


LNS INDIA
HIGH PRESSURE COOLANT
SYSTEMS WEBINAR



WHERE THE STORY BEGAN



ORVIN – SWISS
JURA BERNOIS

CRADLE OF THE SMALL PARTS
TURNING INDUSTRY

**WORLDWIDE
PRESENCE**

 **LNS Agents**

 **LNS Subsidiaries**

**OVER 45 YEARS
OF EXPERIENCE**

OUR PRODUCTION FACILITIES AROUND THE GLOBE



Kings Mountain - NC



Cincinnati - OH



Meadville - PA



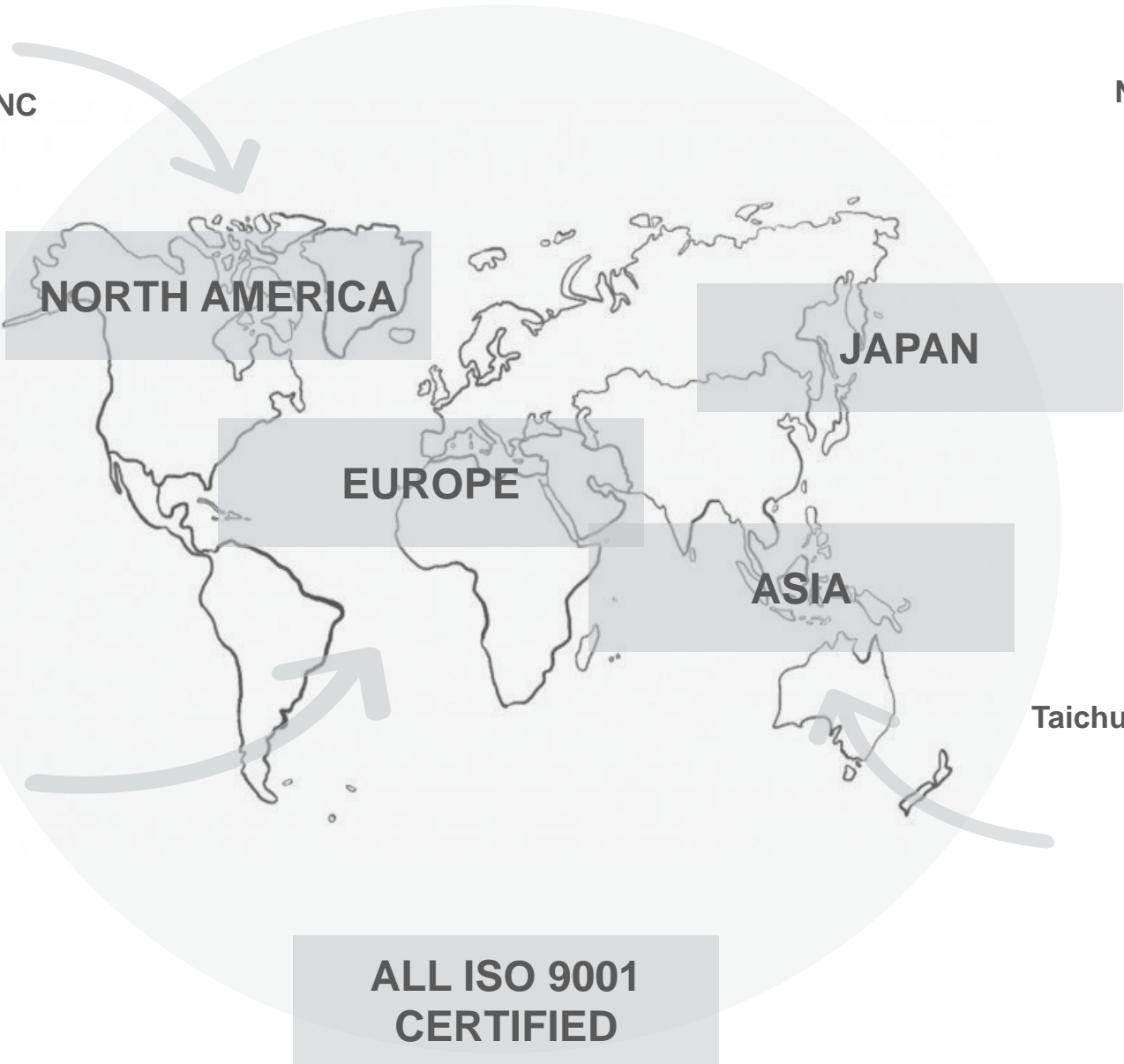
Barnsley - UK



Curno - Italy



Orvin - Switzerland



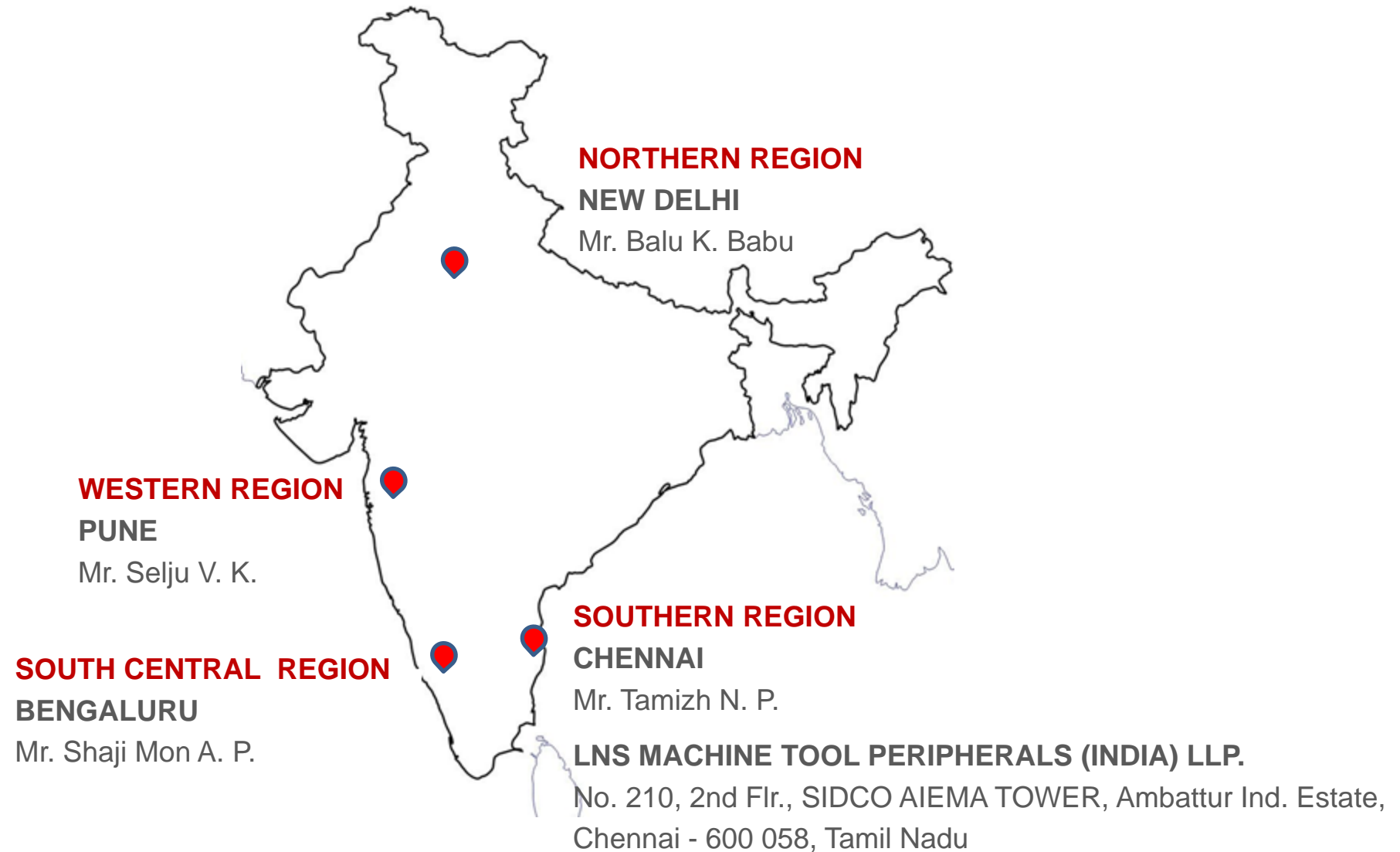
Nomi Shi - Japan

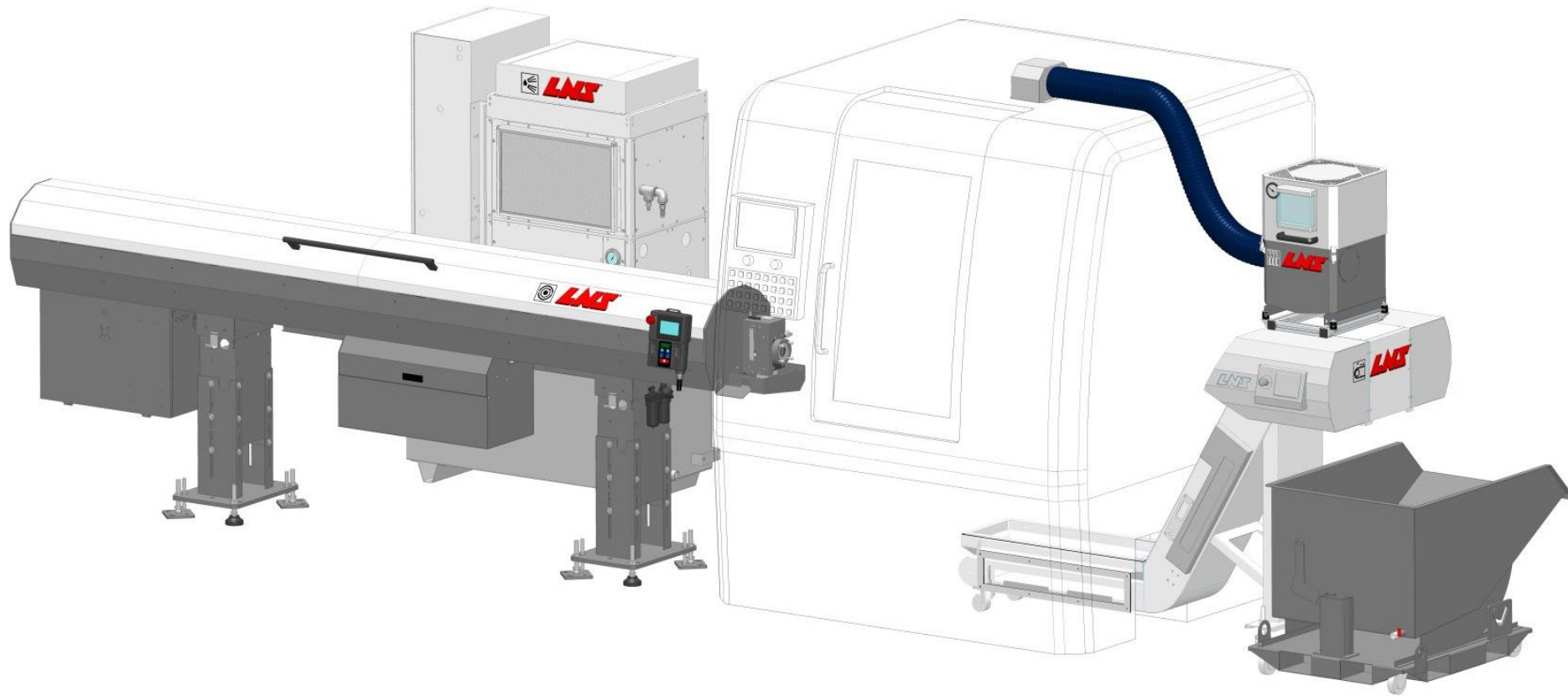


Taichung City - Taiwan



Suzhou - China





MISSION

The global partner of choice automating manufacturing with innovative solutions.

VISION

By 2022, LNS will be the **global** leader providing a **One-Stop-Shop** of solutions for machine tools. To succeed we are committed to providing the **best in class products and services** with a focus on innovation and continuous improvement in everything we do. Our competitive strength comes from our customer focused culture, global manufacturing and support capabilities, broad product portfolio and market leadership.

COOLANT MANAGEMENT SYSTEMS



We Are #1 supplier in the U.S., the
recognized name brand in HPC Solutions

Extensive product portfolio

