

HOLISTIC DIE APPROACH

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WE DON'T FOLLOW
EXCELLENCE -
WE LEAD IT

Dear Business Partner,

For more than 350 years, we have been shaping the future of tool steel manufacturing for Die Casting - today serving customers in over 60 countries. Powered by our leading brands ASSAB and Uddeholm, we have always been committed to excellence.

Now, we have taken one step ahead: transforming from a trusted supplier of high-quality steels into **YOUR Technology Partner**, delivering not only premium materials, but a full package of solutions through a one-stop-shop strategy.

With our **Holistic Die Approach**, we deliver tailored, application-driven solutions across the entire Die Casting value chain:

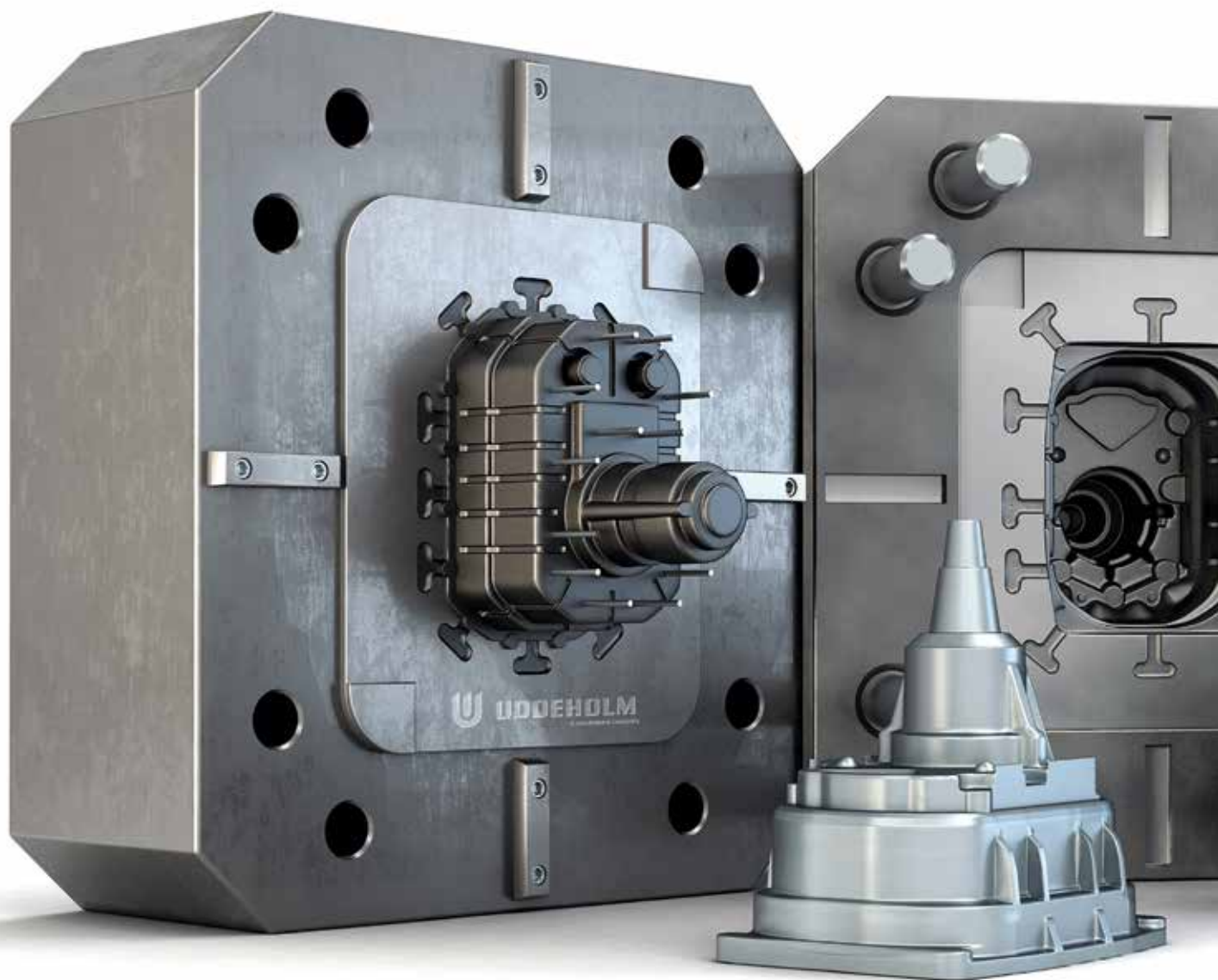
- » State-of-the-art supply, technical support, and services for **Die Makers**
- » Enhanced performance and efficiency (OEE) for **Foundries**
- » Reduced total cost of ownership (TCO) for **OEMs**

We are ready to take on your Casting Challenges and create sustainable, long-term value together.

