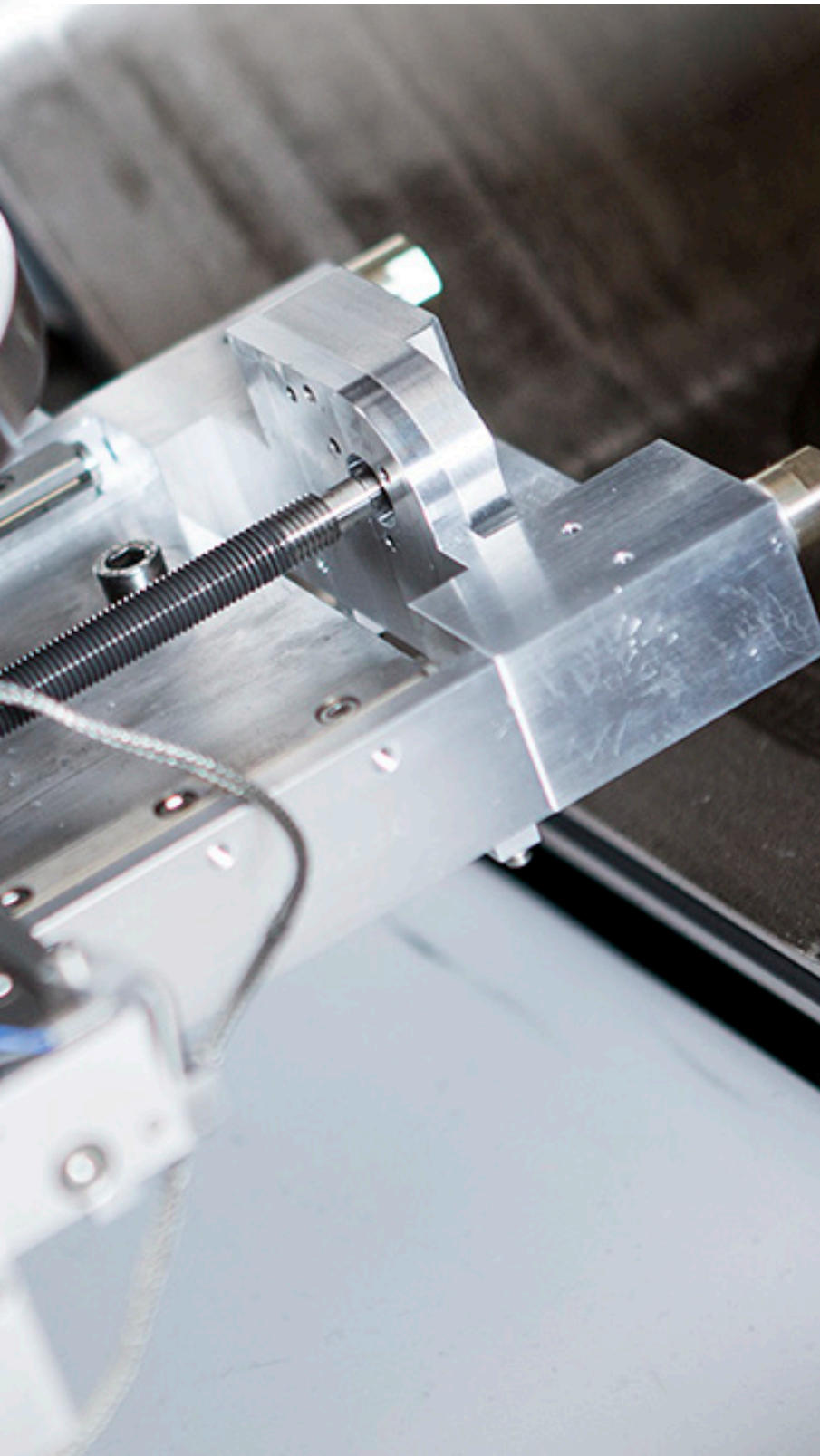
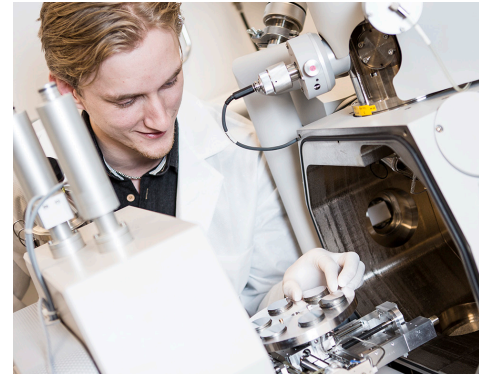
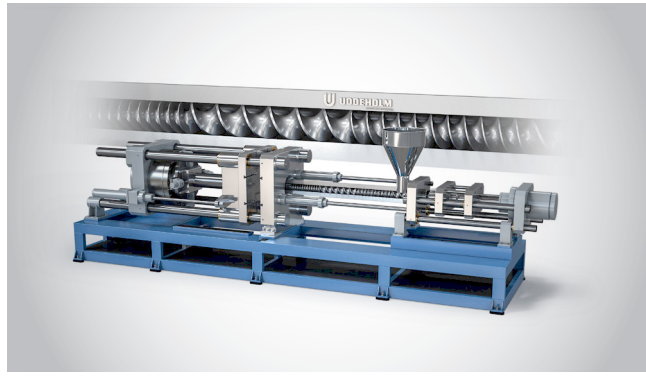


