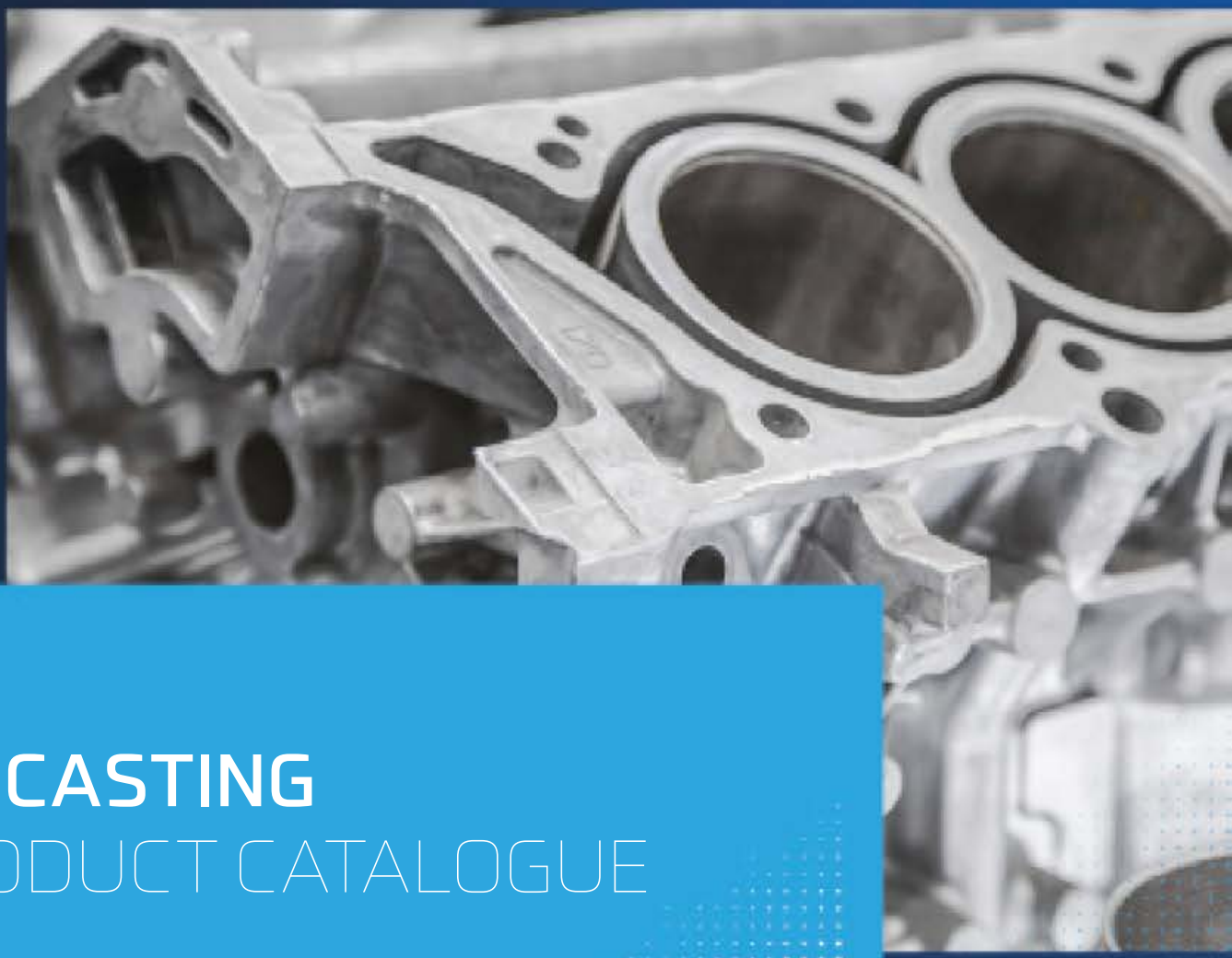
HTS



DIE CASTING
PRODUCT CATALOGUE

iTherm®

innoSleeve

Plunger

htsgroup.com

htsgroup.com

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About HTS

HTS Technology Group

HTS Technology Group was created by merging 14 perspective companies with a unique combination of experience, technology and know-how into the only fully vertically integrated industrial component producer in the market.

Together, we design, develop and produce innovative components and solutions for productivity increase, used in mass manufacturing industries, all this by utilizing completely integrated in-house production and R&D.

