KOVOLIS HEDVIKOV

Aluminium High Pressure Die Cast foundry

Company presentation

October 2025

KOVOLIS HEDVIKOV

1816 – 2016

Aluminium High Pressure Die Cast foundry

One of the largest, family owned, HPDC foundry in the **Czech Republic**

Engineering (design & development)	**~ 80 mil € / 2 billion CZK annual sales**
Tool shop	**~ 12.000 tons Al annual production**
Aluminium die cast foundry	**~ 800 employees**
Mechanical machining	
Other services (FSW, assembly,..)	

History

Long tradition…

1816	foundation (iron works)
1930	**first press machines**
1945	Al alloy specialization after World War II
1992	privatization, Metall Production
1994	KOVOLIS HEDVIKOV Ltd (formation)
1996	**KOVOLIS HEDVIKOV, share co. (transformation)**
1996	**machining shop establishment**
2006	2nd tool shop acquisition
2011	**new foundry opening**
2017	ownership structure change
2020	**machining facility extension**

Key information

Production settled in the Czech Republic

Worldwide supplies to:

- Europe (90%)
- USA – ZF CVCS (Wabco), Garrett Motion, Stellantis
- Brazil – ZF CVCS (Wabco), Stellantis
- Argentina – PSA
- Japan, India – Garrett Motion ZF CVCS (Wabco)

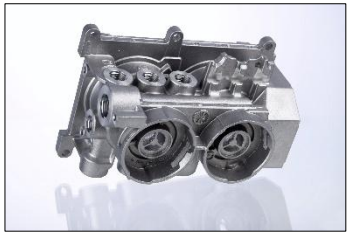
Automotive focus

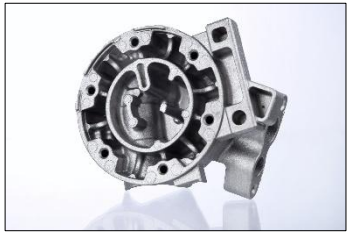
- certification **IATF 16949 + EN ISO 14001**
  TISAX (information security), heading for: ISO 45001 (safety)
- Components for:

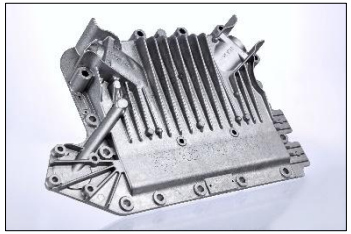
- **Powertrain**
- **Brake Systems**
- **Thermal Control**
- **Turbo Chargers**
- **Drive Systems**
- **Brackets**
- **Electronic**