Reach full potential

**Uddeholm PM-tool steel**  
**concept for screws**

**POWER TO PUSH**  
**THE LIMITS**



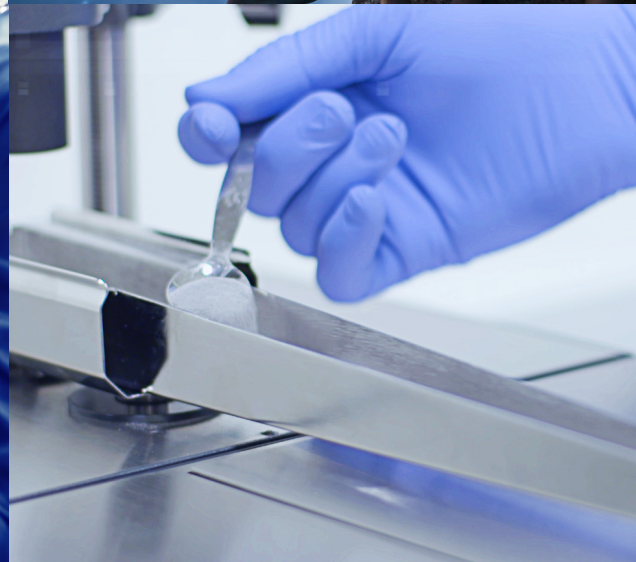


## #1 IN HIGH PERFORMANCE TOOL STEEL

With pioneering research and development, innovative thinking and deep commitment, Uddeholm offers 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.



*Uddeholm is the world leader in the development and production of premium tool steel for the manufacturing industry.*



## PROMISING BETTER BUSINESS

# STANDOUT PRODUCT PERFORMANCE

Uddeholm's portfolio of powder metallurgical steels is perfectly suited to match the needs of the challenging production environments of plasticizing screws.