Group Overview

The HTS Difference

INNOVATIVE TECHNOLOGIES

We utilize four different additive manufacturing technologies, including our proprietary MFT technology. Based on the advanced capabilities of MFT, we produce components with conformal cooling and flow design, achieving mechanical properties comparable to those of a forged tool steel block.

SUPERIOR PERFORMANCE

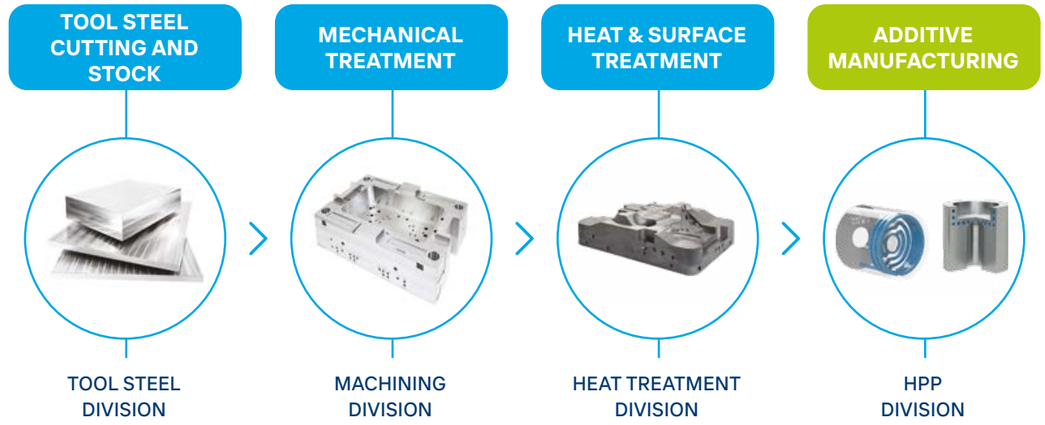
iTherm® - our proprietary conformal cooling components have a substantial impact on cooling and material flow, resulting in shorter cycle times, higher cast part quality and subsequently also productivity.

SOLUTION ORIENTED

Years of experience and R&D of HTS Group companies in combination with leading OEM customer collaboration gives us knowledge and capacity to help you improve your productivity.

Total process control – from steel to final component

HTS in-house processes

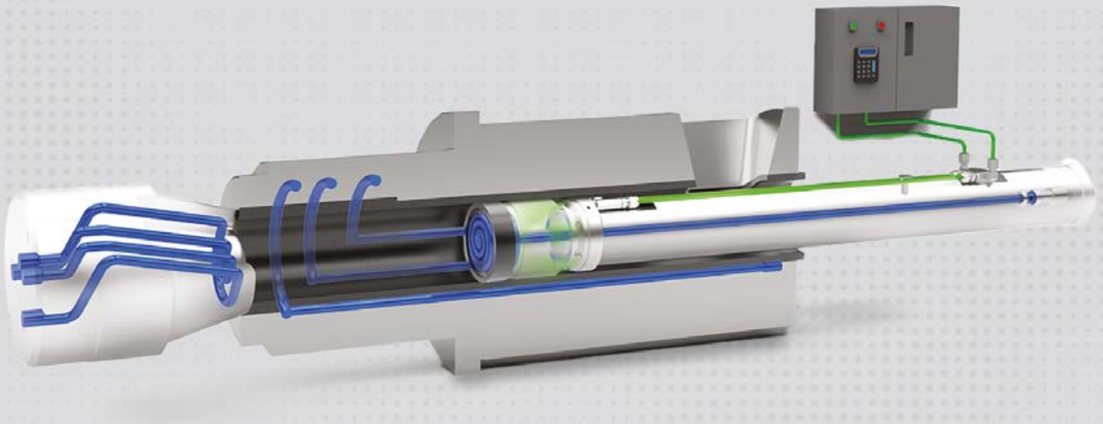


HTS Die Casting Range of Products

HTS offers the most comprehensive solutions for die casting to the market, from innovative shot sleeves, plungers, and lubrications to the most advanced iTherm® conformally cooled components. iTherm® die casting solutions are based on our proprietary Additive Manufacturing technology, MFT, that made possible the introduction of Conformal Cooling to Die-Casting Injection System and Tooling, with a series of benefits in productivity, quality of products, process stability, and environmental footprint. These solutions stem from our dedicated engineering expertise and extensive R&D initiatives.