Customer‘s production portfolio - automotive focus





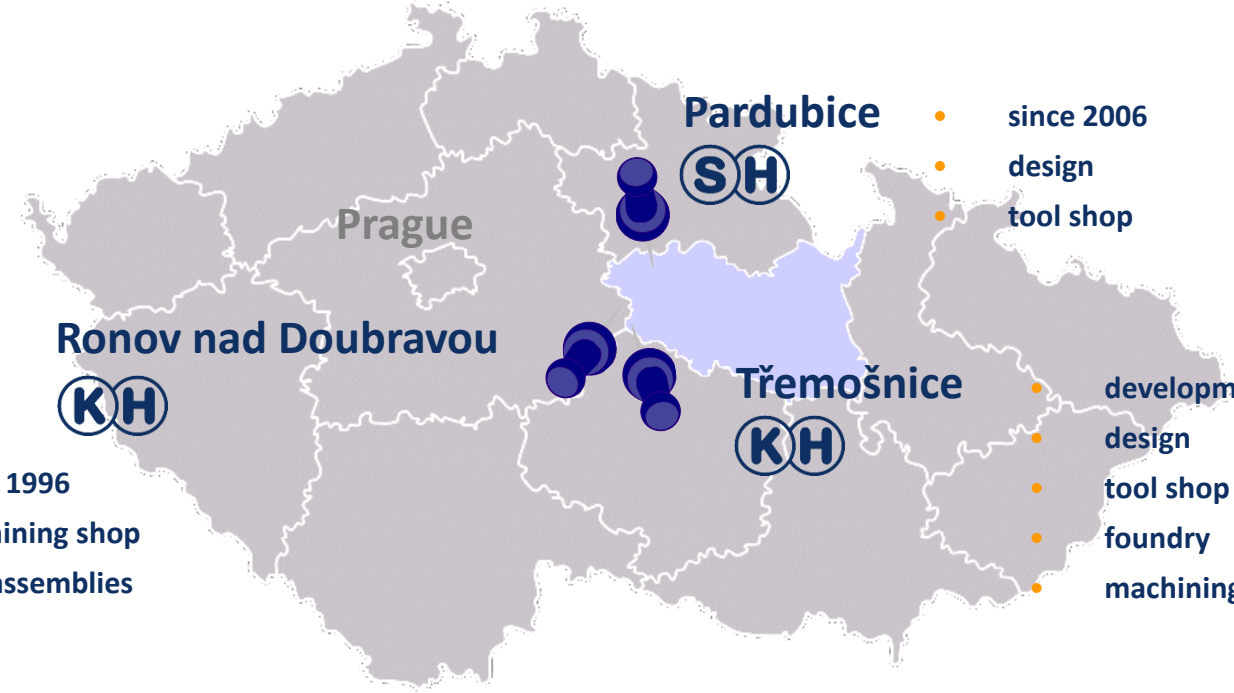







Foot print, production sites

Localized in the middle of the Czech Republic



- since 1996
- machining shop
- sub-assemblies

- since 2006
- design
- tool shop

- development
- design
- tool shop
- foundry
- machining shop

Design and tool making

Design department

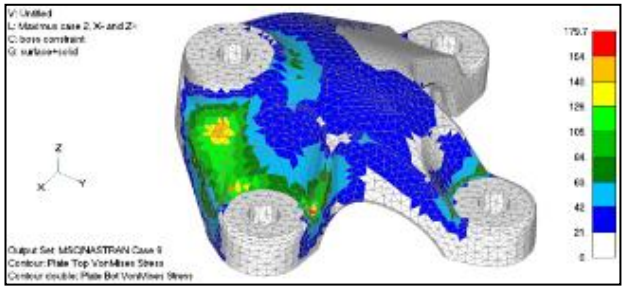
18 designers (5 designers with university degree)

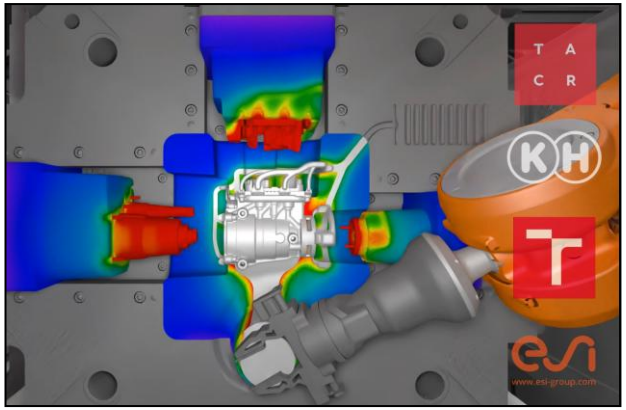
- 11 designers with DFM ability
- 14 designers with die design ability
- 16 designers with trimming tool design ability
- 16 designers with fixture design ability

CAD software – SolidWorks (17 designers), NX Unigraphics (2 designers)

PLM software – TeamCenter from Siemens (all designers)

Simulation software – casting simulation software ProCast (5 designers)





Tools shops

- two toolshops (one in same location as foundry, other 30 km from foundry location)
- more than 100 moulds annualy produced in-house
- die modification, repairs, maintenance

Melting shop

Good material is a basis for any next processes

Alloys
- EN AC-46000 / EN AC-AlSi9Cu3(Fe)
- EN AC-43400 / EN AC-AlSi10Mg(Fe)
- EN AC-47100 / EN AC-AlSi12Cu1(Fe)
- ADC 12
- ADC 14

