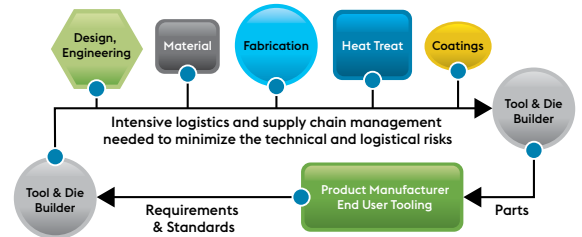


CORE PIN DESIGN AND MANUFACTURING SERVICES



voestalpine provides tailored solutions by integrating design, material selection, thermal processing and PVD Coatings to deliver optimized solutions.

The traditional approach to the manufacture of core pins for die casting applications has been for the core pin manufacturer to rely on multiple sources during the various stages of manufacture such as material or steel selection and additional ancillary steps such as heat treatment.

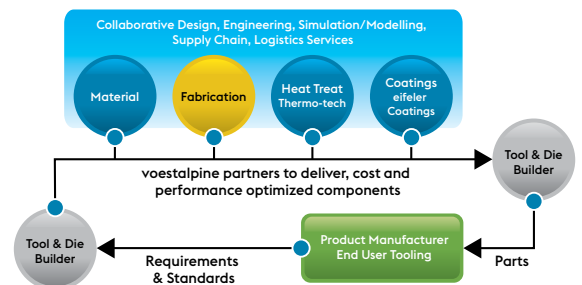


... is the complete potential of material, thermal processing and coatings fully exploited to deliver the highest end user productivity?

INCREASINGLY
COMPLEX AND
DEMANDING
ENVIRONMENTS
REQUIRES
INNOVATIVE
APPROACHES.

REDUCING SUPPLY CHAIN WASTE

voestalpine now offers a complete integrated solution which delivers a core pin optimized to perform to a higher level in your application. With decades of experience helping customers solve complex metalworking problems, we are well poised to take performance responsibility for your system components. We choose the optimal material; whether that is traditional steel or one of our Additive Manufacturing (AM) hot work powders which are specifically designed for the working environments they experience.

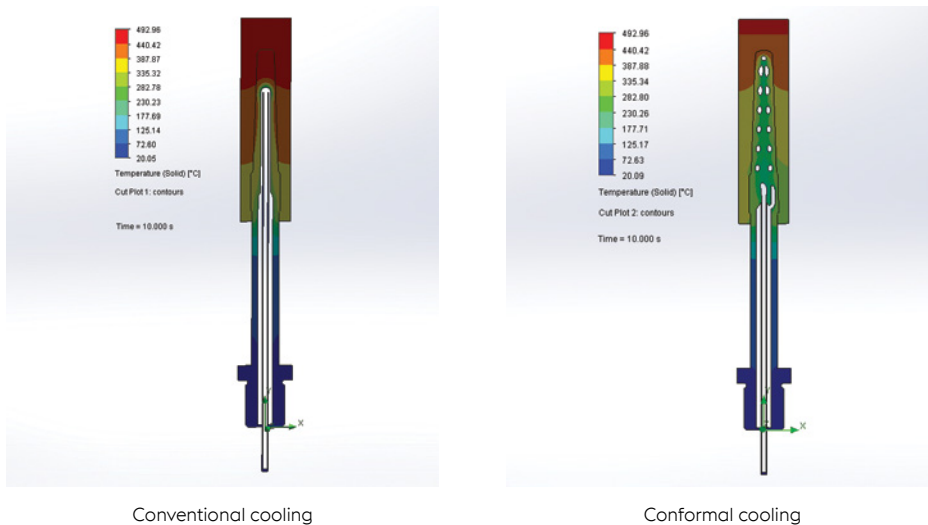


... an integrated approach yields superior risk mitigation, total cost optimization with solutions backed by the strength of voestalpine.

CORE PIN DESIGN AND MANUFACTURING SERVICES

No other core pin manufacturer can promise the performance of voestalpine because we control the manufacturing process from the initial melt of the steel ingot to the delivery of the finished core pin to the customer. The failure of a single core pin can cause shut downs which puts on time deliveries at risk and can increase production costs. Companies that have worked with us have experienced significantly longer core pin life with no impact on part quality or production process parameters. In certain applications, core pins can be a constraint on productivity. For these environments, customers benefit from performance engineered core pins with specific characteristics, for example, improved heat transfer properties that enable optimized tooling performance such as reduced cycle times.

Example of Improved Core Pin Thermal Characteristics Simulation by using Conformal Cooling.



BENEFITS:

- » Reduced risk of automated machine shutdown due to core pin failure
- » Reduced down time planned and unplanned
- » Reduced total cost of ownership for tooling
- » Improved Yield and Quality
- » Reduced cycle time with performance engineered pins

WHY CHOOSE VOESTALPINE?

- » An accountable, reliable design and manufacturing partner
- » Deep understanding of your application requirements
- » Access to advanced engineering services: modelling, simulation
- » Solutions that leverage full technological capabilities
- » Access to Additive Manufacturing expertise
- » Responsive, competent troubleshooting

CASE STUDY: DIE CASTING PRODUCTIVITY IMPROVEMENT THROUGH TAILORED COATINGS

- » **Situation:** Japanese OEM parts facility had production shortfalls as a result of frequent core pin replacement due to corrosion in low pressure casting application.
- » **Action:** OEM approached voestalpine and worked with the core pin supplier to design a cost effective polishing and coating solution drawing on material, die casting and coatings knowledge; trial parts were produced with no design change.
- » **Result:** Trial parts proven to have 3 to 4x longer lives than the existing design with no impact on part quality or production process parameters; production target quantities now achieved.