Additionally, we provide our customers with advanced simulation support, precise installation of components, and comprehensive training programs to ensure optimal performance and seamless integration. HTS die casting solutions are used by leading automotive manufacturers and manufacturers of original components.

HTS DC Injection System



iTherm®

iTherm® brand stands for ultimate productivity solutions, based on principles of conformal cooling. iTherm® components are made using different additive manufacturing technologies, among which also MFT, our proprietary metal fusion technology.

SHOT BLOCK

SPRUE BUSH

FEED RING

CORE

DIE INSERT

innoSleeve

The innoSleeve brand, our cost-efficient, environmentally friendlier shot sleeve manifests our commitment to reduce the CO_2 footprint generated during the shot sleeve production process.

INNOSLEEVE SOLUTION

Plunger

The brand Plunger by HTS is recognized as the most comprehensive in the industry, encompassing the widest range on the market, from steel and copper to advanced conformally cooled plungers. Additionally, we produce innovative rings and spring bushes.

PLUNGER PERFORMA

PLUNGER CONDUCTA

PLUNDER ENDURA

Conformal Cooling

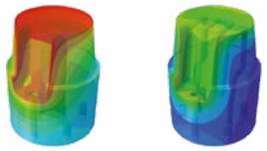
Conformal Cooling is the design and implementation of cooling channels that closely follow the contours of the die or mold cavity. Unlike traditional cooling channels, which are typically straight and drilled into the mold, conformal cooling channels are created using advanced additive manufacturing technologies. This allows the channels to be precisely placed in optimal locations, resulting in more efficient and uniform cooling.

CHANNELS FREELY DESIGNED

Cooling channels are freely designed based on the cooling/heating requirements of the product, without being constrained by the limitations of conventional drilling methods.

MORE UNIFORM HEAT DISTRIBUTION

Conformally cooled components enable more even heat distribution over the working surface, resulting in more uniform and rapid cooling.



ZERO LEAKAGE

Conformally cooled components usually feature just two cooling water connectors (IN and OUT), ensuring a leak-proof design.

ADVANTAGES

UP TO **40% cycle time reduction**

Conformal cooling reduces cycle time by enhancing heat dissipation, leading to faster and more uniform cooling of dies. This results in quicker solidification of materials, thereby shortening the overall production cycle.

UP TO **200% component lifespan extension**

Shorter spraying time and consequently reduced thermal loads and thermally induced stress increase the number of shots before the crack initiation and propagation, hence prolonging the component lifespan.

Porosity elimination

Customized channel design and uniform temperature distribution across the surface enable the improvement of cooling power in critical hot spot areas, decreasing the porosity in the cast.

iTherm® BY HTS

Taking conformal cooling to the next level

iTherm® by HTS sets a new standard in conformal cooling, taking it to the next level with cutting-edge additive manufacturing technologies and advanced engineering capabilities.

Our proprietary Metal Fusion Technology (MFT), along with other methods like LMD, WAAM and SLM, ensure that iTherm® components deliver superior thermal management and optimized performance.

As the only global producer with four in-house additive manufacturing technologies, HTS Technology Group provides top-of-the-line iTherm® conformally cooled components, that meet even the most stringent application requirements.

With iTherm® by HTS, you benefit from:

- Innovative technologies
- Advanced engineering
- Installation and usage support

HTS Innovative Technologies

HTS Additive Technologies

HTS is the leading additive manufacturing solution provider that offers the the most comprehensive range of additive manufacturing approaches for tooling & implementation of conformal cooling, enabling the selection of the best technology for any geometry, size, complexity, or material requirement.

TECHNOLOGY	MATERIAL INPUT
MFT METAL FUSION TECHNOLOGY	FORGED PLATES & BARS 
DED **LMD** LASER METAL DEPOSITION **WAAM** WIRE ARC AM	WIRE 
SLM SELECTIVE LASER MELTING	POWDER 

