Advanced Cutting Fluids
Customers Face-to-Face

- The exchange of knowledge and experiences.
- Communicating reality.
- The pursuit of innovation is necessary even though it may be uncomfortable at times.
Sustainability

- Not being harmful to the environment.
- Endure the complexities of modern manufacturing.
History

- Most of the cutting fluids on the market today are based on 1970’s technology:
  - Coolants: Boric Acid (Boron), Formaldehyde, and Secondary Amine
  - Cutting Oil: Short Chain Chlorinated Paraffin (SCCP) and Medium Chain Chlorinated Paraffin (MCCP)
Regulatory

- UN
- WTO
- RoHS
- ECHA
- REACh
- CoRAP
- SVHC
- CLP
- EPA (TSCA)
- DEP
- OSHA
- WHMIS
- PRTR
- IARC
- NTP
- SCAQMD
Registration Evaluation Authorization and Restriction of Chemicals (REACH)

- EU since 2007, full implementation 2018
- South Korea
- Japan
- Philippines
- Vietnam
- Thailand
- Taiwan
- China
- Malaysia
- Singapore
- Turkey
Substances of Very High Concern (SVHC)

- Boric acid (Boron)
- Formaldehyde Containing Biocides
- Secondary Amines (DEA, DCHA, DIPA, Morpholine)
- Short Chain Chlorinated Paraffin C13< (SCCP)
- Medium Chain Chlorinated Paraffin C14 to C17 (MCCP)
GHS Labeling Requirements

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<th>Best</th>
<th>Worst</th>
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- !: Warning
- : Health hazard
- ☠: Death hazard
Tribology, Forms of Wear

- Abrasive
- Adhesive
- Chemical
- Electrical
- Mechanical
- Thermal
Tool

Chemical Film

Physical Film

Chemical Film
Martensite from Austenite
Parts

Brand X  Advanced Fluid
Advanced Cutting Fluids

- Machine Environment
- Parts Cleaning
- Material Handling
- Increase Chip/Swarf Value, 95%>
- Lowering Carbon Foot Print, <70%
Facts

- Lubricants are often the last part of the process to be considered
- Often the process is engineered to the limitations of the lubricant not the limitations of the tools and machine
- Time-Tested Technologies, 2 Years Minimum
Comparison of Hangstefers S787 to the other products – Rake wear

Hangstefers exhibited the lowest rake wear throughout the trials until the equivalent of 7 parts were machined.
Comparison of Hangstefers S787 to the other products – Flank wear

Hangstefers exhibited the lowest flank wear throughout the trial.
Comparison of Hangstefers S787 to the other products – Surface Roughness

The surface roughness measurements showed that Hangstefers S787 improved the surface roughness of the test pieces produced compared to the baseline coolant and produced a much more consistent result than any other product.
Thank You For Your Attention