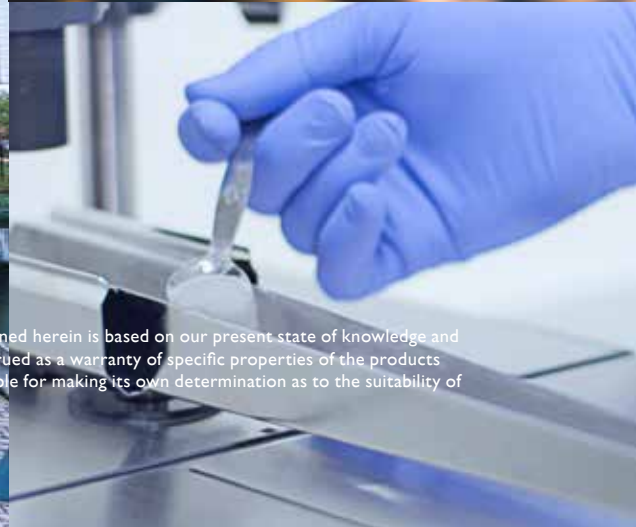


PM-tool steel with revolutionary resistance

Vancron SuperClean

STRENGTH IN MOTION





ASSAB is a trademark of voestalpine High Performance Metals Pacific Pte Ltd. The information contained herein is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as a warranty of specific properties of the products described or a warranty for fitness for a particular purpose. Each user of ASSAB products is responsible for making its own determination as to the suitability of ASSAB products and services.

AN AWAITED ANTI-GALLING SOLUTION

UNIQUE TOOL STEEL FOR SPECIAL DEMANDS

Vancron SuperClean is the right choice for environment where coating is not an option or is insufficient. This new solution exceeds expectations and delivers longer tool life, higher output and shorter time to market.

NEW TOOLING OPPORTUNITIES

When you work in demanding production environment and need a reliable safeguard for your tool's vulnerable areas and weak points, Vancron SuperClean is the answer. The challenges can be tight tolerances, complex design, need for quick maintenance

or delivery time. Thanks to pioneering metallurgy and product development, Together with Uddeholm, ASSAB has secured a chemical composition with prominent anti-galling features that simplify improve the whole tooling life cycle.



APPLICATION: Drawing die **WORK MATERIAL:** AISI 304, austenitic stainless sheet **THICKNESS:** 0.5 mm **LUBRICANT:** Cl-paraffin oil

REFERENCE COMPANY: Grundfos a/s

STEEL GRADE	ASSAB PM 23 SuperClean	ASSAB PM 23 SuperClean +PVD TiN	ASSAB PM 23 SuperClean +CVD TiC/TiN	Vancron SuperClean
HARDNESS	62 HRC	62 HRC	62 HRC	64 HRC
FAILURE MECHANISM	Galling	Galling	Delamination	None
PARTS PRODUCED	83 000	130 000	1-8x10 ⁶	>16x10 ⁶

FOR COMPLEX SHAPES AND SIZES

GIVES YOUR TOOLS EXTRA LIFE

Vancron SuperClean delivers increased productivity and crucial protection against a “triple combination” of wear, with or without a PVD coating.

LONGER PRODUCTION RUNS

Vancron SuperClean is a unique grade for production environment where neither uncoated nor coated tools are suitable. However, if the tool can be coated, it will still get something extra by using Vancron

SuperClean with a PVD coating. The composition of the steel will adhere better to the PVD coating than other steel grades. It can also be a good backup behind the coating, to keep production going even if the coating wears off in critical areas.



HIGH QUALITY FROM START TO FINISH

The combination of galling resistance, adhesive wear resistance and low friction provides a concrete solution for common challenges in powder compacting, cold extrusion, blanking and forming processes. The tool can easily be fine-machined and adjusted to the tight tolerances needed and polished to high surface finish. Your tool will maintain great shape and condition longer than other tool steels and hence secure the quality of produced parts over time.