Günther Prunner
Segment Manager Die Casting

Holistic Die Approach

WE UNDERSTAND
YOUR PROCESS
AND YOUR PRESSURE



Ready for your Casting Challenges

Die Casting is one of our core areas of expertise, supported by a dedicated global team. This positions us close to the Die Casting industry, with a deep understanding of individual needs. We achieve this by combining specialized materials and tailored services.

Our Holistic Die Approach offers everything you need to maximize OEE Improvement & Die Life - tailored to your process.

From material selection to treatments, from critical components to application support, we cover the entire die lifecycle - turning know-how into measurable performance:

- » **Less Scrap rate**
- » **Maintenance optimization**
- » **Improve Cycle times**
- » **Less Downtime**

Our goal: putting your casting challenges at the center and turning them into a competitive advantage.



Our Top Products



For decades, **ASSAB** and **Uddeholm** have set the benchmark in manufacturing and supplying high-performance tool steels. This experience gives us a deep understanding of the unique challenges faced by the High Pressure Die Casting industry. Our advanced steel mills and deep metallurgical know-how ensure materials with exceptional purity, toughness, and thermal resistance. Each grade is designed to perform under the extreme conditions of HPDC.



SOLUTION	MATERIAL CODE	
Dievar	NADCA Grade C, Type C1850	Patented
Vidar Superior	NADCA Grade E, Type E1825	~1.2340 / H11 Modified Superior
ASSAB 8407 Supreme	NADCA Grade B, Superior ESR AISI H13 (No Type)	1.2344
Unimax		Patented
QRO90 Supreme		Proprietary

Optimized Powder for AM

PREMIUM MATERIALS
FOR MAXIMUM
PERFORMANCE

AM Dievar

- » A chromium-molybdenum-vanadium alloyed hot work tool steel delivering **excellent resistance to heat checking, soldering, gross cracking, and plastic deformation**
 - » Offers superior toughness and high-temperature strength, **outperforming existing standards** such as 1.2343, 1.2344, and 1.2709
 - » Recommended hardness: **46–50 HRC**, ensuring a perfect balance between strength and ductility
-



AM Dievar is produced under strict quality control and paired with our proprietary AM parameters to guarantee **99.9% relative density, optimized microstructure,** and **consistent mechanical properties.**

With our advanced AM powders, you gain exceptional thermal resistance and toughness - keeping your dies in production longer, accelerating cycle times, and ensuring consistent performance even under the toughest HPDC conditions.

FOR FULL DETAILS
CONTACT OUR
SPECIALISTS

Heat Treatment

EXTENDING
TOOL LIFE,
ENHANCING
PERFORMANCE



The secret to longer tool life isn't just in the steel - it's also in the heat treatment.
By applying the right process with absolute precision, we unlock the full potential of your HPDC tools, ensuring they withstand extreme thermal and mechanical loads shot after shot.



OUR HEAT TREATMENT SERVICES ARE DESIGNED TO:

- » Increase material strength while achieving optimal toughness
- » Improve wear resistance and minimize heat checking
- » Enhance corrosion behavior for longer tool life

OUR CAPABILITIES INCLUDE:

- » **Vacuum Hardening**
 - ensures dimensional stability and clean surfaces;
 - toughness, vacuum hardening according to NADCA specs.
- » **Gas and Plasma Nitriding**
 - improves surface hardness and fatigue resistance
 - optimized process for HPDC
- » **Additional Services**
 - ABP, Nitriding, Oxidizing, sub-zero treatment, and more

Every process is tailored to your application and monitored by our expert metallurgists to guarantee consistent quality and performance.



Surface Treatments PVD Coating

THE SHIELD BEHIND
DIE CASTING
PERFORMANCE

In High-Pressure aluminum Die Casting, surface degradation is inevitable - but not uncontrollable.

