



"When cycle times are measured every second counts"



Polymer technology has advanced to a stage where conventional tool steels struggle to cope with the increased demands placed on the tooling by advanced plastics and additives.

Increased wear, high temperature injection and curing can lead to significant reduction in tool life. Corrosive gasses produced as a by product of production can also seriously damage the tool steel, leading to premature failure.

Thermal hot spots can present a serious issue for high volume production, slowing down parts produced. When cycle times are measured every second counts!

INFLUENCING FACTORS TOOL FAILURE



Water supply



Polymer



Tool use &
Maintenance



Steel choice



Polishing



Heat treatment



Moulding
Temperatures



Manufacturing method

Reinforced polymers with high levels of glass fibres are increasing. This elevates the need for higher hardness and the optimisation of tool steel composition and production methods. Flame retardants are commonly used, which in turn creates other problems with corrosion and therefore increases the need for stainless solutions.

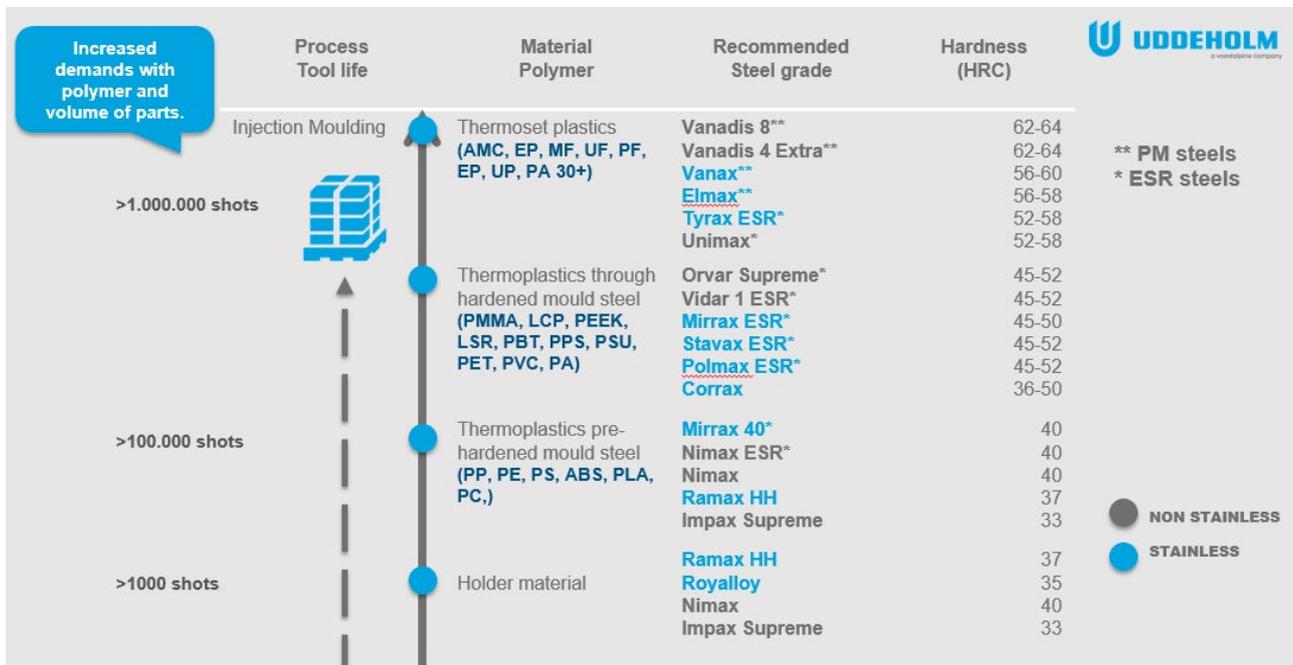


Bio-composites can often cause a combination of both wear and corrosion, due to wood fibres and water vapour. This failure mode is also known as tribochemical wear.

For Uddeholm as a steel producer and solution provider it is of course very important to know about the polymer development and trends.

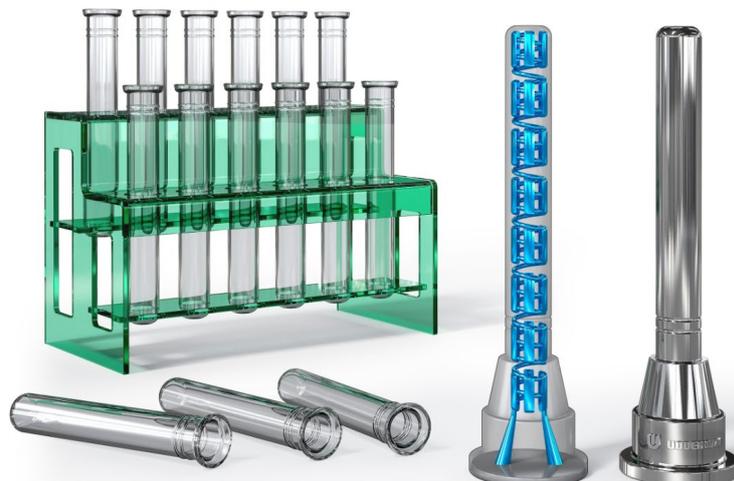
By understanding the trends in a global market, we can develop tailored materials which meet the demands placed on our customers tools and production efficiency.

Tool production life - Uddeholm steels for moulds



Additive Manufacturing - 3D metal printing

Another exciting trend in the plastics industry is the use of additive manufacturing (AM) for tooling. This solution based technology can offer a world of new possibilities for complicated parts / tooling. Design of complicated shapes means cooling of the tools is a big challenge faced by both designers and toolmakers.



Uddeholm has developed a technical and service based solution using (SLM) powder bed technology.

By covering the whole value chain from material development, design and simulations right through to printing and post processing, we have a unique service package for individual customer

needs. whether its high cycle time of plastic parts or warpage issues due to hot spots that are currently inaccessible with conventional drilled cooling channels. Uddeholm has a new perspective on solving the everyday production challenges.

With the use of this amazing technology you can enjoy features such as conformal cooling and only where its needed with hybrid manufactured parts. AM technology can also be used to consolidate multiple parts of an assembly into one manufactured part with an optimized design

The possibility to reduce mass of tooling inserts using topology optimization allows for greater weight reduction, cooling time of the insert and most importantly the cost of manufacture time and material usage.

For more information on our high performance steel grades or additive manufacturing for moulding applications contact us



UDDEHOLM

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