- HPC
- Coolant Chillers
- Cyclone Filtration
- Tramp Oil Remover
- Oil Skimmers



History of ChipBLASTER



ChipBLASTER, Incorporated & Founded in 1994 and located in United States - Meadville, Pennsylvania.

ChipBLASTER is the only coolant system which can offer & distribute High Pressure with High Volume Coolant delivery technology for Metal Cutting.



LNS Acquired ChipBLASTER
in September 2018

An aerial photograph of a large industrial facility. The main building is a multi-story structure with a dark roof and numerous windows. A parking lot filled with cars is situated to the left of the building. The surrounding area includes green grass and some trees. A semi-transparent text box is overlaid on the center of the image.

High-Pressure / High-Volume Technology

LNS ChipBLASTER



Temperature Control at Cutting Point & More

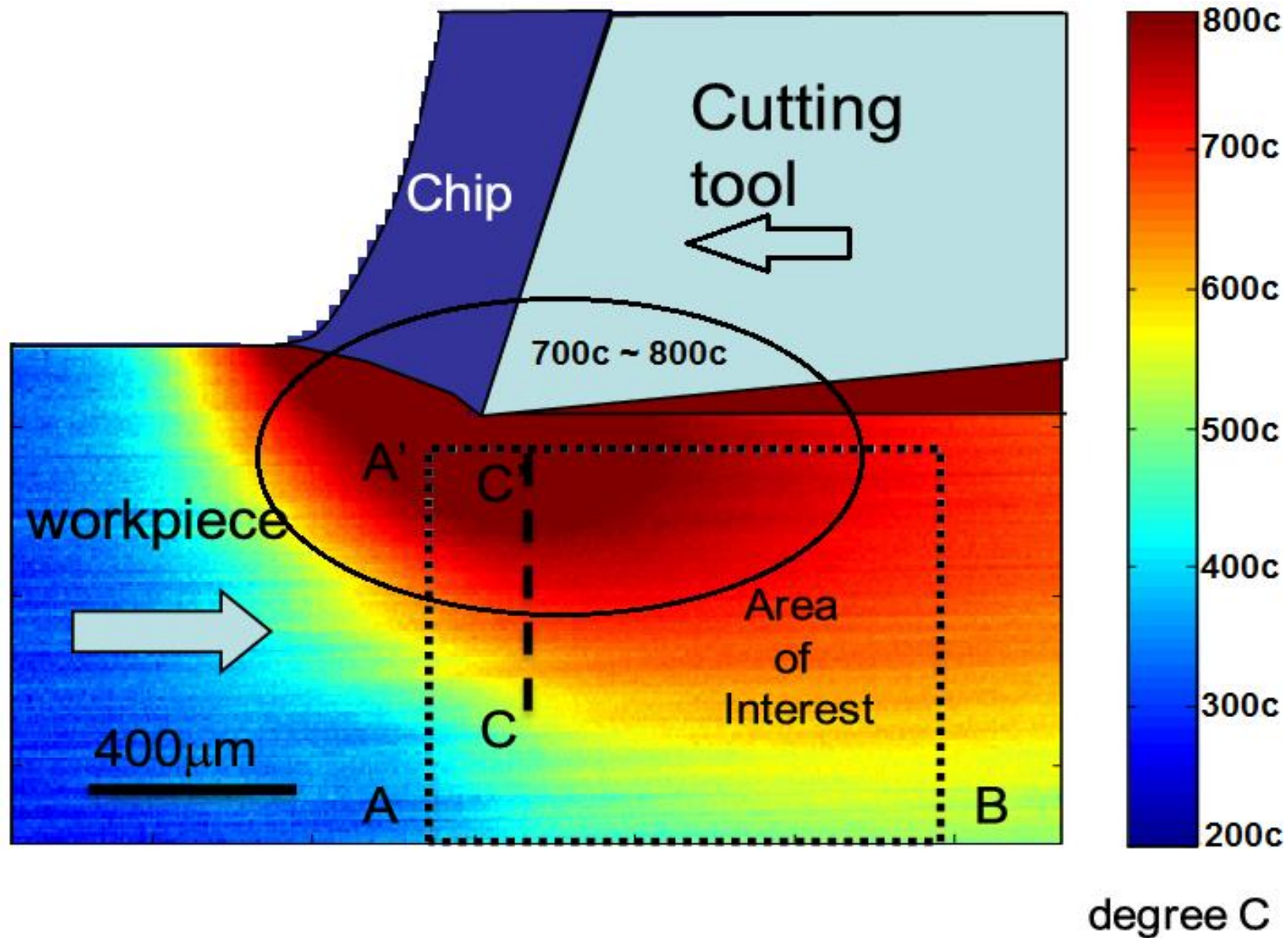
VS.

Competitors



Chip Braking & evacuation through applying the coolant with force.

High Pressure Coolant is not used only for Chip Braking, it's just a added feature.



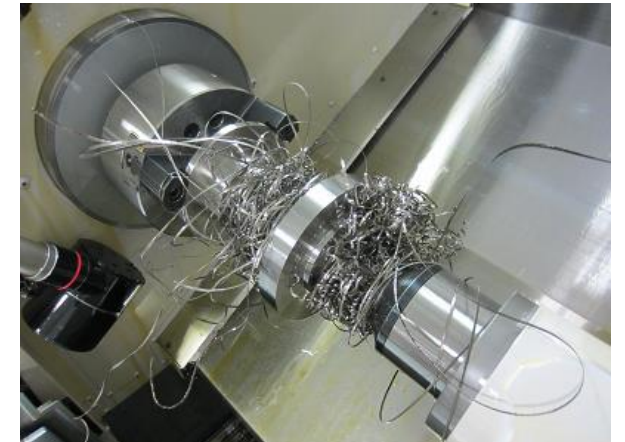
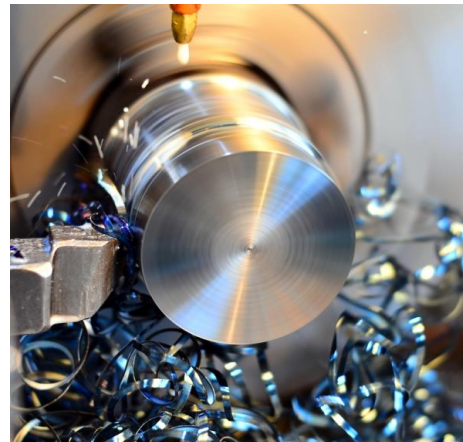
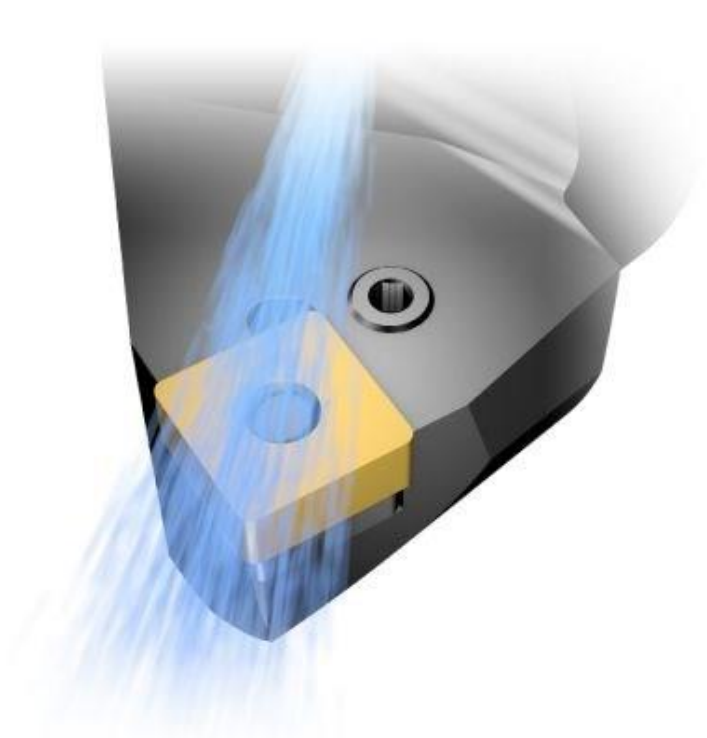
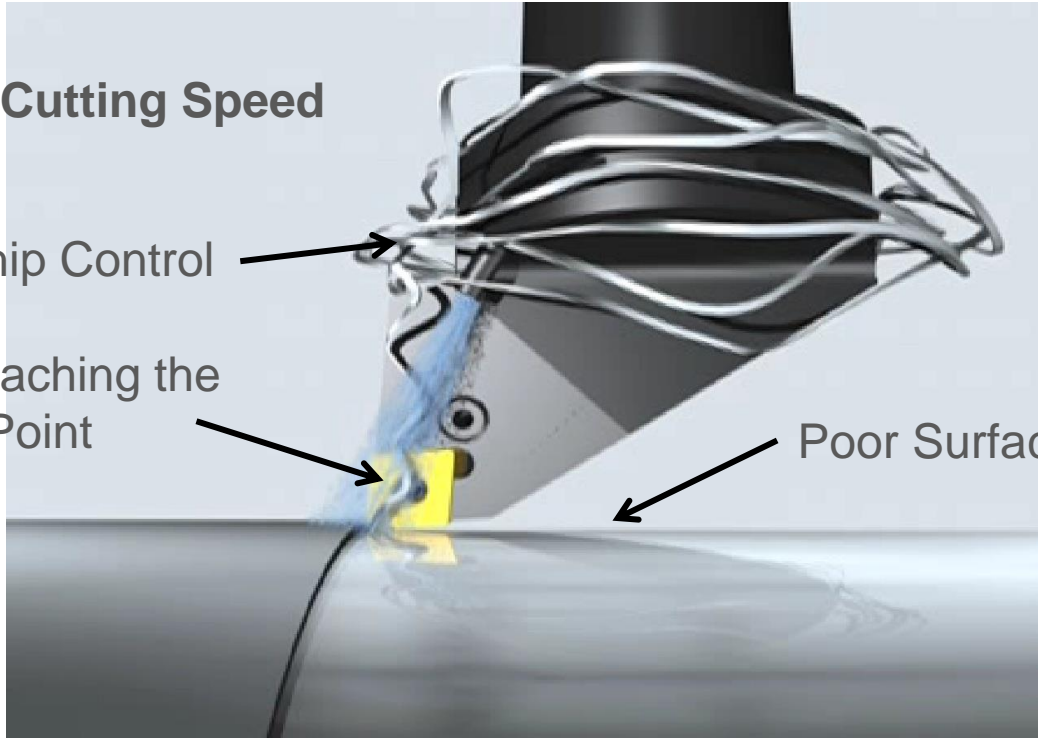
CONVENTIONAL COOLANT FUNCTION