10 melting furnaces
- 3 x Striko Westofen (shaft) [1.000 kg / hour]
- 1 x Marconi (shaft) [1.500 kg / hour]
- 1 x Striko Westofen (shaft) [1.500 kg / hour]
- 1 x Striko Westofen (shaft) [2.500 kg / hour]
- 1 x UVP (gas crucible) [1.000 kg / hour]
- 4 x UNO (gas crucible) [450 kg / hour]

Inspection
- 2x spectro analysis / chemical composition inspection
- 2x density index / dross test

Total melt. capa: 10t / hour

Auxiliaries
- degassing (nitrogen)

Casting shop

HPDC technology

30 press machines

- 6 x Bühler Evo 530
- 2 x Bühler Evo 660
- 4 x Toshiba 650 J-MS
- 9 x Toshiba 800 J-MS
- 6 x Bühler Evo 840
- 2 x Bühler Evo 1050
- 1x Shibaura (Toshiba) 1300R-E (Installation 12 - 2025)

Deburring

- Tumbling
- Shot blasting
- Robotic deburring

Including

- shot control (real time)
- vacuum assisted die casting
- local squeeze casting
- jet cooling
- **data matrix code marking**

all cells fully automated

- sprayer (Wollin)
- metal dosing (ladle or dosing furnace)
- extracting robot (ABB)
- automated trimming operations

Casting shop

1x Shibaura DC1300R-E (equivalent to ~ 1600T, installation 12-2025)

unique Japanese technology

Feature	Benefit
• Electric toggle clamping	• Faster, precise mold handling and higher cycle rates
• Compact design	• Saves floor space for easier facility integration
• High-capacity servo injection	• Handles large molds with power and precision
• TOSCAST-999 controller	• User-friendly UI, diagnostics, paperless operation
• Energy-efficient operation	• Reduces cycle time, power use, and CO_2 emissions
• Strong specs	• High locking force, fast injection, large casting capacity

Machining – Třemošnice and Ronov n. D.

Equipment

65x CNC centers

- **SW (Schwäbische Werkzeugmaschinen)** incl. 4 spindles / 5 axis machine
- **Chiron DZ15 (9x) + FZ15, FZ15 Ma, FZ08W**
- FANUC -T21 iFL; AkiraSeiki
- Haas VF2, VF3
- Brother, EMAG

19x CNC lathe machines (4x vertical)

- Okuma LVT, LB 250, LB 300
- Takisawa TT200, TC-200
- Index V200
- Haas TL15 / SL20
- Moriseiki NL2000SY

special dedicated machines
conventional equipment
pressure leakage tests (air drop, Helium, water)
FSW
assembly operations

Additional possibilities

- Impregnations (ext.)
- Passivation (ext.)
- Heat treatment (T5, T6)
- Pressure testing *(Helium, air-drop, under water)*
- Welding by FSW in house
- Welding by EBW *(Electron beam welding)* (ext.)
- Laser marking, DMC marking