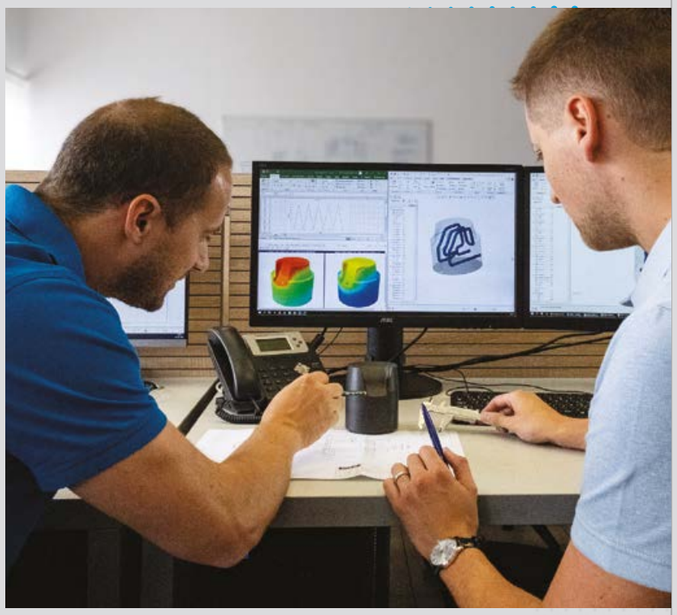
Available steels:
1.2343 / H11,
1.2344 / H13,
1.2367, Dievar,
SITHERM S353R,
1.2709/MS1, L40,
Corrax, and more.

Available dimensions;
from 20 × 20 × 20 mm to
1.500 × 1.200 × 1.000 mm

Advanced Engineering

EXPERT ENGINEERING TEAM

Our engineering office, staffed with a team of **10 experienced engineers,** provides the optimal solutions for your die casting needs



01

Advanced Simulation and Analysis

We analyze thermal and structural behaviors and predict component performance under varying conditions using **Magma** simulation software

02

Material Selection and Testing

We evaluate different steel grades to determine the best fit for your application, considering factors such as thermal conductivity, wear resistance, and mechanical properties.

03

Process Optimization

Our engineers are experts in process optimization, focusing on reducing cycle times, minimizing downtime, and enhancing overall productivity for our customers.

Installation and Usage Support

DEDICATED EXPERT ONSITE SUPPORT

HTS acts as an integral part of your team, providing dedicated, expert onsite support and collaboration throughout the entire lifespan of your project. At HTS, we ensure you receive comprehensive support and guidance to maximize both the performance of our products and your production performance through each phase of the project, starting before your purchase to installation and setup of components and performance.

TRAINING PROGRAM

Our training program spans the entire die-casting process, encompassing everything from fundamental principles to the operation and maintenance of components, as well as specialized knowledge in casting processes and technologies.

Consider us an extension of your team.

iTherm® BY HTS

iTherm® components

iTherm®

iTherm® brand stands for ultimate productivity solutions, based on principles of conformal cooling. iTherm® components are made using different additive manufacturing technologies, among which also MFT, our proprietary metal fusion technology.

SHOT BLOCK

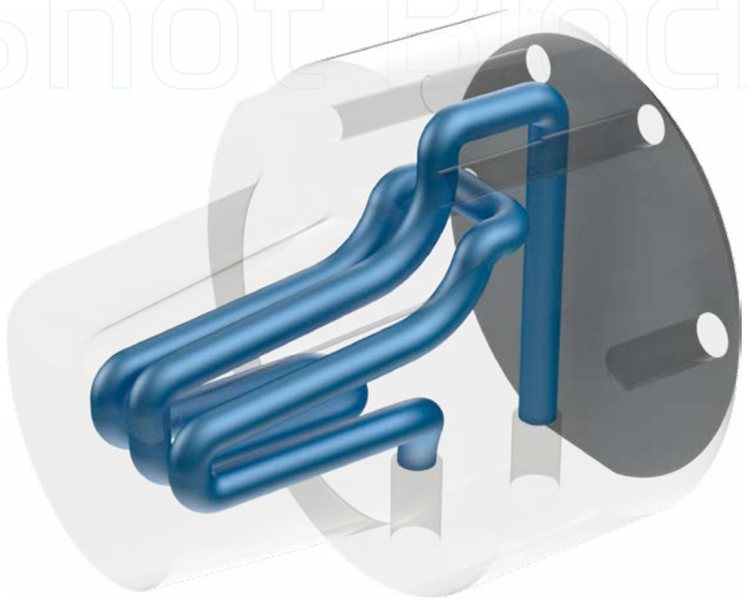
SPRUE BUSH

FEED RING

CORE

DIE INSERT

Shot Block



Conformally Cooled

Uniform Heat Distribution

Tool steel Material

Single Body Component

Cycle Time Reduction

Lifespan Extension

iTherm® Shot Block

Engineered with additive manufacturing technology, the conformally cooled iTherm® Shot Block enhances die casting performance by reducing the required spraying and the biscuit solidification time.