Low Cutting Speed

Poor Chip Control

Coolant Not Reaching the
Actual Cutting Point

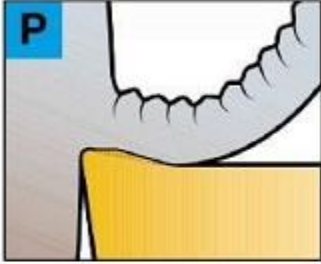
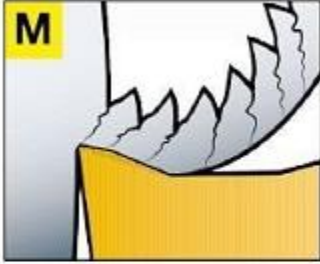
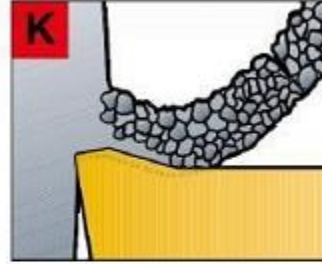
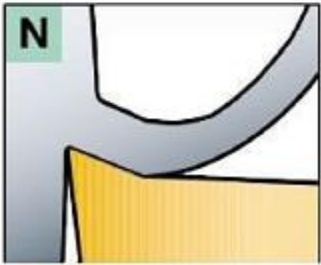
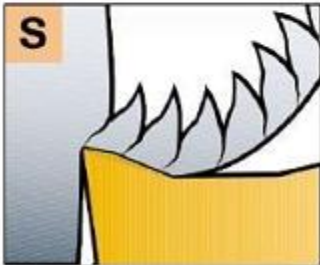
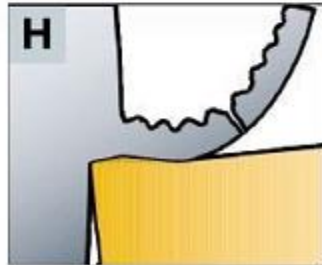
Poor Surface Finish



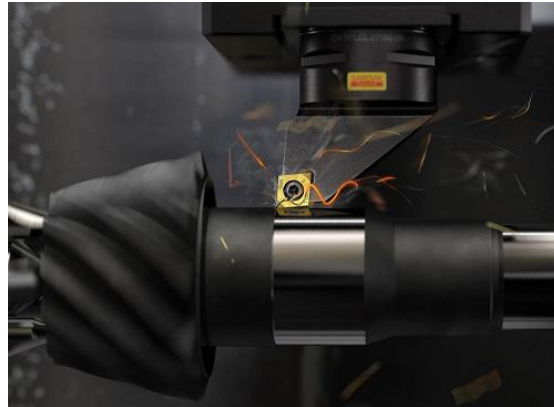
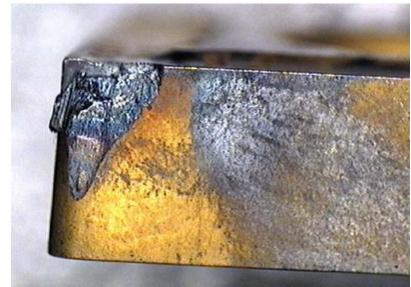
CHIP COLOUR WILL TELL YOU THE TRUTH

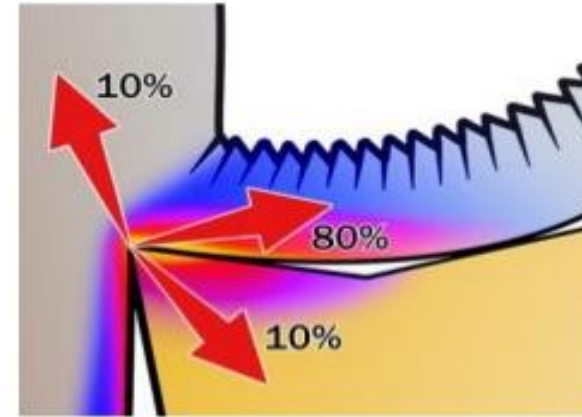
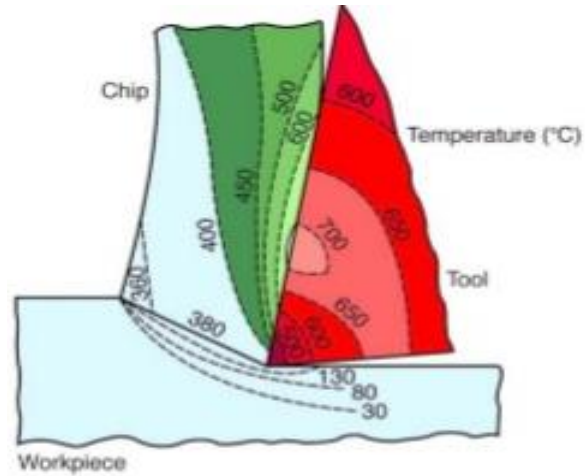


Different Material VS. Different Chip Forms

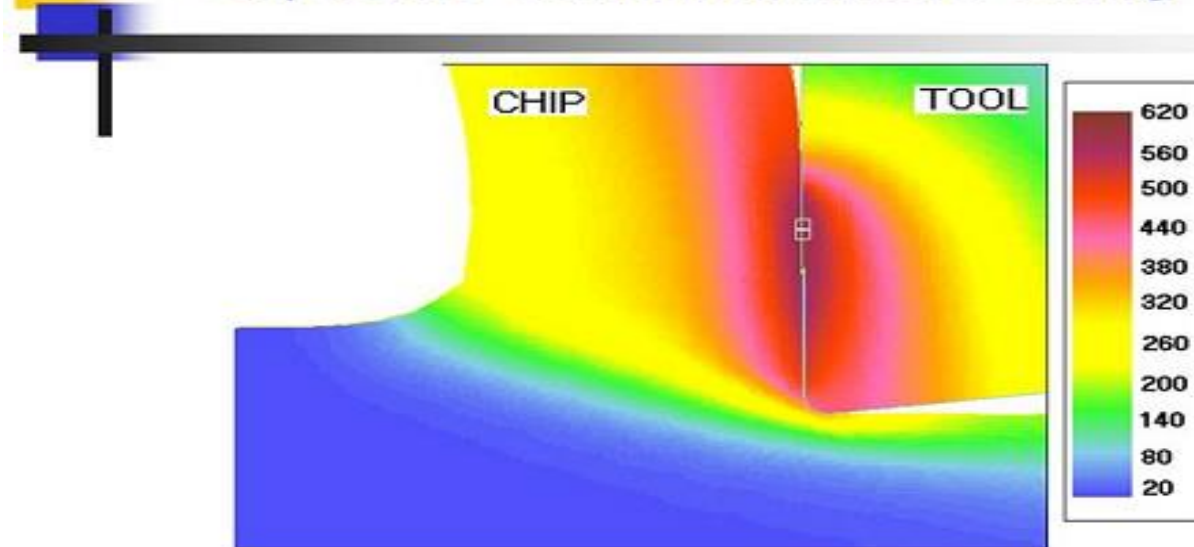
| | | |
|--|--|--|
| <p>ISO P</p> <p>Steel</p>  | <p>ISO M</p> <p>Stainless Steel</p>  | <p>ISO K</p> <p>Cast Iron</p>  |
| <p>ISO N</p> <p>Non-ferrous Metals</p>  | <p>ISO S</p> <p>Heat Resistant Alloy</p>  | <p>ISO H</p> <p>Hardened Steel</p>  |

- Super Heated Cutting Tools
- Higher Cycle Time Due to Lesser Cutting Speed
- Lesser Tool Life due to Coolant Can't penetrate the Tool tip
- No lubrication at cutting point
- Poor Chip Control & rolling with cutting tools & work Piece
- Chips fall back into cutting point & re cutting the chips
- Lesser Machine Tool Life
- Process & accuracy unstable
- Poor Surface Finish