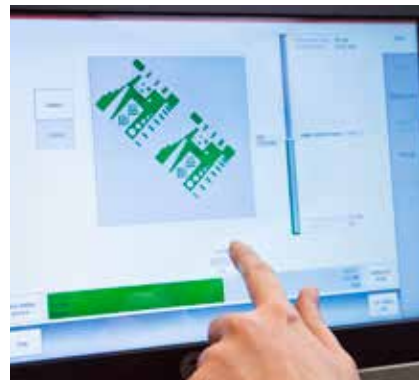
RELIABLE AND PREDICTABLE PRODUCTION

The excellent properties of Vancron SuperClean will ensure that the wear rate will be low and predictable. Adhesive wear is more unpredictable than abrasive wear and therefore the anti-galling properties are very important in order to minimise the unpredictable propagation of tool wear.



BETTER TOTAL TOOLING ECONOMY

The payback starts already during the manufacturing of your tool! The good machining properties in both delivery condition and hardened condition will significantly reduce your tool manufacturing cost. The extended and more predictable tool life will make your process run seamlessly. During your planned tool maintenance stops, the good hard milling properties, grindability and polishability will make maintenance quick and easy. All together it means higher output and less downtime and will reduce your cost per produced part.



OVERCOME CHALLENGES

MAKES THE IMPOSSIBLE POSSIBLE

Vancron SuperClean is an innovative solution that saves time and money. With a material that doesn't require coating to obtain the same resistance against wear, you simultaneously raise production rates.

GET TO MARKET FASTER

Vancron SuperClean is the perfect match for production with high precision cutting and shaping tools with sharp edges and tooling of complex geometries. The R&D department at Uddeholm has secured the properties and

qualities you need to make your product. With its winning combination of resistance, you can be assured reliable performance from the material, no matter the size and shape of tool or parts.





PROMISING BETTER BUSINESS

A PARTNER FOR TROUBLE-FREE PRODUCTION

ASSAB's driving force is to increase value and make a difference for our customers. We do so by always choosing the right material for the job at hand.

READY FOR THE FUTURE

With an in-house R&D department and a state-of-the-art powder laboratory, ASSAB can deliver cleaner material, with improved properties and business-enhancing features.

Vancron SuperClean is our latest answer to customer needs. With third generation PM-technology we have developed a unique and sustainable solution for modern manufacturing environment.

Vancron SuperClean in short

- Extremely good galling and adhesive wear resistance
- Unique low friction properties
- Very good abrasive wear resistance
- High hardness and compressive strength
- Consistent edge retention
- Easy to machine and polish
- Reliable dimensional stability



PROPERTY COMPARISON

ASSAB XW-42

Vanadis 4 Extra SuperClean

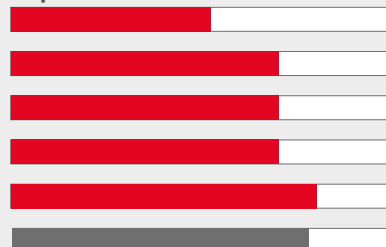
Vanadis 8 SuperClean

Vancron SuperClean

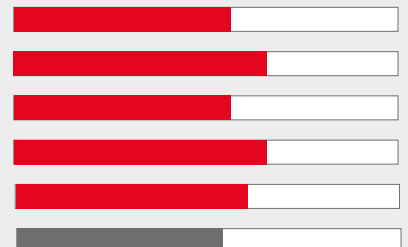
Powder metallurgical high speed steel
ASSAB PM 23 SuperClean

Conventional high speed steel
ASSAB M2

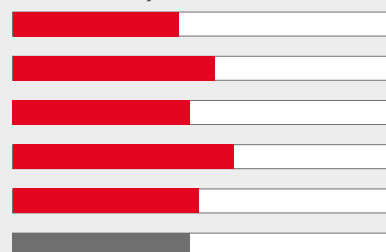
Hardness/resistance to plastic deformation