Designed to optimize heat dissipation iTherm® Shot Block ensures uniform heat distribution, accelerates biscuit solidification, and reduces cycle times by up to 20%, significantly enhancing efficiency and minimizing downtime.

iTherm®

Feed Ring

Conformally Cooled

Uniform Heat Distribution

Tool steel Material

Single Body Component

Cycle Time Reduction

Lifespan Extension

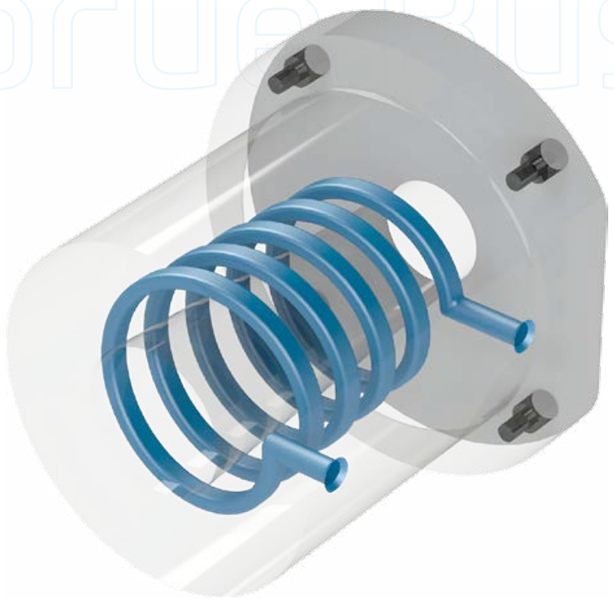
iTherm® Feed Ring

The feed ring in the die casting process plays a crucial role in controlling the flow and solidification of molten metal, ensuring efficient filling of the mold and minimizing defects.

Engineered with additive manufacturing technology, the conformally cooled iTherm® Feed Ring further enhances die casting performance through optimized heat dissipation and enhanced component quality. It improves gating, ensures efficient metal flow into the mold, and maintains uniform temperature distribution. Additionally, the iTherm® Feed Ring helps control the solidification process, reducing defects and improving the overall strength and integrity of the cast components.

iTherm®

Sprue Bush



Conformally Cooled

Uniform Heat Distribution

Tool steel Material

Single Body Component

Cycle Time Reduction

Lifespan Extension

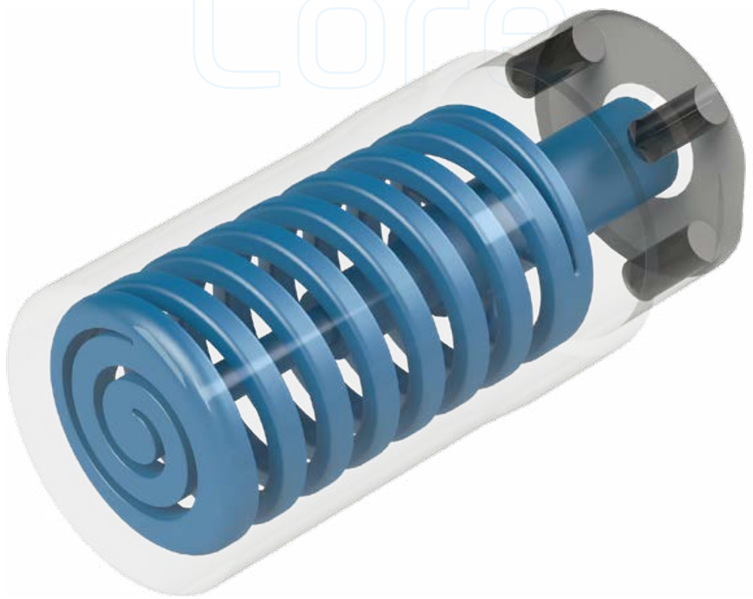
iTherm® Sprue Bush

iTherm® Sprue Bush enhances die casting efficiency with strategically engineered cooling channels. Essential for efficient gating and minimizing turbulence, this component accelerates solidification rates, optimizes metal flow, and reduces cycle times.