  DMC marking direct in the casting cell => full tracebillity
- (Sub)assembly

Tooling transfers, expertise in tooling relocation

Advantages

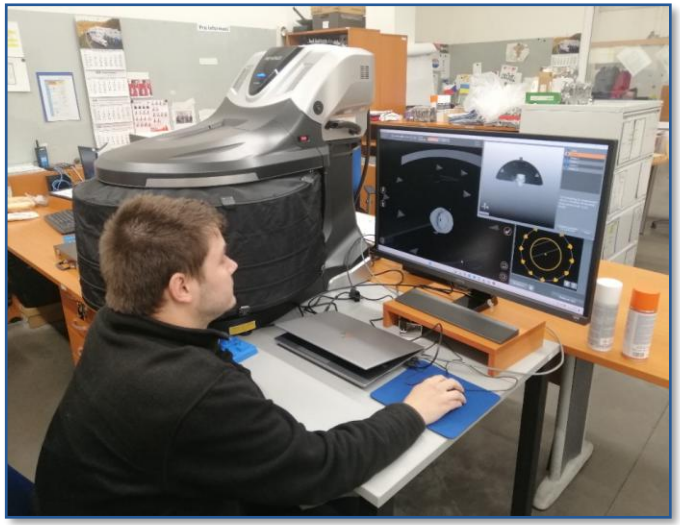
- Extensive experience in successfully transferring serial production with existing tooling from other foundries.
- In-house design department and tool shop located directly at the foundry site, ensuring smooth integration and quick problem-solving.
- Advanced **3D scanning capabilities** - enabling reverse engineering of tools when technical documentation is unavailable, including **fully automated conversion to CAD data**.
- High flexibility and rapid response during relocation and production ramp-up phases.

QRQC system in place

Inspection

- CT GE X-Cube 225 kV
- X ray Seifert 160 kV
- 10 x 3D - CMM (WENZEL LH serie)
- Optical scanner - Keyence
- profile/contour meter
- form tester
- metallurgical microscope
- tensile testing machine
- hardness tests equipment
- UV penetration test
- pressure leakage tests
- surface tension tests
- quality laboratory with in-house gauge calibration
- cleanliness laboratory and testing equipment

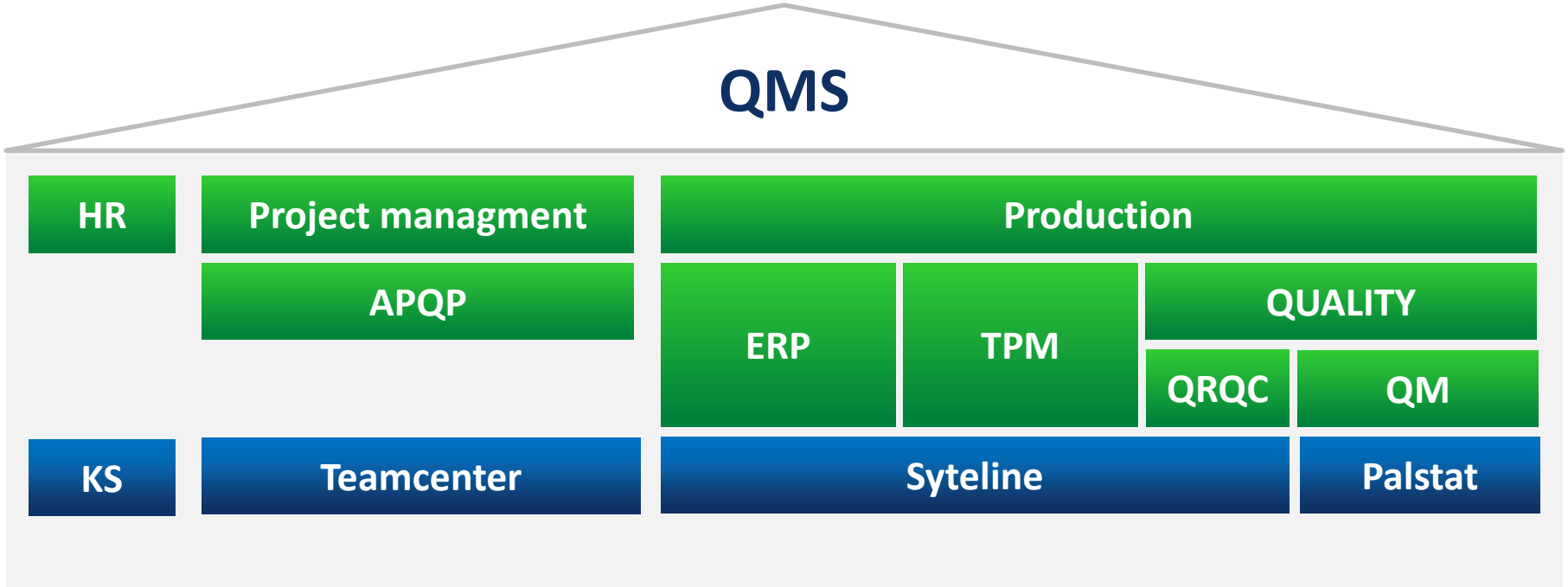
Optical scanner



- Keyence VL-700
- fully automatic conversion to CAD data
- quick comparison of samples with 3D model
- scanning tools in their sampling phase
- reverse engineering
- 2D measurement as on a profilometer