### WITH EXPERIENCE AND EXPERTISE

By combining the knowledge and experience of the best metallurgists and field specialists in the world with close customer collaborations, Uddeholm can develop tool steel with unique

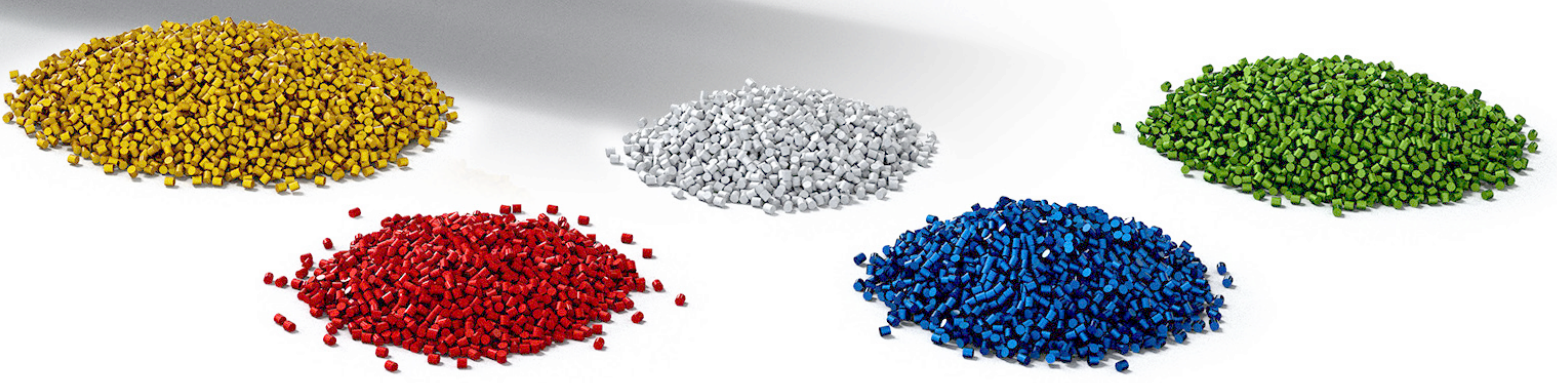
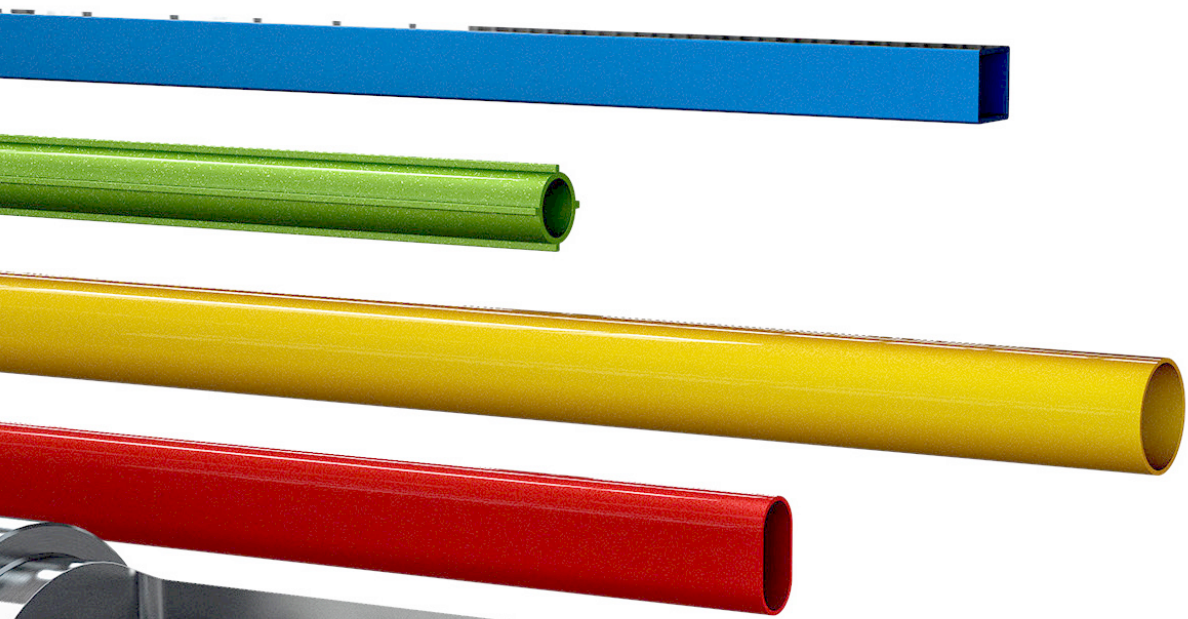
properties that multiply the screw's life and performance while it is still easy to machine. Our range of business-enhancing solutions delivers higher quality, increased performance and better total tooling economy.