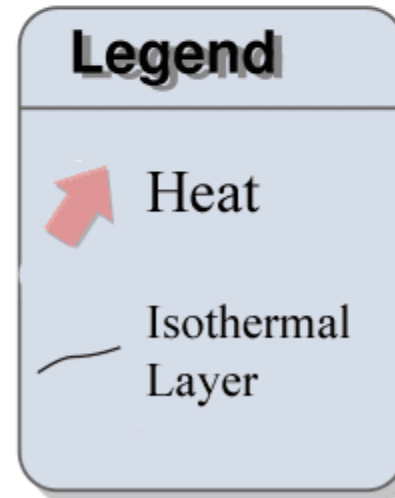
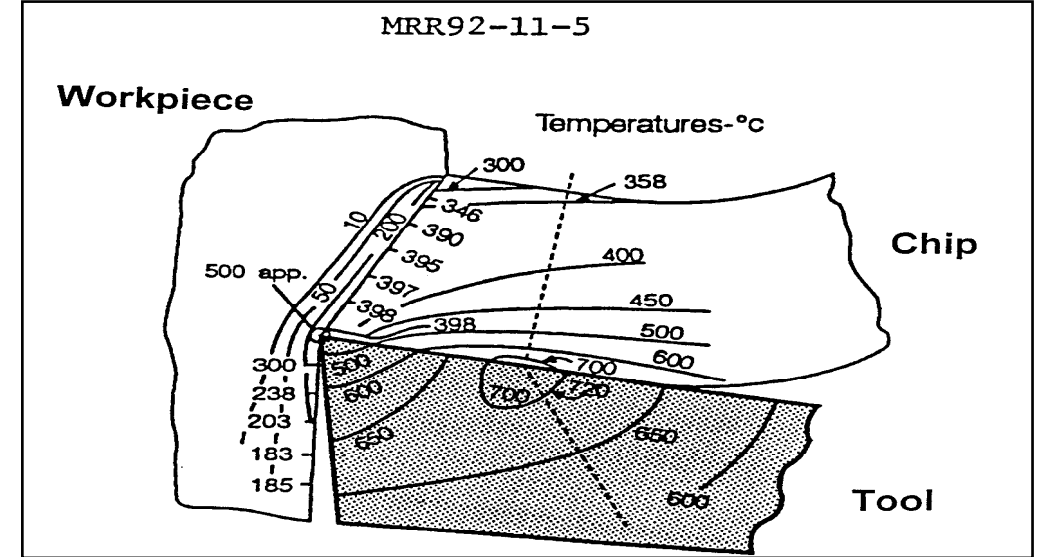
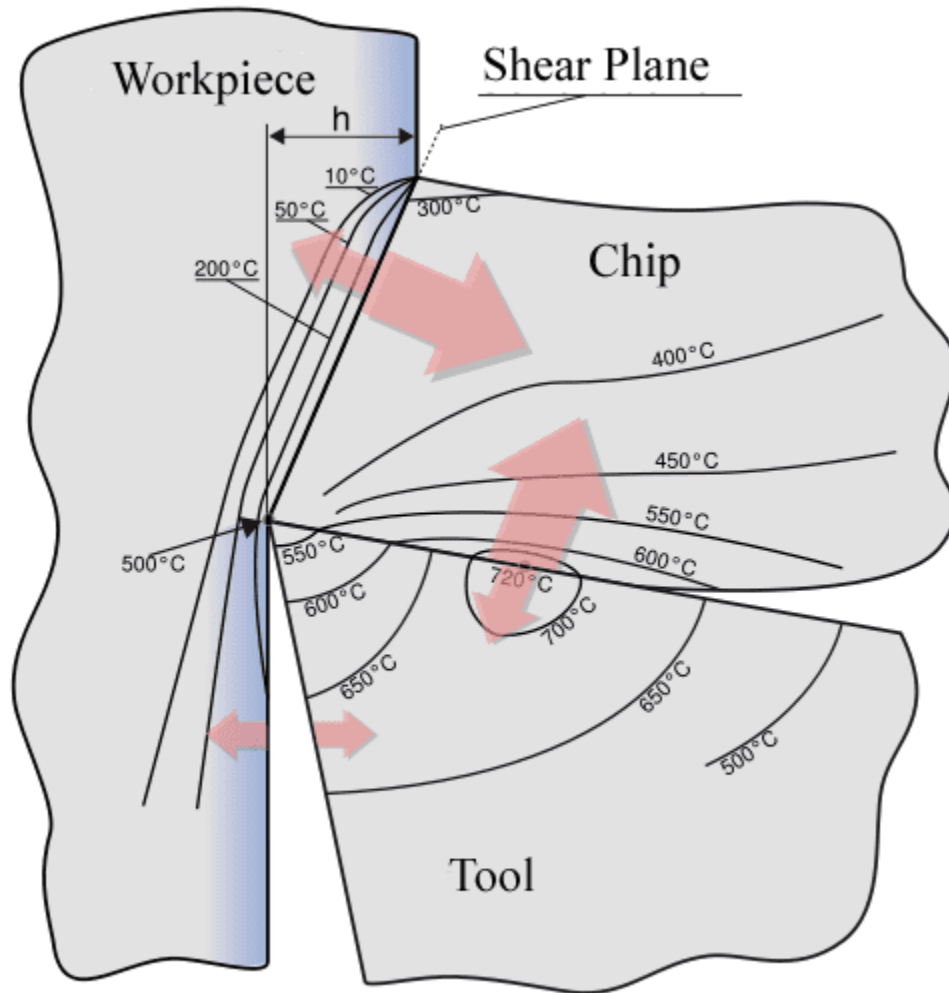




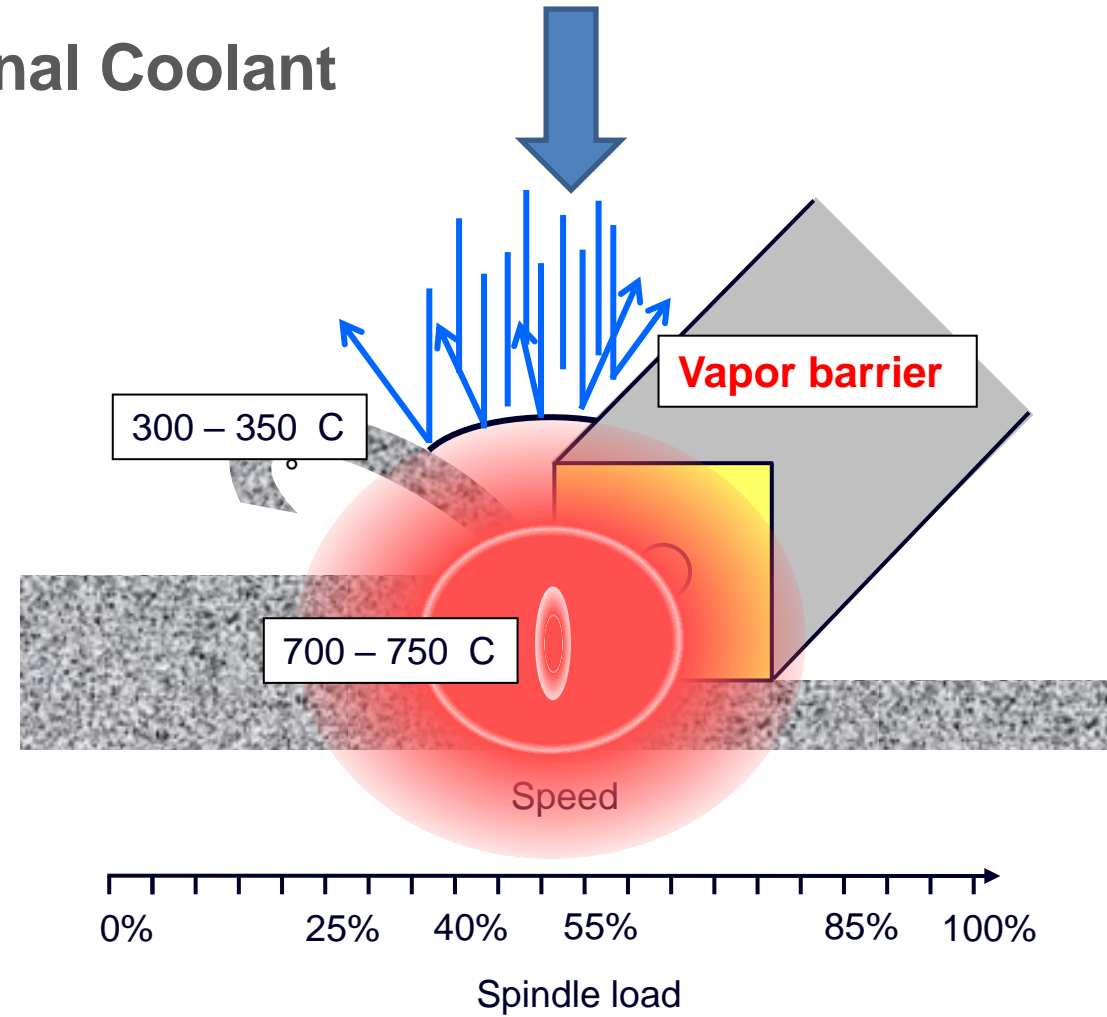
Temperature distribution in metal cutting