PVD coatings have become essential in extending tool life, reducing downtime, and maintaining dimensional accuracy under extreme thermal and mechanical stress.

By forming a protective barrier against soldering, erosion, and alloying reactions, advanced coatings help manufacturers achieve consistent part quality and operational efficiency.



INTRODUCING DUPLEX-TIGRAL - DEVELOPED FOR DIE CASTING, ENGINEERED FOR EXTREMES

- » At the forefront of this innovation is **Duplex-TIGRAL**, a premium PVD solution engineered by voestalpine eifeler for the most demanding die casting environments. Its two-stage process begins with **plasma nitriding**, which diffuses nitrogen into the steel surface to enhance hardness and adhesion. This is followed by a **AlCrTiN**- based layer, forming a dense, nanostructured matrix with exceptional resistance to oxidation, abrasion, and thermal shock.

SYNERGISTIC PROTECTION FOR MAXIMUM PERFORMANCE

- » Together, these layers create a synergistic defense against the harsh conditions of aluminum die casting. **The low application temperature (<450 °C)** preserves the base steel's integrity, while the coating's ductility and **high hot hardness (3300 HV)** ensure durability under cyclic stress. Duplex-TIGRAL minimizes part sticking, reduces maintenance cycles, and enables multiple recoating rounds - delivering longer tool life, improved productivity, and superior casting performance.

Our Services Optimized Components for Die Casting

TAILOR-MADE
SOLUTIONS



YOUR CHALLENGES, OUR TAILORED ANSWERS

To meet these challenges head-on, delivering ready-to-use solutions that combine premium voestalpine materials with advanced manufacturing technologies.

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- » **Premium Materials** - produced from high-performance Uddeholm tool steels or AM powders for hot work applications.
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- » **Complete Processing** - each component undergoes state-of-the-art machining, heat treatment, ABP and other surface treatment, and eifeler PVD coating for maximum durability.
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- » **Additive Manufacturing Advantage** - where needed, we integrate AM technology to create conformal cooling channels and customized sensor integration, reducing cycle times and improving part quality.
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By choosing our optimized components, you combine premium materials, advanced treatments, and additive features like conformal cooling - helping you extend die life, reduce scrap and downtime, and optimize OEE for faster cycles and superior productivity.

FOR MORE INFORMATION
ABOUT OUR ENGINEERED PRODUCTS
AND TAILOR-MADE SOLUTIONS FOR HPDC
PLEASE CONTACT OUR TEAM

SMART DESIGN BY
PBF HIGH EFFICIENCY
COOLING FOR HPDC



Powder Bed Fusion

Powder Bed Fusion (PBF) technology unlocks new possibilities for High Pressure Die Casting. By building components layer by layer from premium metal powders, we create complex geometries and near-contour cooling channels that conventional machining cannot achieve.

WHAT MAKES THE DIFFERENCE

- » **Optimized Thermal Management**
conformal cooling reduces cycle times and improves part quality
- » **Complexity Without Compromise**
freedom to design intricate shapes and integrate sensors for smarter tooling
- » **Material Excellence**
Uddeholm powders engineered for HPDC deliver superior hot wear resistance and toughness





RESTORE COMPLEX HPDC DIES

Tool Repair by Laser Metal Deposition

In High Pressure Die Casting, worn dies often mean costly downtime and full replacements. Our **Laser Metal Deposition (LMD)** service offers a smarter alternative - restoring critical areas with precision and durability.

WHAT MAKES THE DIFFERENCE

- » **Targeted Restoration**
rebuild critical zones such as gates, ejector pin holes and worn areas without scrapping the entire die.
 - » **Dimensional Accuracy**
low heat input minimizes distortion compared to conventional welding.
 - » **Material Upgrade**
apply wear- or corrosion-resistant alloys exactly where needed for extended performance.
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LMD uses a high-energy laser to melt metal powder directly onto the worn surface, rebuilding geometry layer by layer.

Sustainability and Circular Economy



inSPire is our sustainability framework, built for real impact. It's driven by a dedicated team focused on practical projects that make a difference - helping our customers and our industry move toward a more sustainable future, one step at a time.

CLOSED LOOP: CIRCULAR ECONOMY IN ACTION*

In a circular economy, steel is endlessly recyclable - preserving its value, reducing environmental impact, and supporting sustainable growth.