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### More uptime for screw users

- » Improved resistance to wear and corrosion
  - » Extended screw life
  - » Longer production series
  - » No more unplanned production stops
- 





## UNDERSTANDING YOUR DEMANDS

# HIGH PERFORMANCE FROM HOPPER TO DIE

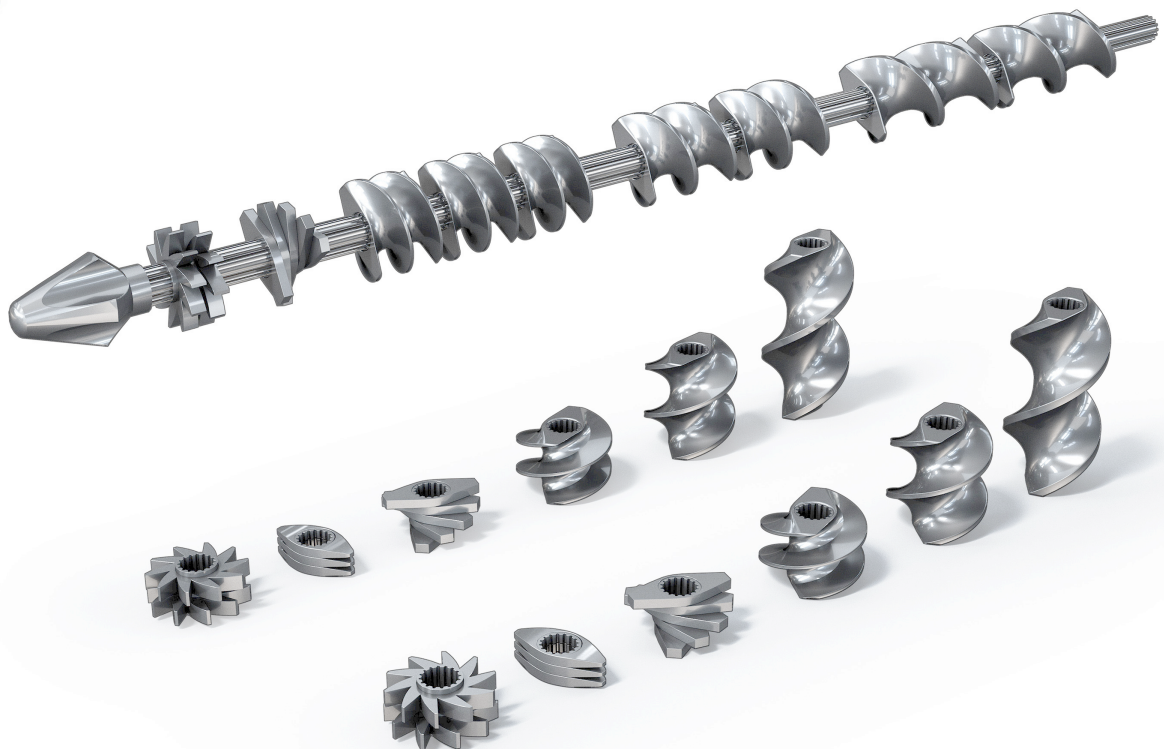
With our premium PM-offer for plasticizing screws you can choose between four high quality solutions that can withstand wear, torque and corrosion.

Uddeholm is leading the development and production of premium tool steel for the manufacturing industry. Products you see and use every day, all contain parts that have been formed by tools made from Uddeholm steel. With pioneering metallurgy and production technology we secure the unique properties and improve tool performance in the most demanding industrial applications. Imagine the possibilities that our market leading solutions

can provide for your plasticizing screw performance.