The iTherm® Sprue Bush sets the standard for conformal cooling of the sprue, proven to reduce cycle times by up to 25%+ on dies limited by sprue cooling.

iTherm®

Core



Conformally Cooled

Uniform Heat Distribution

Tool steel Material

Single Body Component

Cycle Time Reduction

Lifespan Extension

Customer statement

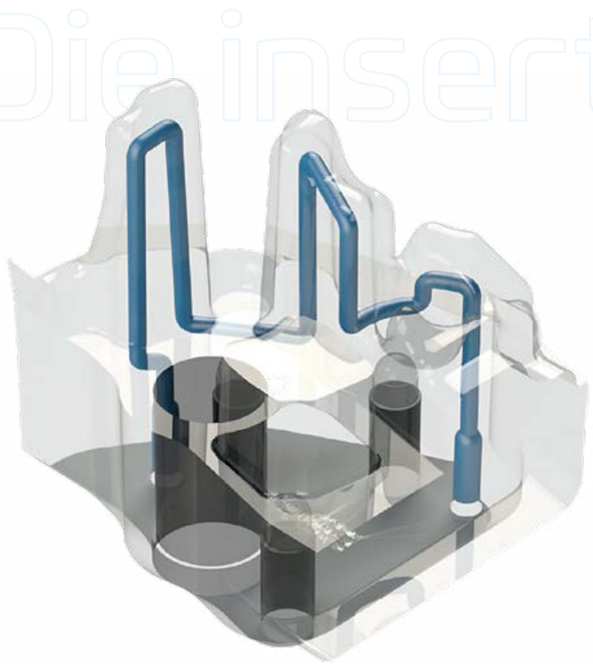
“We are happy with iTherm® Core. Cooling power and service lifetime are its main advantages.

We tested HTS concept of iTherm® Core. The cooling power and service lifetime of iTherm® Cores convinced us to use it in serial production.”

iTherm® Core

By supporting structural integrity and efficiently managing heat dissipation with integrated cooling channels, the iTherm® Core accelerates solidification rates, maintains uniform heat distribution, and reduces cycle times by up to 20%. Most often it is used in applications such as engine block casting.

Die Insert



Conformally Cooled

Uniform Heat Distribution

Tool steel Material

Single Body Component

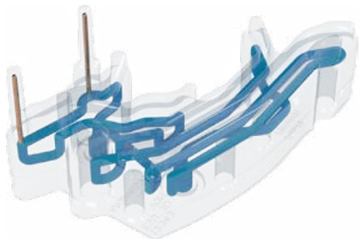
Cycle Time Reduction

Lifespan Extension

iTherm® Die Insert

HTS die inserts are meticulously designed to meet your unique requirements with precision and reliability. Using state-of-the-art technology and materials selected for optimal performance, we engineer inserts that integrate seamlessly into your manufacturing processes. Whether you need inserts for intricate geometries, specialized features, or specific material properties, our expert engineering team ensures each insert is tailored to enhance efficiency and quality.

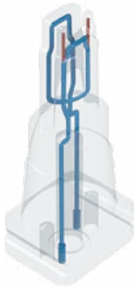
Examples of Die Inserts engineered by HTS



168 × 110 × 102 mm
Material: SITHERM 353R

296 × 241 × 127 mm
Material: SITHERM 353R

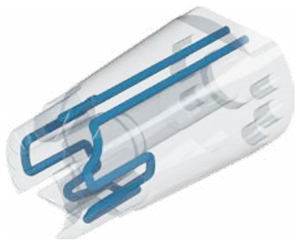
262 × 178 × 288 mm
Material: SITHERM 353R



50 × 40 × 124 mm
Material: Stavax

40 × 37 × 113 mm
Material: 1.2083

Ø 200 × 357 mm
Material: Dievar



Ø 65 × 114 mm
Material: Stavax

Ø 26 × 107 mm
Material: Stavax

innoSleeve

innoSleeve is a cutting-edge and environmentally friendly shot sleeve solution designed to reduce sleeve expenditures by up to 40%, minimize production downtimes, and ensure your casting process runs smoothly and efficiently.

ADVANTAGES

Longer sleeve lifespan

Up to **40%**

lower sleeve expenditures

Minimized warpage, erosion, and wear, ultimately extending the average lifespan of sleeves, resulting in fewer sleeve replacements and lower overall shot sleeve expenditures.

Decreased environmental impact

Up to **70%**

lower CO_2 emmisions

innoSleeve generates up to 70% less CO_2. This way we are supporting our die-casting customers' efforts to decrease their environmental footprint.