  creation of a measurement protocol

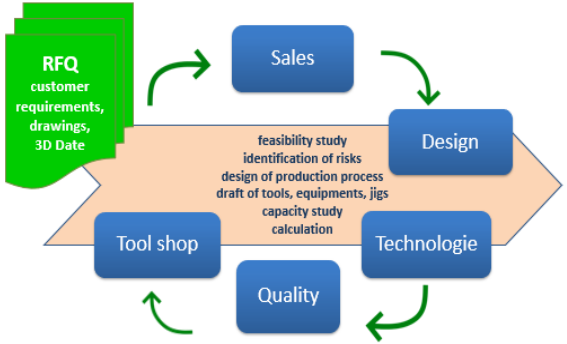
Quality Management System

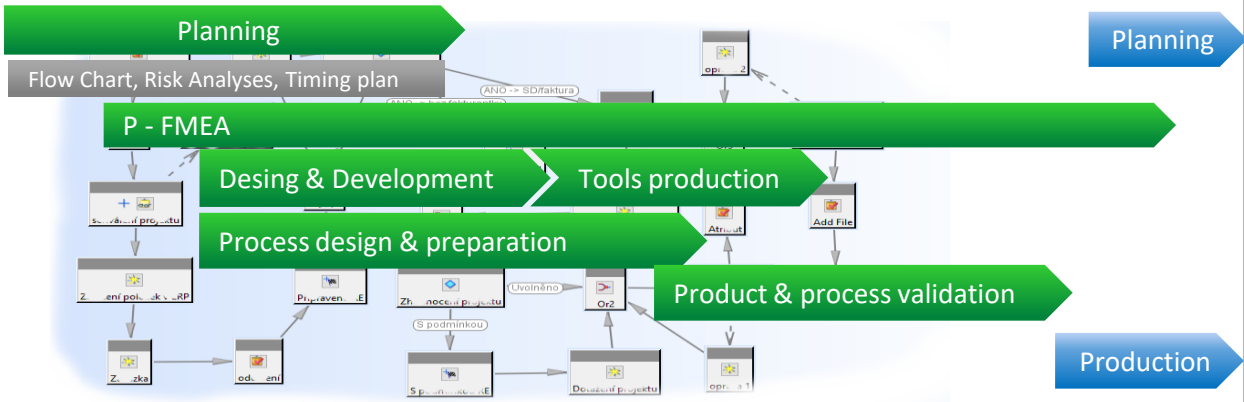


process

processing SW

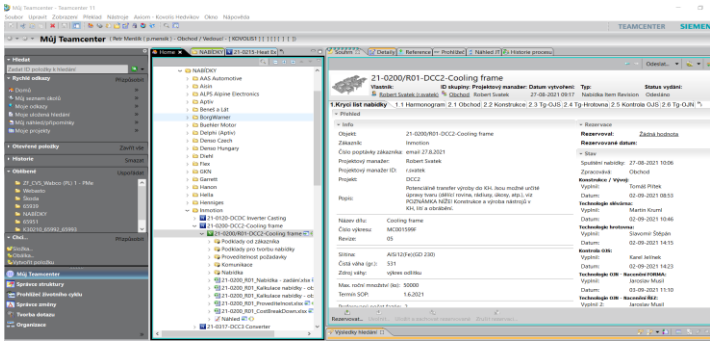
Project management / APQP





Complete process controlled by **PLM System Teamcenter** (Siemens)