## BECAUSE CLEANER IS STRONGER

Both technology and raw material are key factors when selecting the optimal steel grade for screws. We know that the quality and performance of the screw are crucial, because its durability and efficiency have an economic impact for the plastic manufacturer.



## A SOLUTION FOR EVERY NEED

# PROVIDING NEW POSSIBILITIES

With market leading metallurgy and production technology we develop the intelligent tool steel that your complex shapes and challenging conditions require.

These four premium PM-steel products for high performance screws are all selected for their unique and high resistance to wear and corrosion.

## THE STAINLESS PROBLEM SOLVER

**Uddeholm Vanax SuperClean** is the superior answer to demands on productivity in challenging environments. By replacing carbon with nitrogen, the stainless properties can be paired with a high wear resistance. Together they form a unique combination that delivers game-changing quality. Where no other previous material suffices, this unique property combination ensures reliable performance from start to finish.

### Typical analysis %

C	N	Cr	Mo	V
0.36	1.55	18.2	1.1	3.5

### Maximum hardness:

58–60 HRC

### Uddeholm Vanax SuperClean

*The problem solver with the best corrosion and wear resistance available. Used for the most aggressive and corrosive plastic resins with abrasive filler materials.*

## STRENGTH AND STAMINA ALL THE WAY

**Uddeholm Vanadis 8 SuperClean** is the perfect partner for very long production series and challenging environments. Technological advances make this cold work tool steel superior to its predecessors and set a new standard for PM-tool steel. It is cleaner and stronger than earlier generations and gives your applications extra life. The properties ensure the improved screw life that transforms this steel grade into a profitable long distance runner.

### Typical analysis %

C	Si	Mn	Cr	Mo	V
2.3	0.4	0.4	4.8	3.6	8.0

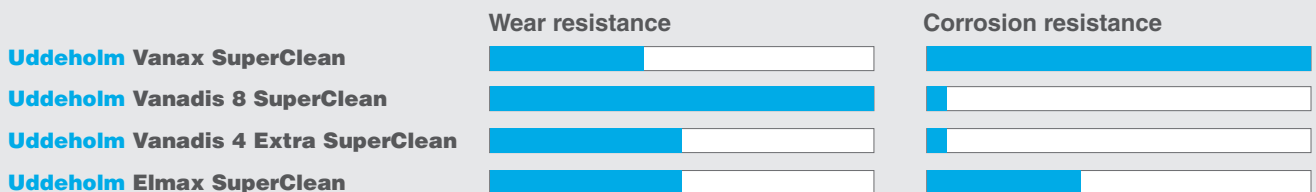
### Maximum hardness:

60–62 HRC

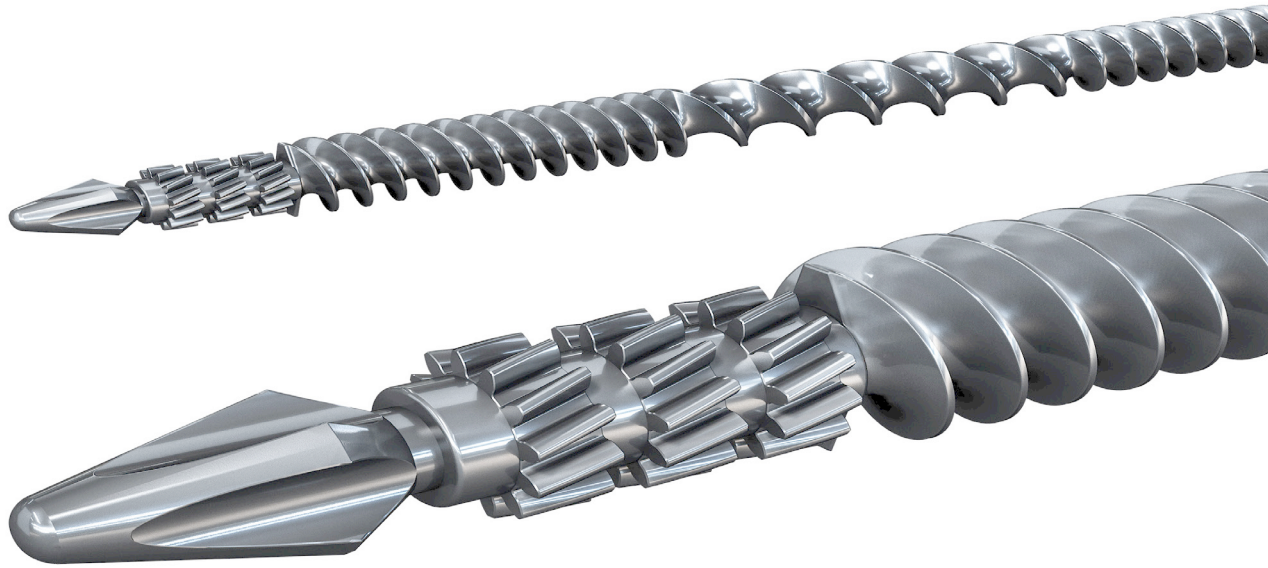
### Uddeholm Vanadis 8 SuperClean

*When abrasive wear resistance is key. For plastic resins with more than 40% glass fibre.*

## PROPERTY COMPARISON







## A FLEXIBLE AND RELIABLE PERFORMER

**Uddeholm Vanadis 4 Extra SuperClean** is the reliable choice when you want the best conditions for trouble-free production. With unparalleled cracking resistance and very good wear resistance it guarantees extended screw life. This third generation high-alloy powder metallurgical tool steel provides a flexible and dependable performer for challenging production environments.

### Typical analysis %

C	Cr	Mo	V
1.4	4.7	3.5	3.7

### Maximum hardness:

62–64 HRC

### Uddeholm Vanadis 4 Extra SuperClean

*Cracking resistance and torque resistance at the highest level. The ultimate choice when a reliable production is important. For plastic resins with up to 40% glass fibre.*

## THE WINNING COMBINATION OF RESISTANCE

**Uddeholm Elmax SuperClean** delivers properties that only market leading metallurgy can offer. The high wear resistance combined with corrosion resistance produces material characteristics especially suited for long production runs and complicated shapes. When matched with the right application, the result is higher output, reduced maintenance and a more predictable production.

### Typical analysis %

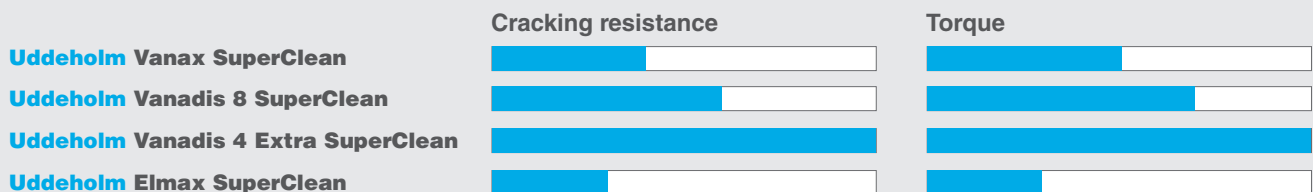
C	Cr	Mo	V
1.7	18.0	1.0	3.0

### Maximum hardness:

58–60 HRC

### Uddeholm Elmax SuperClean

*A perfect combination of wear and corrosion resistance. For those moderate corrosive plastics with a high amount of filler materials.*



## A REWARDING RELATIONSHIP

# ALWAYS MOVING FORWARD

Facing a rapidly changing tooling industry we have made several business-enhancing investments in R&D and powder production in order to expand our tooling expertise and improve our tool steel offer.