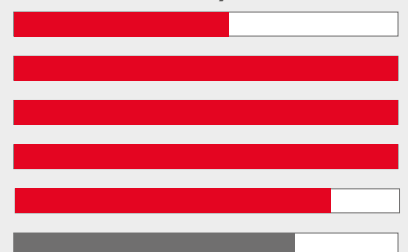
Grindability



Machinability



Dimension stability



ASSAB XW-42

Vanadis 4 Extra SuperClean

Vanadis 8 SuperClean

Vancron SuperClean

Powder metallurgical high speed steel
ASSAB PM 23 SuperClean

Conventional high speed steel
ASSAB M2

MARKET LEADING METALLURGY

THE BENEFITS OF INNOVATION

With the right material for your environment, every step of the process can be calibrated to reduce maintenance and raise production rates.

SMOOTHER AND SIMPLER

Thanks to the coating property embodied in the steel, it has the same performance through a cross section of the whole tool and the tool can be refurbished continuously.

Vancron SuperClean is a money maker and a time-saver, as corrections and adjustments can be made without re-coating when running-in the tool and, active surfaces are easily re-polished with short stop-time.

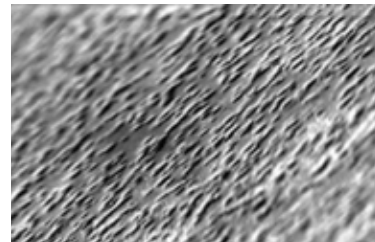
TYPICAL ANALYSIS %

C	N	Cr	Mo	V
1.3	1.8	4.5	1.8	10.0

Maximum hardness: 63–65 HRC

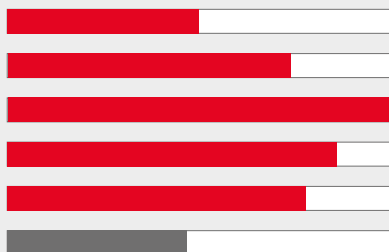
PICTURE PERFECT PROPERTIES

The smaller-sized hard phase and dense distribution of vanadium nitrides reduce friction and make up the internal surface coating. On a polished surface the small peaks of hard phase are surrounded by valleys that can act as reservoirs for lubricant. Together, the combination keeps your tools in shape much longer and improves the quality of the finished part.



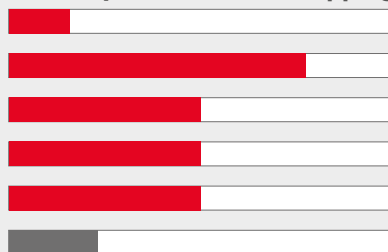
RESISTANCE TO

Abrasive wear



FATIGUE CRACKING RESISTANCE

Ductility/resistance to chipping



ASSAB XW-42

Vanadis 4 Extra SuperClean

Vanadis 8 SuperClean

Vancron SuperClean

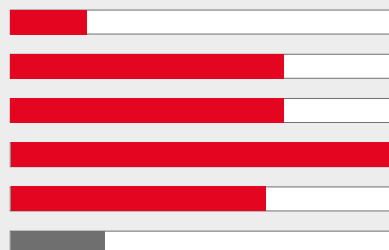
Powder metallurgical high speed steel

ASSAB PM 23 SuperClean

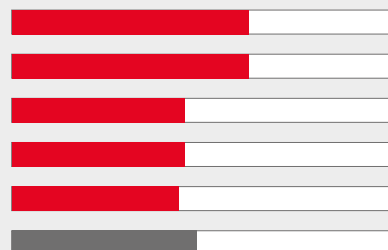
Conventional high speed steel

ASSAB M2

Adhesive wear/galling



Toughness/gross cracking



ASSAB XW-42

Vanadis 4 Extra SuperClean

Vanadis 8 SuperClean

Vancron SuperClean

Powder metallurgical high speed steel

ASSAB PM 23 SuperClean

Conventional high speed steel

ASSAB M2

HIGH PERFORMANCE TOOL STEEL

ALWAYS MOVING FORWARD

With pioneering research and development, innovative thinking and deep commitment, ASSAB and Uddeholm offer business-enhancing steel solutions to premium clients all over the world.