- predefined processes and templates
- managing by predefined workflows
- date management / revision system
- timing plans including milestones
- advance planning
- open tasks
- weekly review all running projects with cross department team



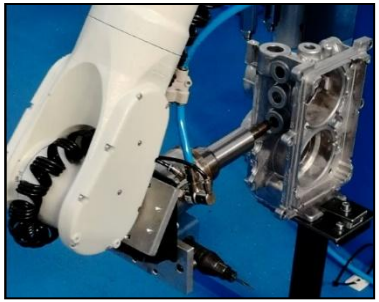
Technological RoadMap overview, examples

Lost cores

Possible to cast parts with inner shapes unable to cast by permanent molds.

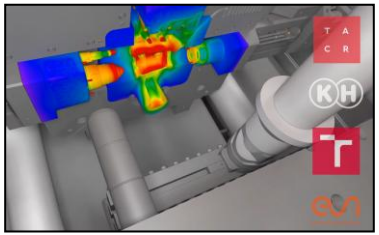
- compacted salt cores

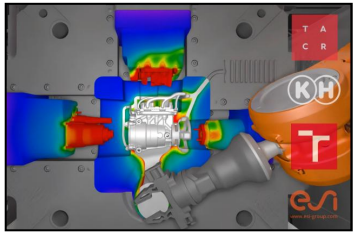
Automated deburring, machining



Smart die

[LINK]