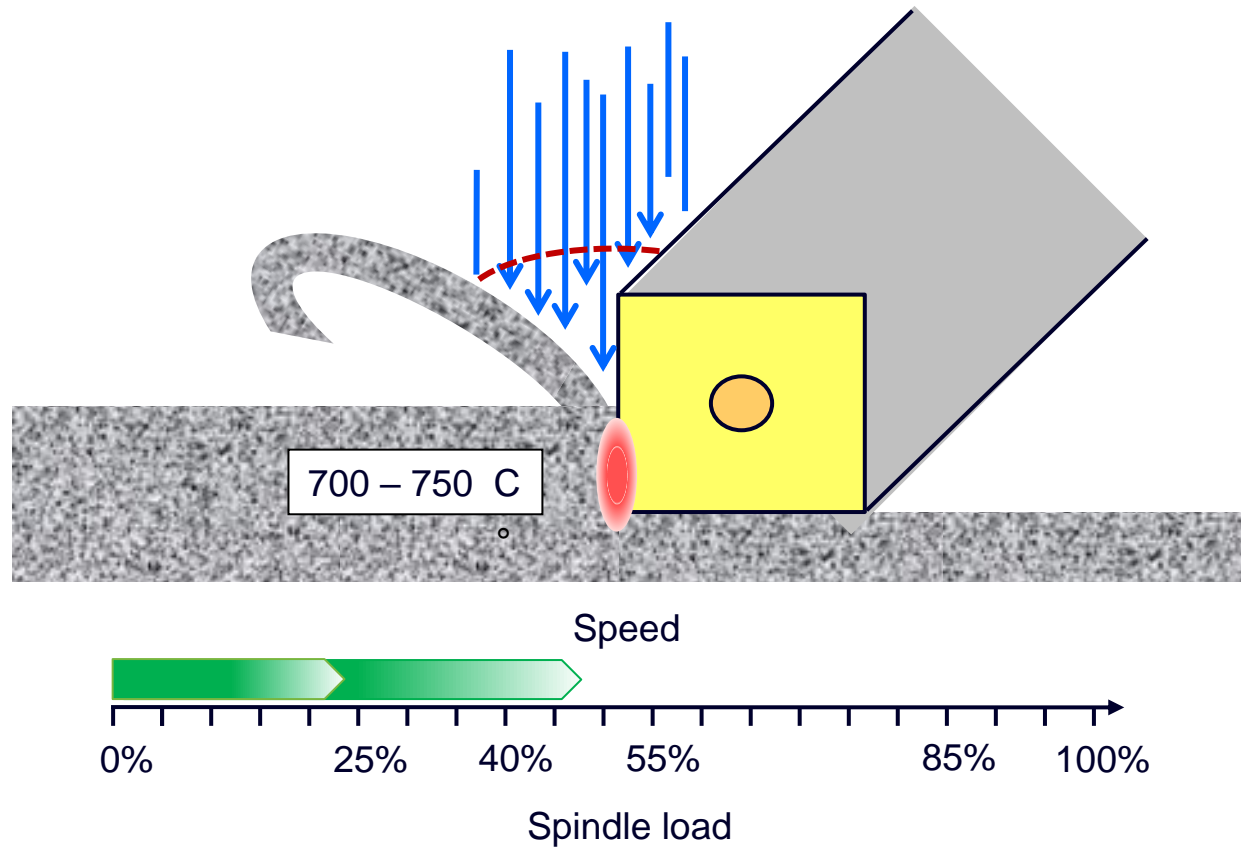
Temperature distribution in workpiece and tool during orthogonal cutting ($V=2.5\text{m/s}$, HSS tool)



Conventional Coolant



Apply the coolant with “force” Will eliminates Vapor barrier

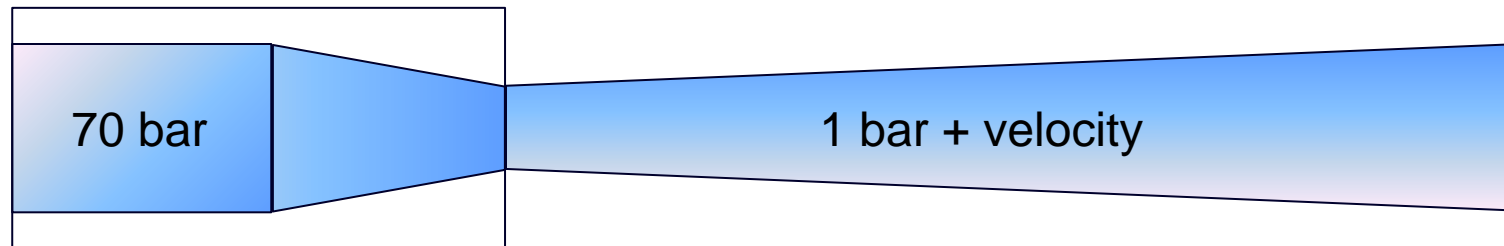


From Pressure to Force!

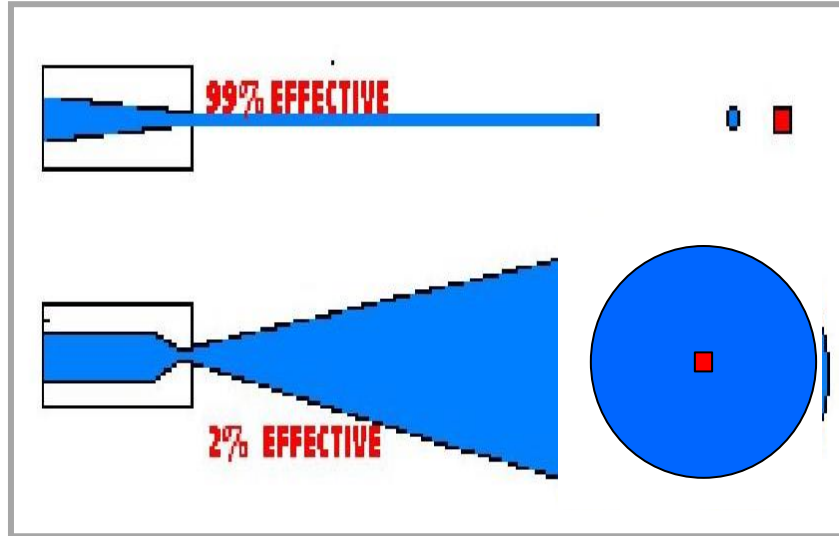
Spindle Power - 1 KW => 2 l/min

$$\text{Force} = \frac{\text{kg} \cdot \text{m}}{\text{s}^2}$$

The needed force is result of consistent mass of coolant in combination with the velocity created through pressure.

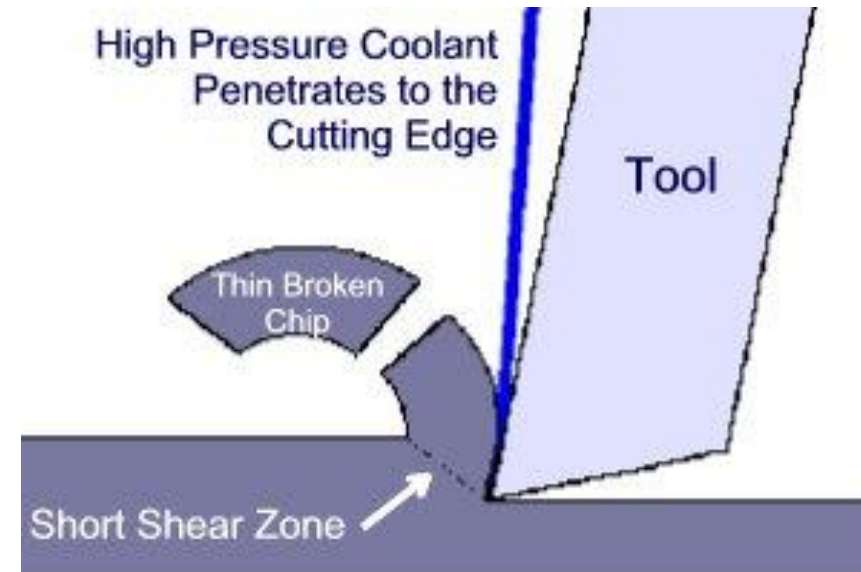
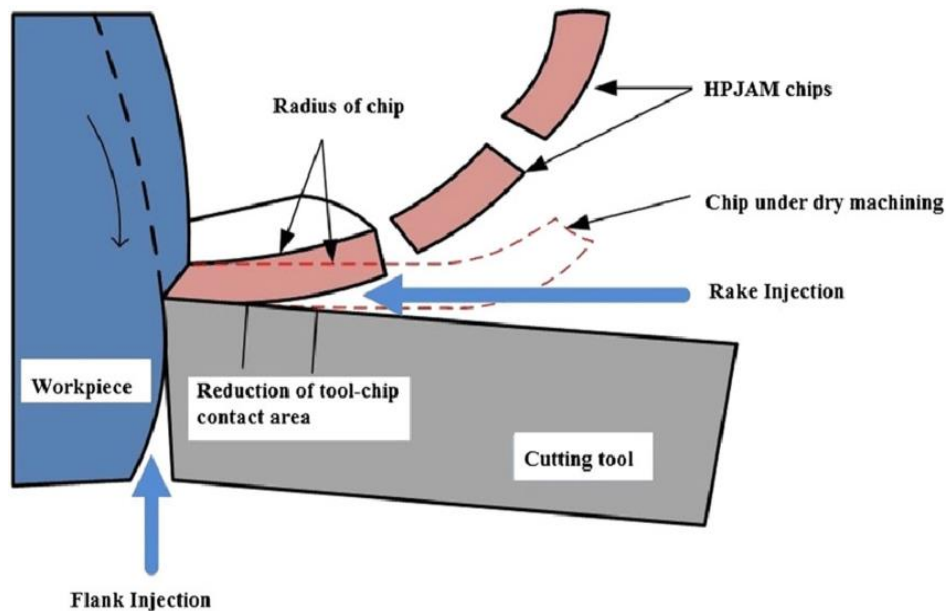