At ASSAB, we work closely with our customers and partners across the supply chain to retain valuable alloys and reintroduce them into the production of the same high-grade steel - without any loss in quality, while continuously improving our environmental footprint.

We take back your worn-out dies and recycle them through our secure closed-loop process. You gain space, avoid disposal challenges, and actively support sustainability – knowing your dies are transformed into new, high-performing steel with full protection of your know-how and materials.

* Check with our specialists for the possibilities in your country.



MAXIMIZING RECYCLING, SECURING SUPPLY

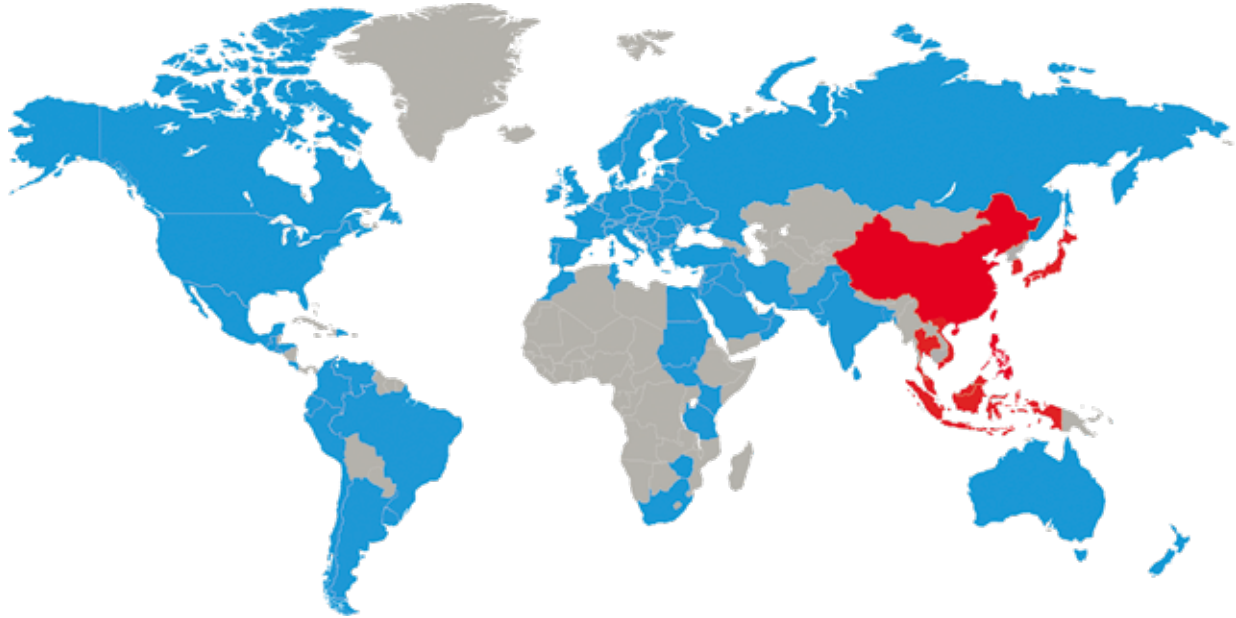
We're serious about reducing our primary raw material footprint. Already, 81% of input material in our melt shops is recycled.

Our goal: to use over 90% of scrap and secondary raw materials by 2030.



KEY BENEFITS

- » **Preservation of valuable alloys to reduce the environmental impact**
- » **Secure and Sustainable Supply**
- » **Protection of Intellectual Property**
- » **Fair and Transparent Compensation**



Choosing the right steel is of vital importance. ASSAB engineers and metallurgists are always ready to assist you in your choice of the optimum steel grade and the most suitable treatment for each application. ASSAB not only supplies steel products of superior quality, but we also offer state-of-the-art machining, heat treatment, surface treatment services and additive manufacturing (3D printing) to enhance your tooling performance while meeting your requirements in the shortest lead time. Using a holistic approach as a one-stop solution provider, we are more than just another tool steel supplier.

In Asia Pacific, ASSAB anchors the distribution network for Uddeholm, a Swedish tool steel manufacturer with more than 350 years of experience in the tool steel industry. Both are integral parts of voestalpine AG, a prominent Austrian-based company listed on the Vienna Stock Exchange since 1995. Together, we establish ourselves as a key player in the steel and technology sector, with a diverse range of products and services.

For more information, please visit:

www.assab.com

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