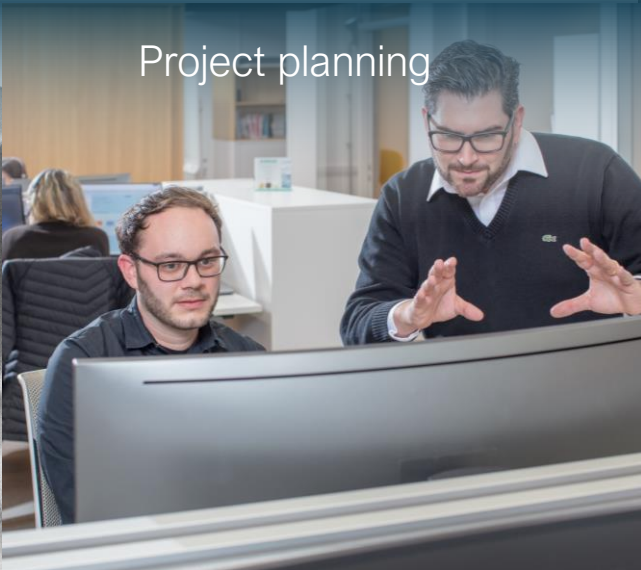
Our sustainability targets:
80% less water
50% less energy
80% less waste
in the die-casting cell



Dashboard &
Downtime Analysis



Part & die design



Project planning

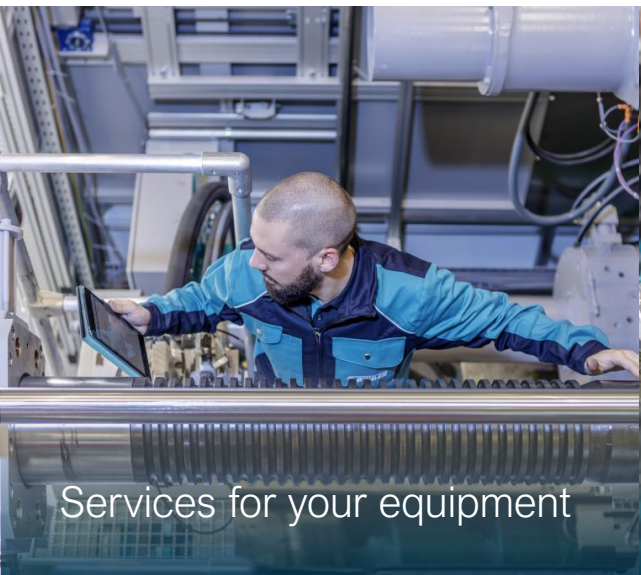


Die-casting solutions up to
greenfield projects



Integration in your factory

From your idea for a part up to the die-casting solution and its service –
Bühler is your partner for all die-casting needs.



Services for your equipment



Training & trials



OEE improvement



Remanufacturing & upgrades

A unique global presence





INNOVATIONS FOR A BETTER WORLD