Nozzles must be properly sized and aimed

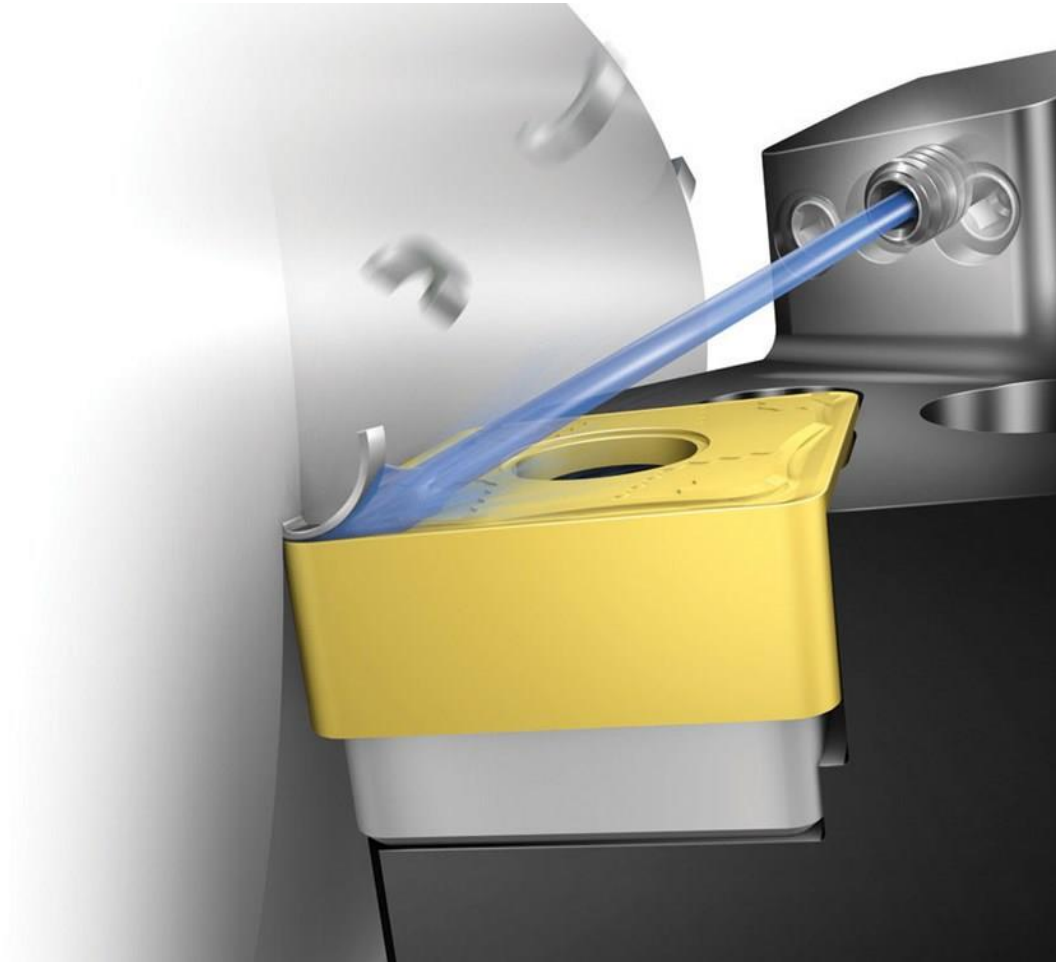


Hitting the target:

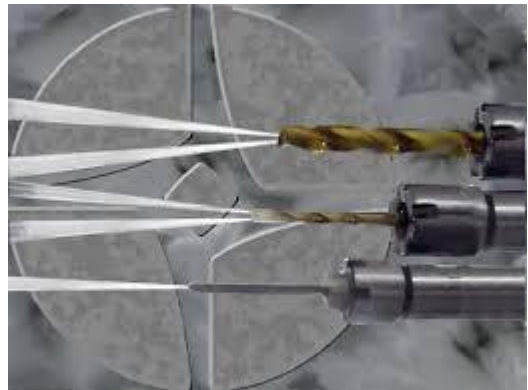
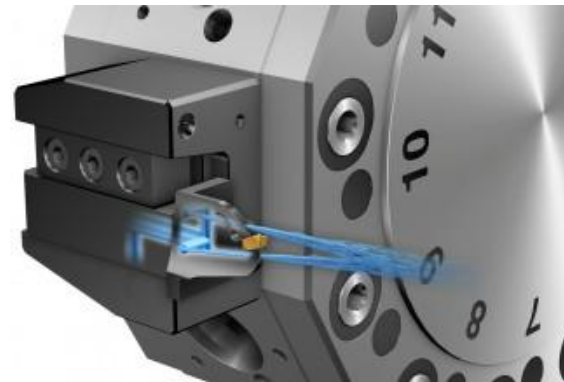
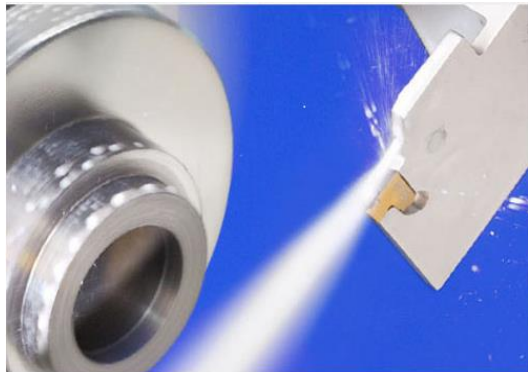
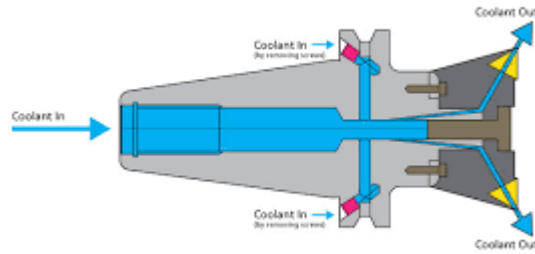
- Match coolant stream to target size
- Harder material = smaller target
- Same flow with smaller orifice
- Increased pressure required

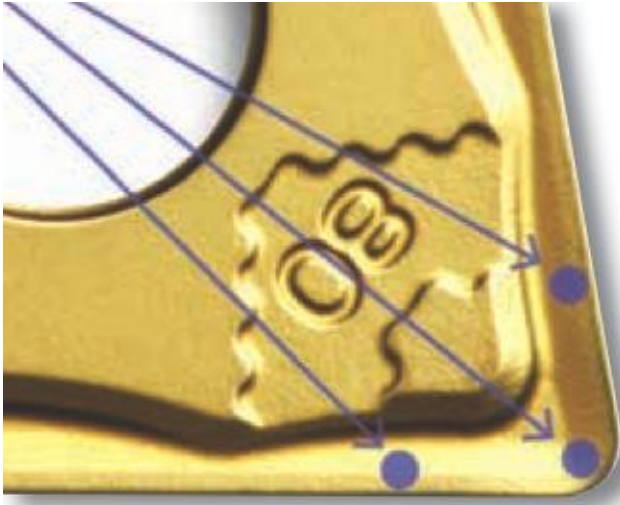


LNS ChipBLASTER Nozzles - *Patent 6,045,300*

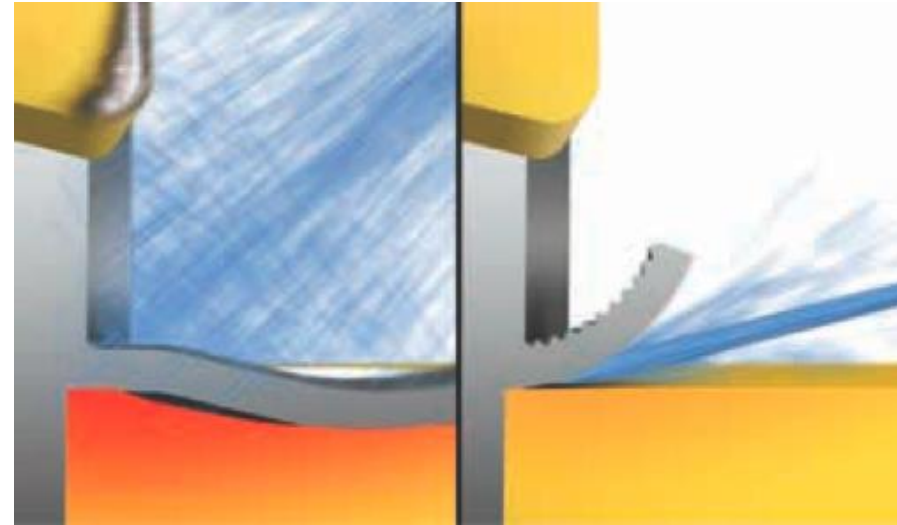
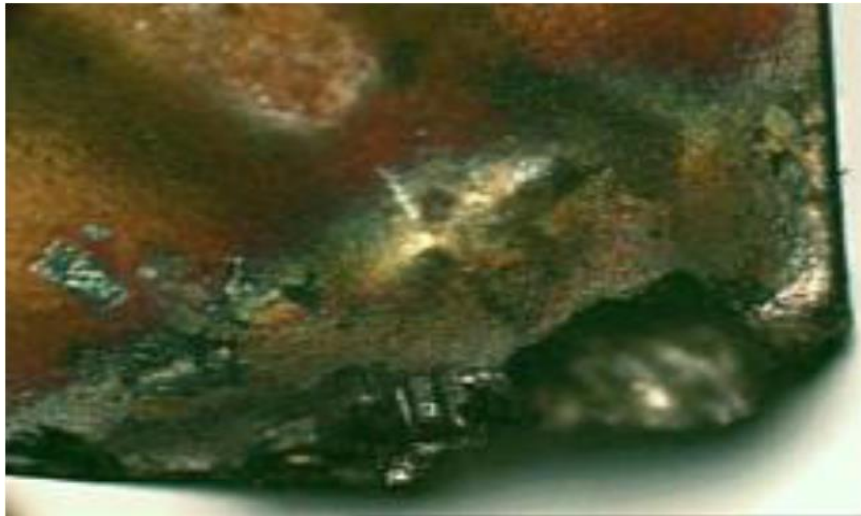


STANDARD COOLANT NOZZLES ON CUTTING TOOLS





Conventional Coolant – Failure Due to High Temperature



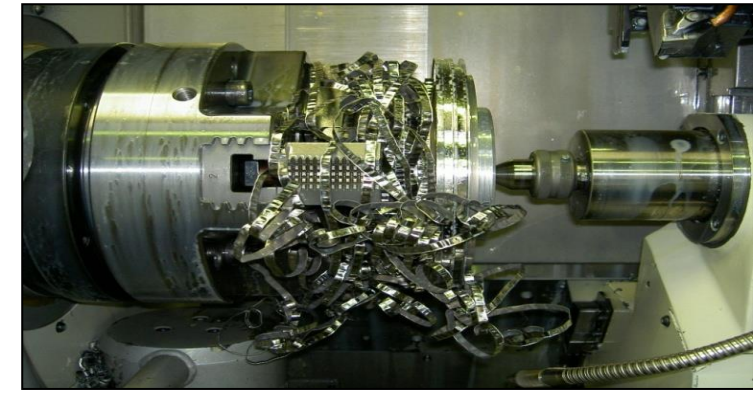
With High Pressure Coolant at 70 Bar



Without High Pressure Coolant!!!



6 Bar Pressure



With High Pressure Coolant!!!