Less production downtime

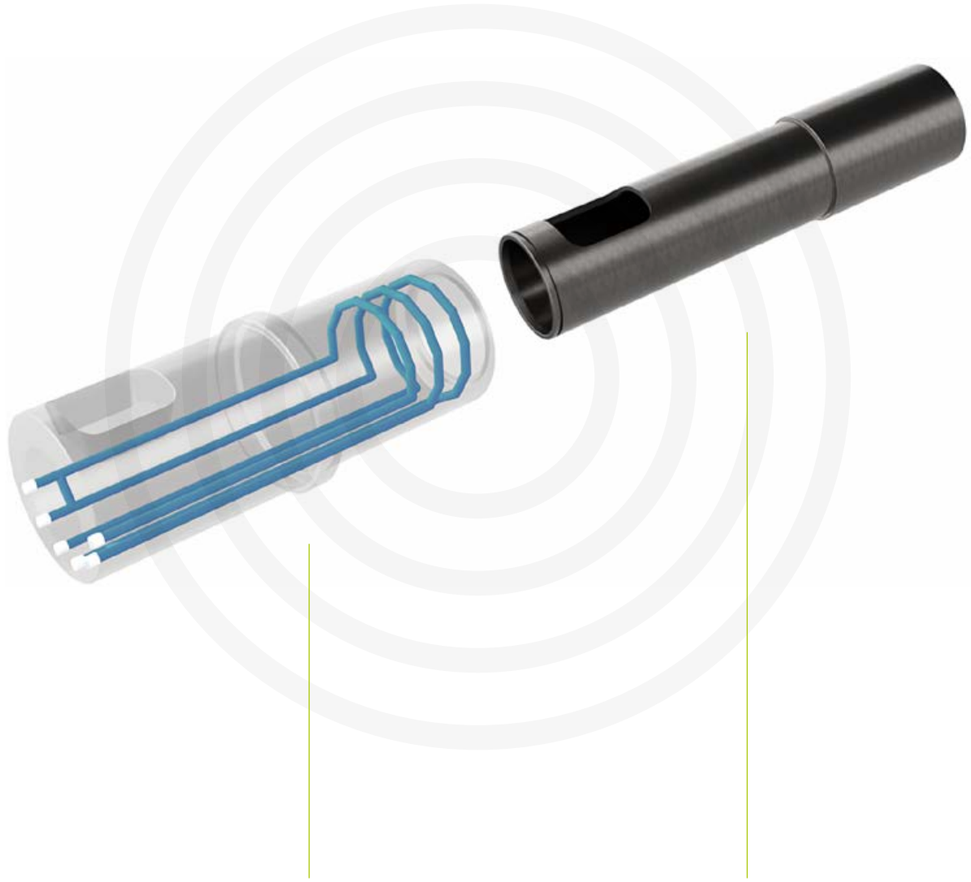
Up to **20%**

quicker sleeve replacement

innoSleeve insert can be replaced in the machine.
The time saved on replacement ensures substantially shorter production stoppages.

innoSleeve

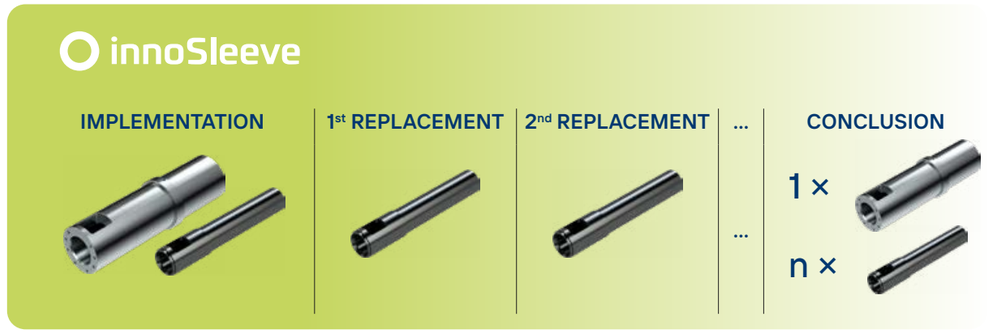
The innoSleeve solution includes an insert that shields the sleeve across the complete diameter and length.



innoSleeve envelope

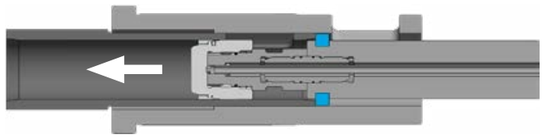
innoSleeve insert

innoSleeve usage logic

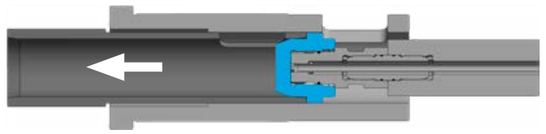


innoSleeve replacement options

1.
Extraction with special plunger



2.
Extraction with a center ring



3.
Extraction with a special tool

For larger machines, there is a specially designed tool, that enables quick replacement of the insert, but the envelope has to be dismounted from the casting machine first.