What started as a small iron mill in 1668 has now become the world's leading provider of tool steel, with business and operations in 90 countries. Always with the promise to deliver solutions that enhance competitiveness and create added value for our customers.

YOUR TOTAL SOLUTION PARTNER

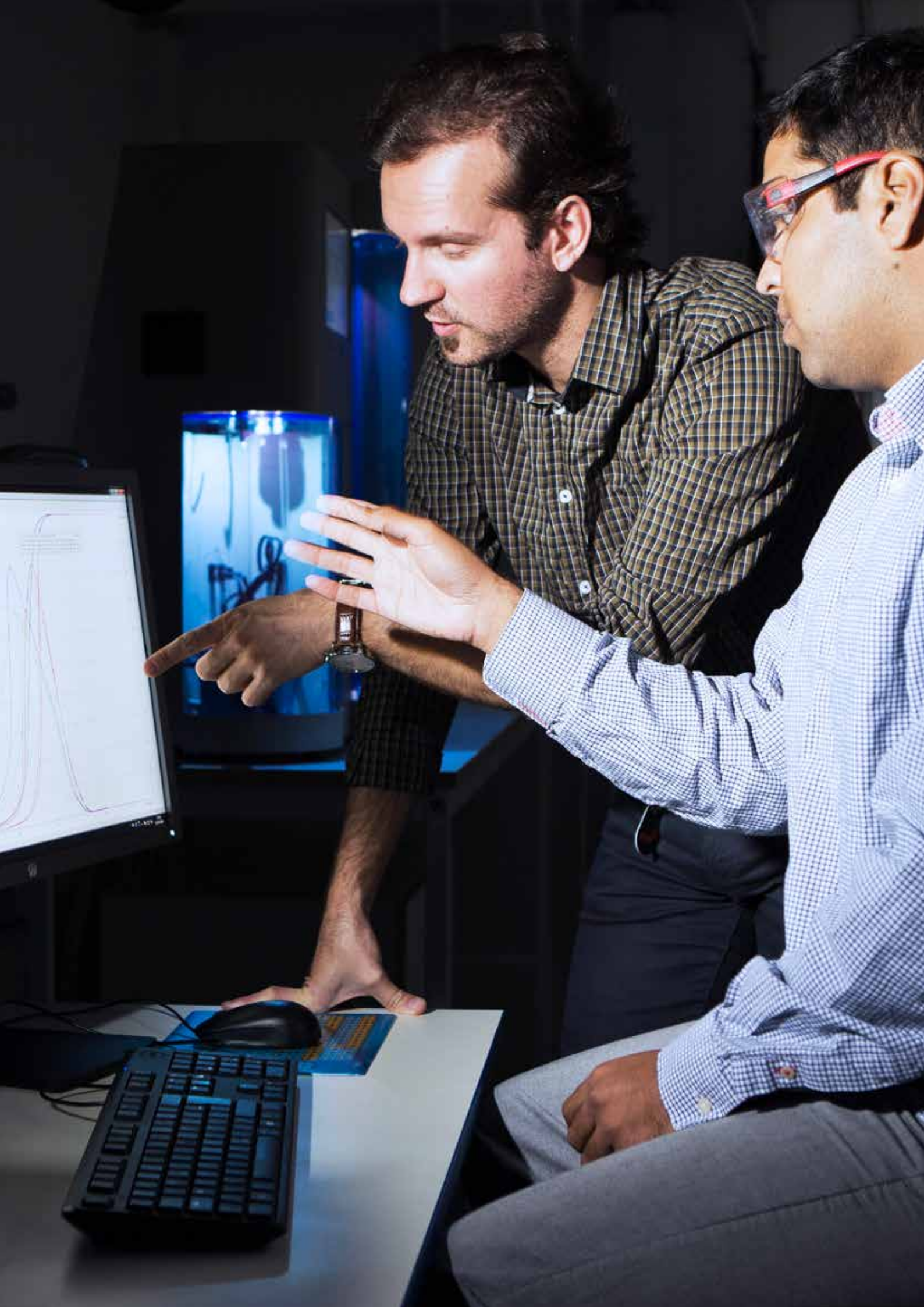
With a new tailored PM-plant and powder laboratory up and running we have the capability to match your demands and develop