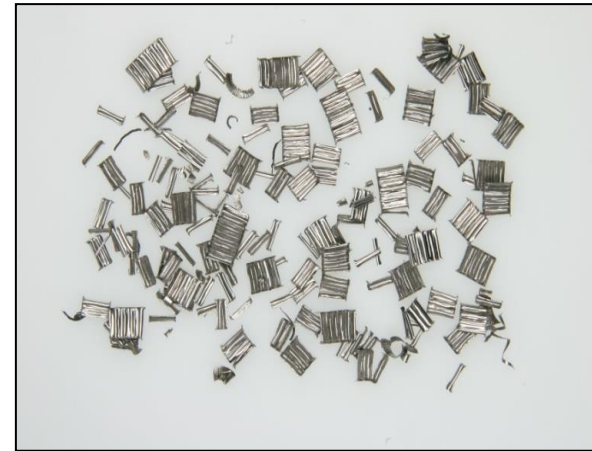
70 Bar Pressure



150 Bar Pressure



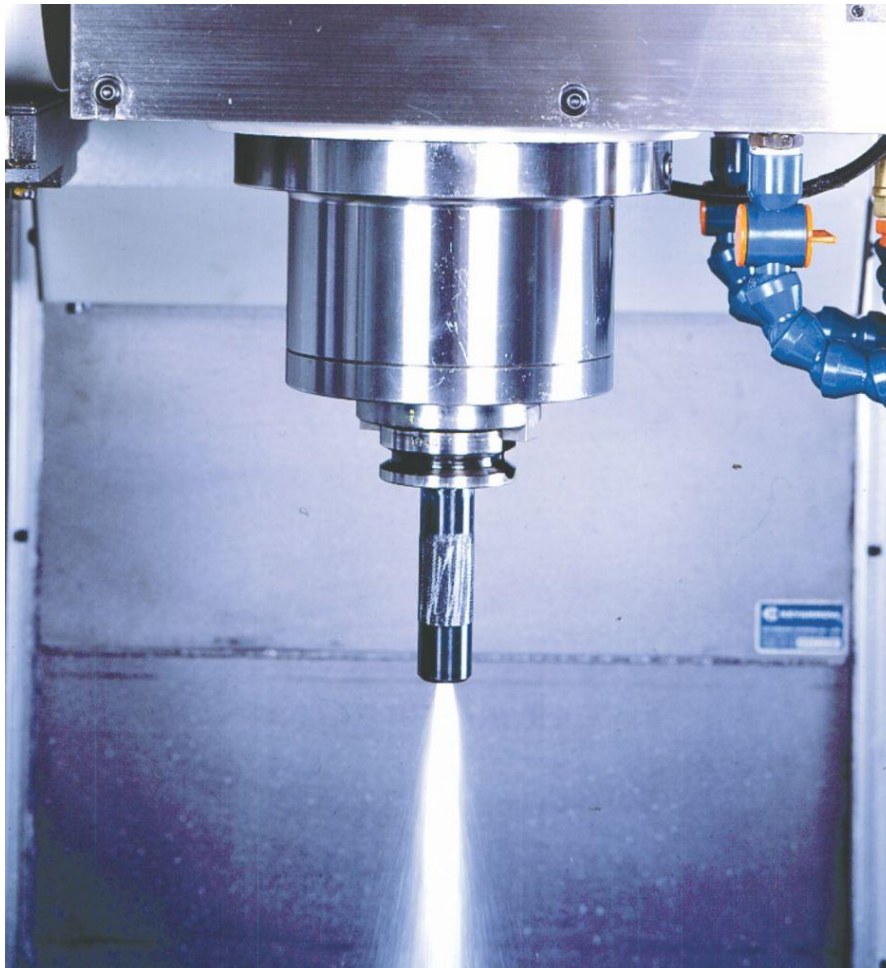
300 Bar Pressure



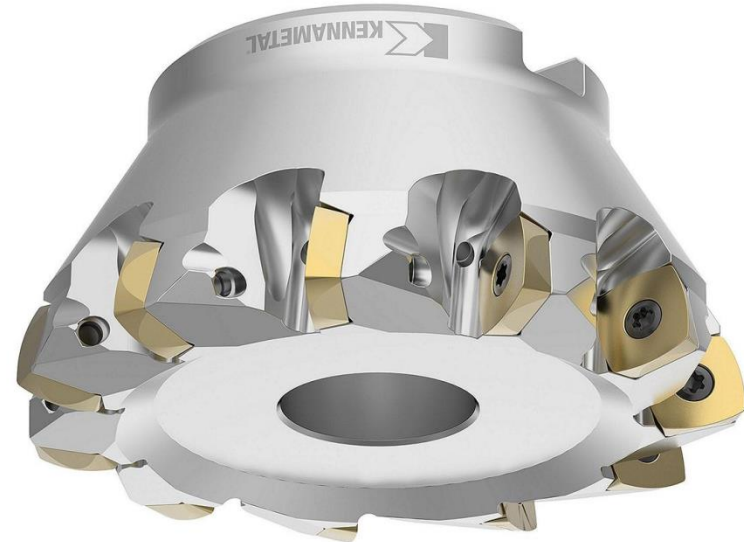
An aerial photograph of a large industrial facility, likely a manufacturing plant. The complex consists of several interconnected buildings with white walls and red trim around the windows and rooflines. The roofs are dark and feature numerous skylights and ventilation units. A large parking lot filled with cars is situated between the buildings. The facility is surrounded by green grass and some trees. A semi-transparent white box with the text 'High-Volume Technology' is overlaid on the center of the image.

High-Volume Technology

Configuring the HPC System - 70 Bar Pressure with many coolant outlets like through Coolant Milling and drilling tools.



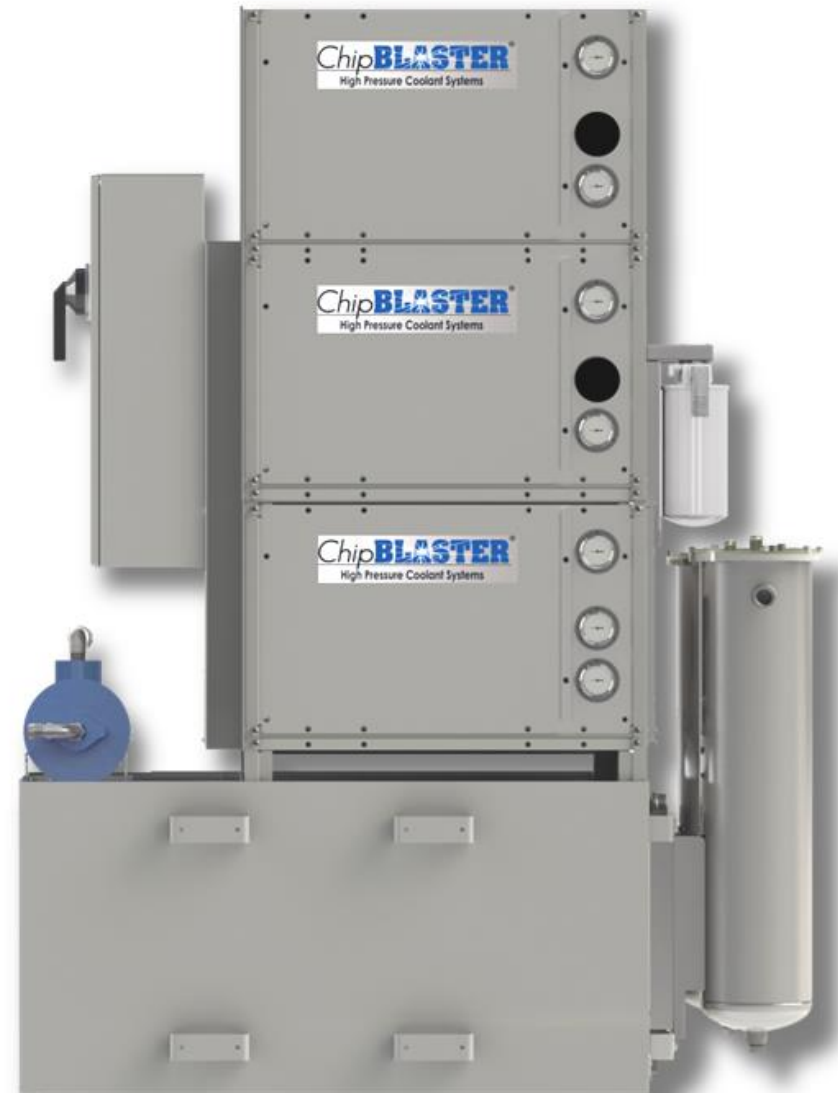
TOOL HOLDERS WITH THROUGH COOLANT HOLES



HIGH PRESSURE WITH HIGH VOLUME DELIVERY



LNS Chip**BLASTER**®



- Longer tool life – 30 ~ 40 %
- Increased Productivity – achieved by increasing cutting speed & Reduce cycle time (by at least 20-30%)
- Improved chip control
- Improved surface finishes
- Eliminate heat related failure of cutting tools
- Improved machine tool efficiency & Life
- Reduced operator supervision
- Less machine Stoppages
- Reduced chip welding and "built-up edge" some sticky material like Aluminum machining
- Better chip control in Low Carbon Steels
- Less chances for Fire accidents during machining





Long-Stroke-Pump
Short-Stroke-Pump



Hydra-Cell-Pump

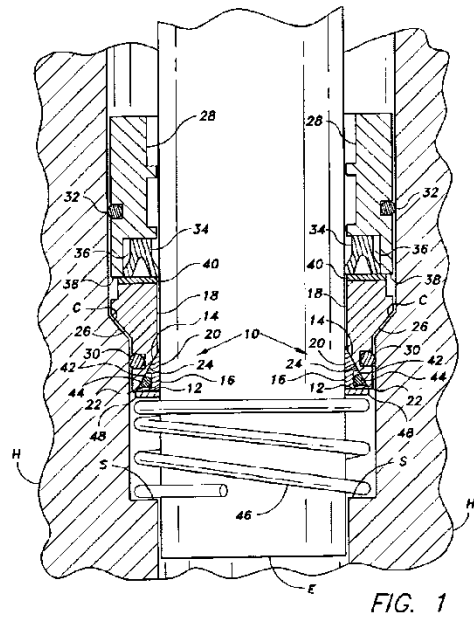


CAT-Pump

LNS ChipBLASTER Pump – *Patent 6,776,419*

Through countless hours of testing, we engineered the best possible seals for our pump!