Plunger BY HTS

- **Plunger** PERFORMA
- **Plunger** CONDUCTA
- **Plunger** ENDURA

Plunger PERFORMA

PERFORMA T-R PERFORMA T-RS PERFORMA T-R/BN

STEEL RING (optional)
Opens during injection due to its own elasticity and due to aluminium penetrating between ring and plunger.

HOT WORK STEEL BODY
The plunger is made with supreme hot worktool steel, using HTS proprietary additive manufacturing technology that allows the implementation of the conformal cooling. Excellent combination of high toughness and resistance to thermal fatigue cracking (also known as heat checking) results in high cooling power >> reduction of cycle time and highest lifetime on the market.

Range Ø40 to Ø260

STEEL SPRING BUSH
Ensures contact plunger/ sleeve at the back of the plunger due to its own elasticity.

Performa
Ring Plunger is an evolution of the steel thread plunger with a better thermal effectiveness and increased durability.

Vacuum and gliding effect
PERFORMA T-RS version includes a spring bush (back ring) which has been specially designed for vacuum systems.Made with softer steel, the spring bush slides easily and doesn't damage the inner surface of the sleeve.

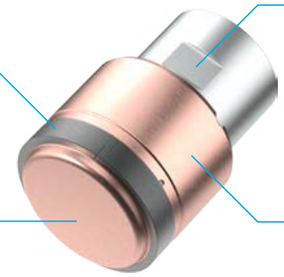
Advanced thermal effectiveness and increased durability

Plunger CONDUCTA

CONDUCTA B | CONDUCTA B-R | CONDUCTA B-RS

STEEL RING (optional)
Opens during injection due to its own elasticity and due to aluminiumpenetrating between ring and plunger.

CuBe BODY
The plunger is made out of forged CuBe. Excellent combination of toughness and highest values of heat transfer.



Range Ø40 to Ø260

STAINLESS STEEL HOLDER
The plunger is fixed to its holder with a special bayonet locking design.

STEEL SPRING BUSH
Ensures contact plunger/sleeve at the back of the plunger due to its own elasticity. Available with the Conducta B-RS model.

Conducta
Ring Plunger is an evolution of the copper bayonet plunger with a better thermal effectiveness and increased durability.

Vacuum and gliding effect
CONDUCTA B-RS version includes a spring bush (back ring) which has been specially designed for vacuum systems.Made with softer steel, the spring bush slides easily and doesn't damage the inner surface of the sleeve.

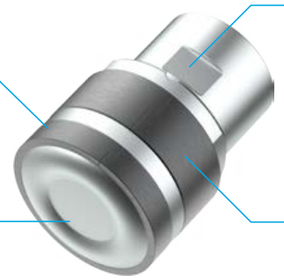
Good thermal effectiveness and increased durability

Plunger ENDURA

ENDURA B-RS ENDURA T ENDURA T-R ENDURA T-RS

STEEL RING
The plunger is made using a premium hot work tool steel that is widely used in hot work tooling applications. Excellent combination of high toughness and resistance to thermal fatigue cracking (also known as heat checking).

HOT WORK STEEL BODY
The plunger is made with hot work steel that is widely used in hot work tooling applications. Excellent combination of high toughness and resistance to thermal fatigue cracking (also known as heat checking).



Range Ø50 to Ø260

STAINLESS STEEL HOLDER
The plunger is fixed to its holder with a special bayonet locking design.

STEEL SPRING BUSH
Ensures contact plunger/ sleeve at the back of the plunger due to its own elasticity.

Endura
Ring Plunger is an evolution of the copper bayonet plunger with a better thermal effectiveness and increased durability.

Vacuum and gliding effect
ENDURA B-RS version includes a spring bush (back ring) which has been specially designed for vacuum systems.Made with softer steel, the spring bush slides easily and doesn't damage the inner surface of the sleeve.

Good thermal effectiveness and increased durability

HTS

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