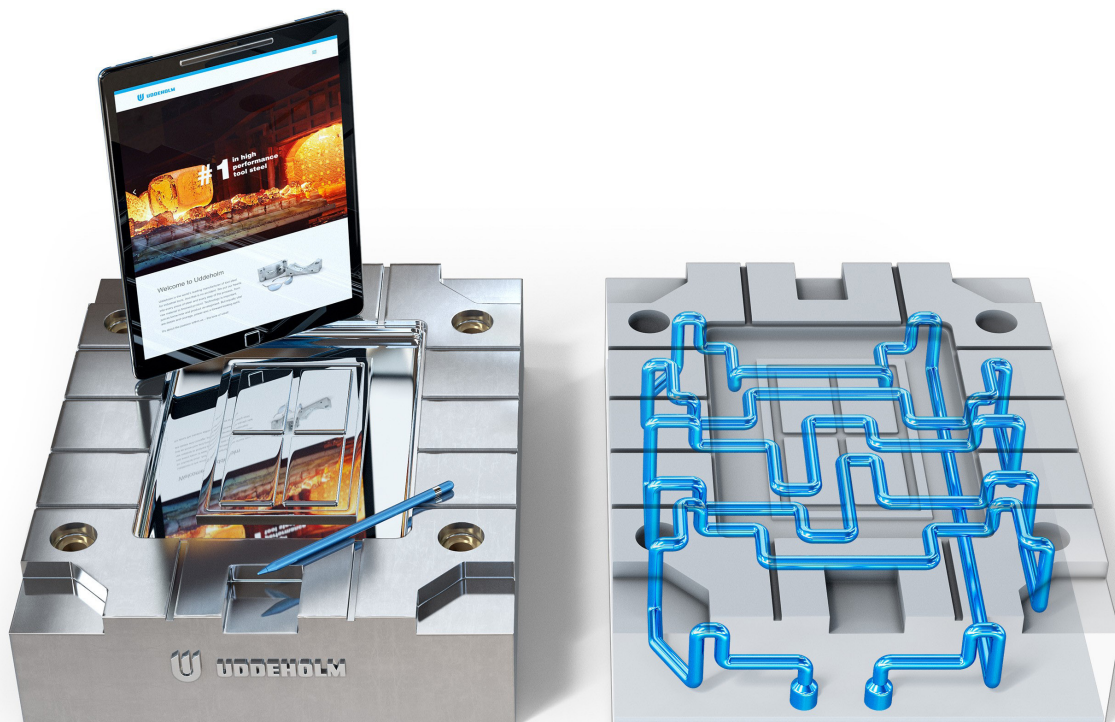
## YOUR TOTAL SOLUTION PARTNER

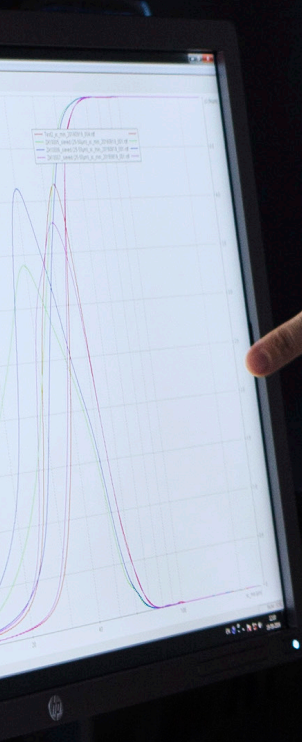
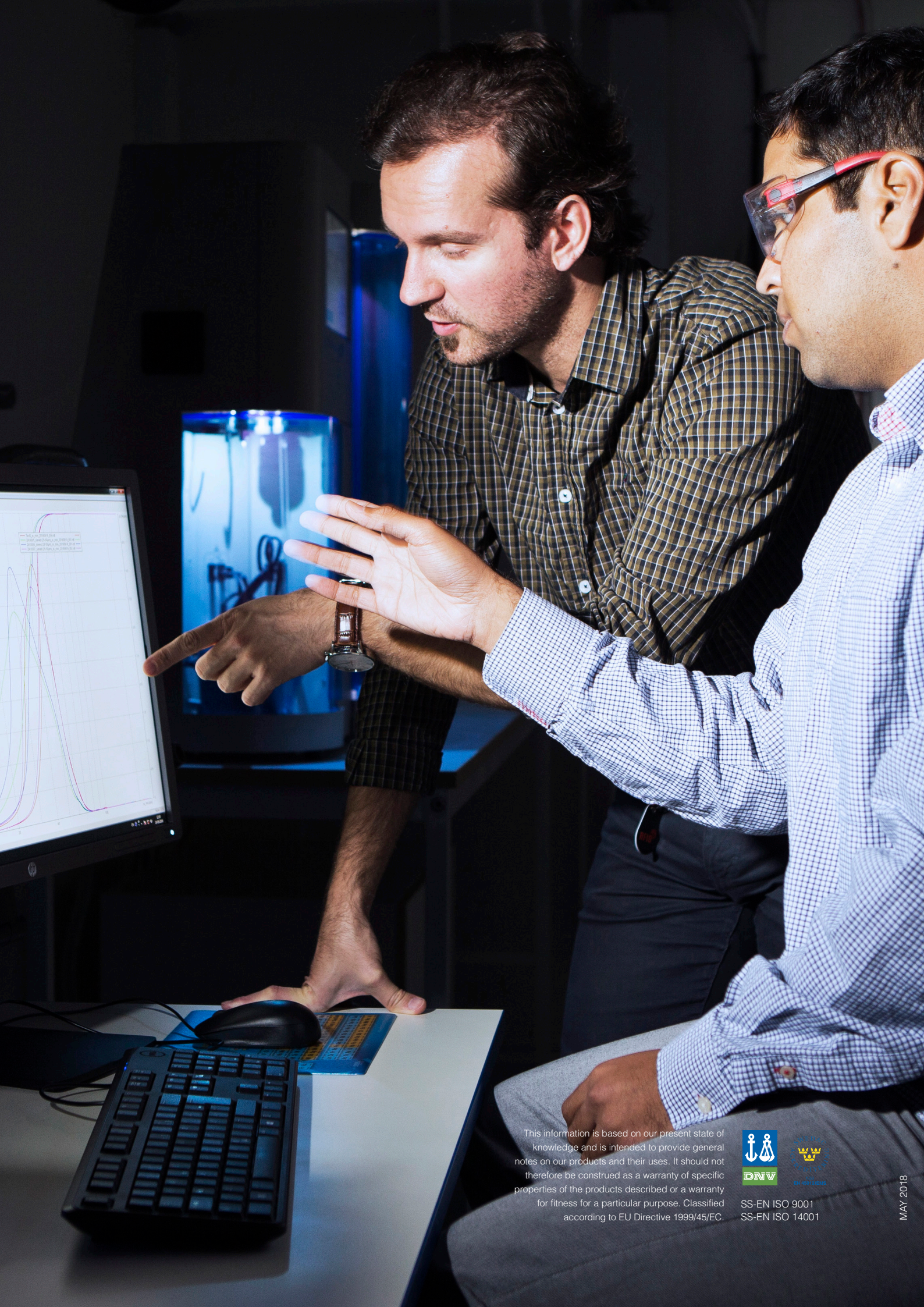
With a new tailored PM-plant and powder laboratory up and running we have the capability to match your demands and develop a tool steel solution that will take you to first place.

## 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. Our unique competence and material knowledge are the two fundamental tools we use to help you create the best conditions for profitable tool making and manufacturing.





This information 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. Classified according to EU Directive 1999/45/EC.



SS-EN ISO 9001  
SS-EN ISO 14001

Manufacturing solutions for generations to come

# SHAPING THE WORLD

Since 1668 we have been providing a wide range of innovative cutting-edge solutions for our customers in demanding segments. Our dedicated employees work in almost ninety countries and together we deliver improved competitiveness to clients worldwide. Welcome to Uddeholm.