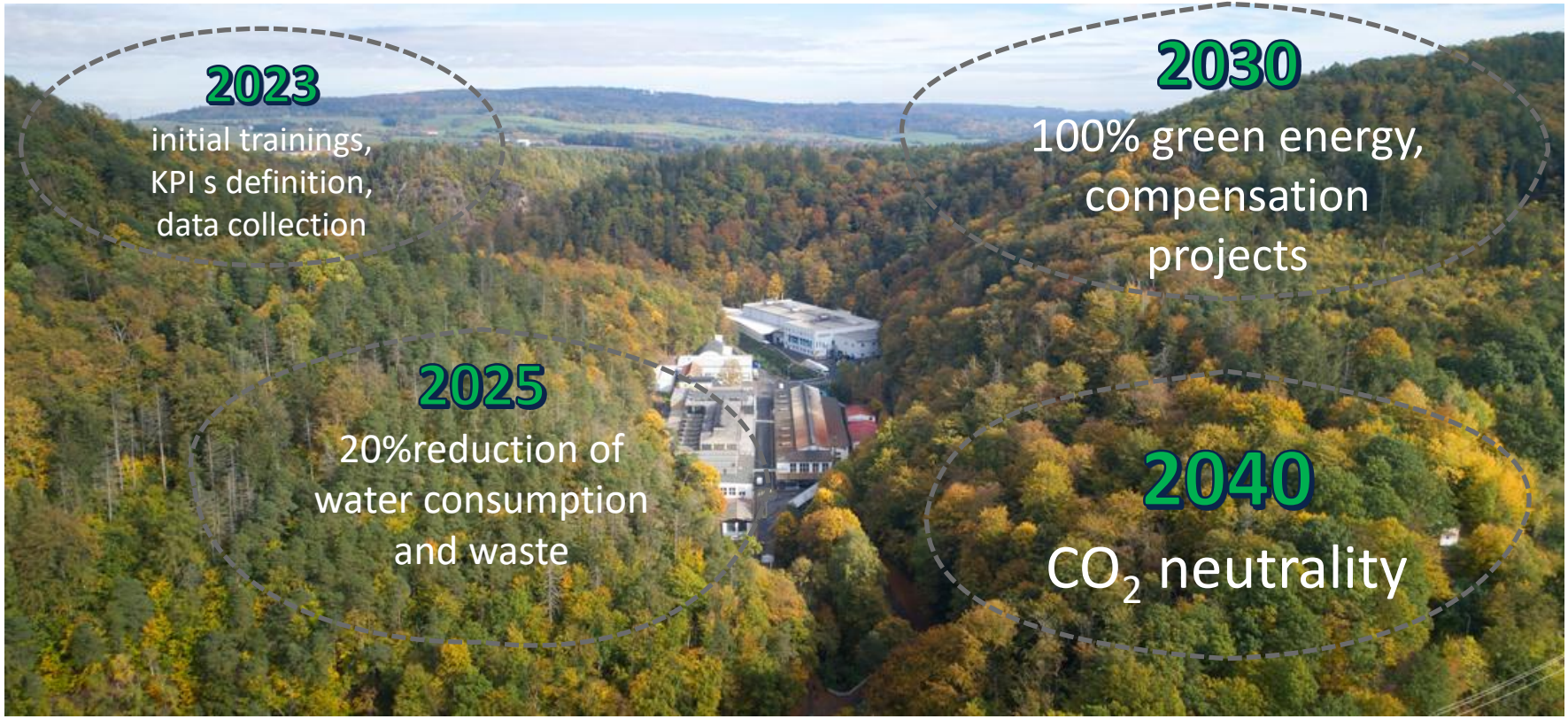




Technological RoadMap overview

Activity		comments
Steel inserts overcast	✓	Using of removable die insert to enable casting of shapes with negative unmoulding shape.
Rheocasting (semisolid)	✓	Semisolid casting using high fraction solid SEED method.
Hypereutectic alloys	✓	Using of hypereutectic alloys with higher wear resistance and better thermal stability.
Lost (salt) cores	✓ - tested on prototypes	Non-permanent cores enabling creation of non unmouldable inner shapes.
DMC marking	✓	Unique marking of each casting ensure one piece traceability.
On-line production data collection	✓	Storing of casting machine parameters linked to unique casting serial number.
Automated (robotised) deburring	✓ - pilots running	Automated processing of deburring operation of complex castings by robots.
Robotised machining	✓ - pilots running	Using robots for part handling between machining and checking operations.
Helium pressure testing	✓	Leak test device using helium for precise leakage measurement.
Production data processing	in process	Joining of data from all production operations including process parameters and quality results in one database as total feedback for quality improvement by production parameters optimization.
Non abrasive die cleaning	Planned	Using of physical-chemical methods to remove soldered aluminium from die parts.
3D steel (tooling) printing	Planned	Using of sintered steel die parts with complex cooling channel geometry.
3D scanning	Planned	Using of 3D scanning for reverse engineering and dimension check.
Die lifetime prolongation project	Continuous	
Paper less tooling manufacturing	Planned	
Special purpose alloys	Planned	
Friction stir welding	✓	Friction stir welding project targeted to heat exchangers.
Smart die project	in process	Target is self controlled real time system to control process parameters to increase die life.
Advanced camera check	Planned	System using artificial inteligence for checking of part quality.
Circular water management	in process	Project aims to waste water treatment to recycle water in technological processes.
Melting carbon footprint reduction	in process	Establishing of working process flow reacting on the melt needs, optimizing furnace operation.
Energy consumption tracking an optimizing	✓ - pilots running	Using of measurements with online data acquisition to control energy consumption.
Material holding process carbon footprint reduction	in process	Project targeted to using of best technology holding furnace using imersion heaters.
Machine hydraulic drive carbon footprint reduction	Planned	Using of advance inverter controlled hydraulic pumps to save energy during pump idling.

Sustainability – Vision and ambitious milestones‘ targets



CO_2 Reduction RoadMap

CO_2 monitoring and regulation
- Suppliers,
- Internal processing (Electricity, Gas, Logistics)
- External processing

Product Carbon Footprint Calculation (upstream)
- Raw material, consumables
- Internal processing, manufacturing (Energy consumtion)
- External processing
- Logistics, transport

Benchmarking

Product Carbon Footprint Reduction Plan (external support + subsidy)
- PPA (Power Purchasing Agreement) projekt
- Photovoltaics panels
- LED lighting
- New technologies with better efficiency (furnaces, CNC)
- Purchasing Green Energy
- Purchasing „green“ products
- OEE, process
- Offsets
- WaterLess Spraying
- Melting process (gas)