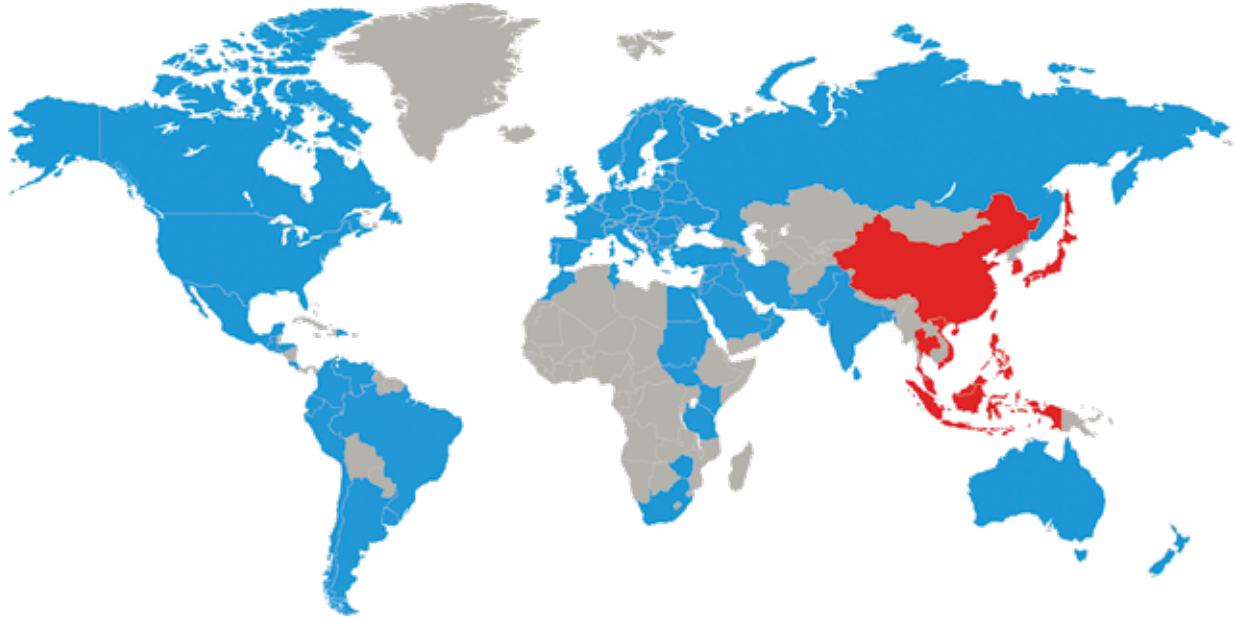
a tool steel solution that will take you to the first place.

WORLDWIDE SERVICE AND SUPPORT

With excellent technical support, delivery service and a range of additional steel treatment services, you can be assured to always get the optimal performance out of your investment, wherever your production is located.







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 best treatment for each application. ASSAB not only supplies steel products with superior quality, we offer state-of-the-art machining, heat treatment and surface treatment services to enhance steel properties to meet your requirement in the shortest lead time. Using a holistic approach as a one-stop solution provider, we are more than just another tool steel supplier.

ASSAB and Uddeholm are present on every continent. This ensures you that high quality tool steel and local support are available wherever you are. Together we secure our position as the world's leading supplier of tooling materials.

For more information, please visit www.assab.com