CO2 footprint overview, calculation and reduction plan

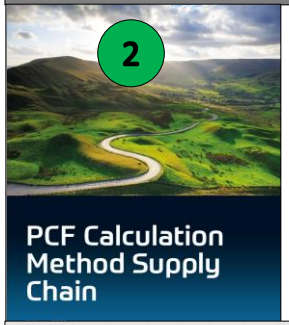
Projekt / oblasti	č_rok zahájení	Cíl IMS
Redukce CO2, Kalkulace CO2	101_2021	Cíl IMS 2021

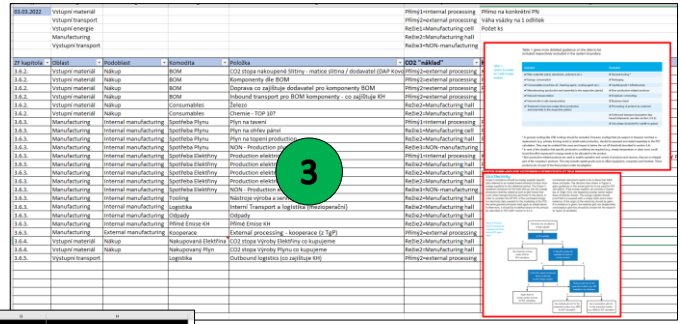
1

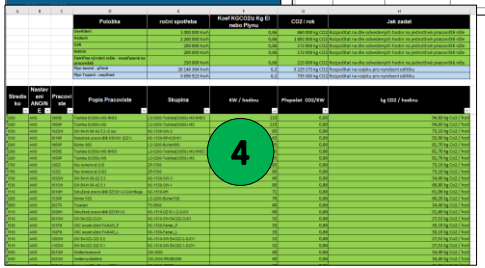
ICS › 13 › 13.020 › 13.020.40

ISO 14067:2018

Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification







1. CIP project in RoadMap KH
2. Metodology PCF calculation (ZF + ISO 14067)
3. Structure for ERP system
4. Data collection – internal / external
5. Data in ERP
6. PCF calculation from ERP on product/product step level – Q3/2022
7. Energy management – online consumption monitorig (el/gas/water), data collection, data management/visualisaion/reports = INVESTMENT 23/24 (HW + SW)
8. Energy regulation based on Energy management results

Target: Y2025 reduction 10% per produced ton (base Y2021)

Differentiation factors, cost, technology, quality

- privately owned, **family company** with the industrial background
  (lean and flexible management decisions, reinvesting into new technologies)
- core competence – not a conventional, but an **innovative** supplier of the HPDC castings at a very **high technological** standard, combined/supported by:
- all services ‚under one roof' concept – **development** (concurrent engineering activities), tooling design, tooling production, casting, machining and, assembly and management of the additional added value services (as a surface treatment)
- footprint: biggest foundry in the Czech Republic, **grow potential and capacities**
- **learning and implementing Japanese style**, utilizing Japanese technologies and **spreading the innovations**
- **project management** (key accounts) way of project work
- **quality mindset - QRQC (quick response quality control)** & QR6s quality control systems (problem solving tools) implemented and deployed
- **ESG (enviro – social – governance)**: GHG and CO_2 emissions reduction activities in place. Responsible behaviour towards employees (code of conduct), external surrounding and to the surrounding nature. Support of local sport, cultural and beneficial activities.

Contact

KOVOLIS HEDVIKOV a.s.
Hedvikov 1
538 43 Třemošnice
Czech Republic

www.kovolis-hedvikov.cz

Petr Menšík
sales manager
T: +420 469 619 324
M: +420 774 619 324
E: p.mensik@kovolis-hedvikov.cz

Miloslav Pavlas jnr.
sales department
T: +420 469 619 320
M: +420 777 619 320
E: m.pavlas@kovolis-hedvikov.cz

Thank You