U.S. Patent Aug. 17, 2004 Sheet 1 of 2 US 6,776,419 B2



U.S. Patent Aug. 17, 2004 Sheet 2 of 2 US 6,776,419 B2

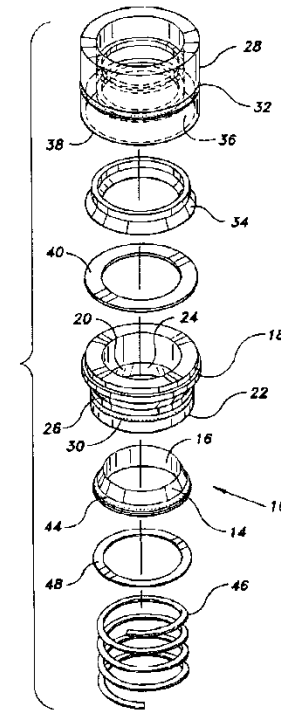
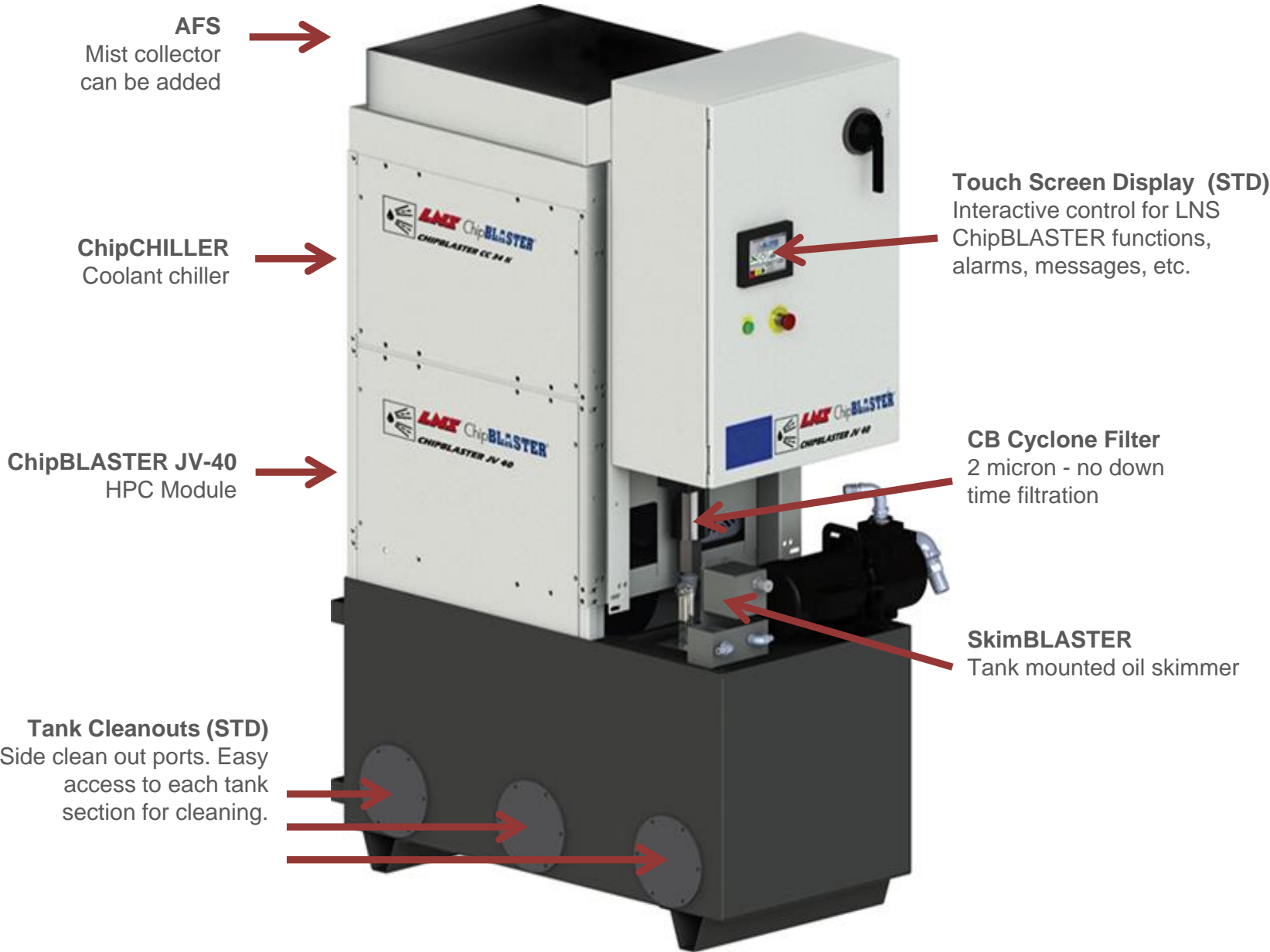


FIG. 2

LNS ChipBLASTER Systems are the most advanced Systems in the market.

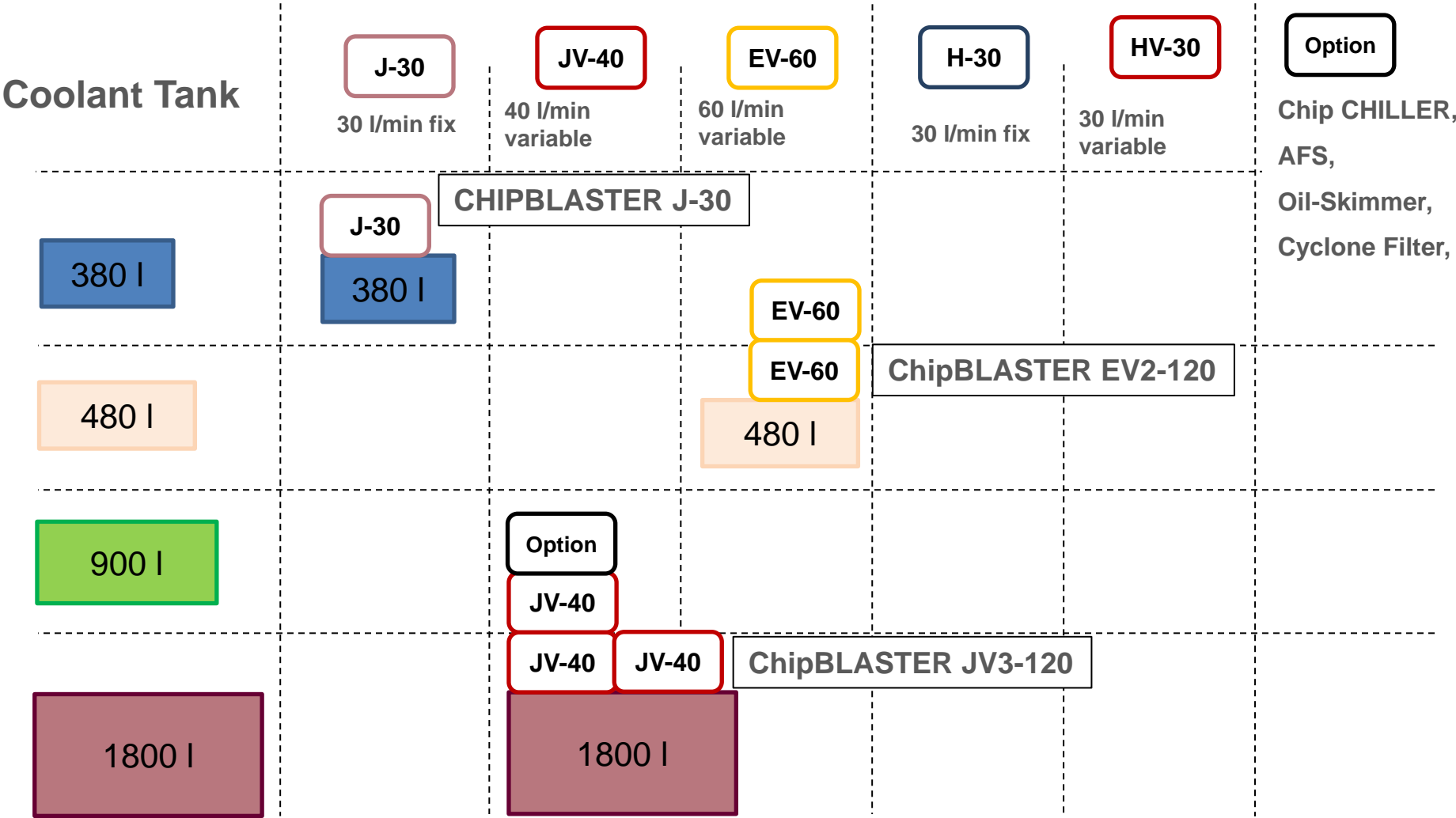


- Pressure between 20 ~ 345 bar
- Volume between 4 ~ 180 l/min
- “Interfacing” with all kind Machine Tools
- Complimenting accessories available



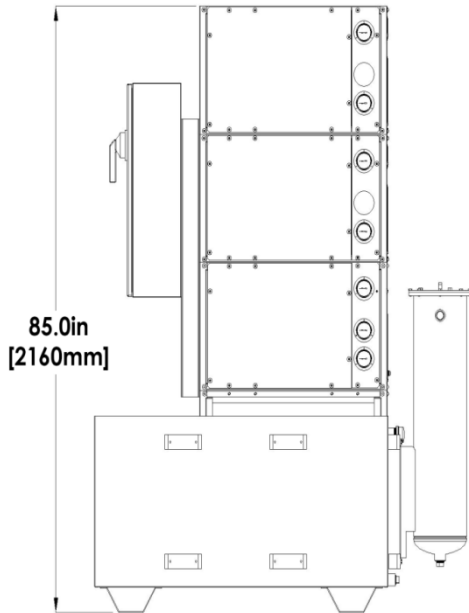
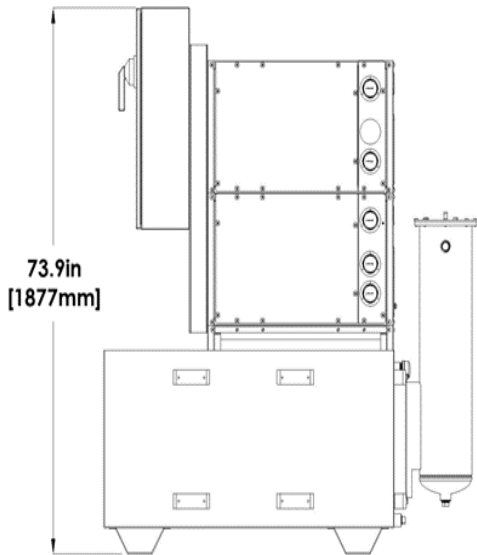
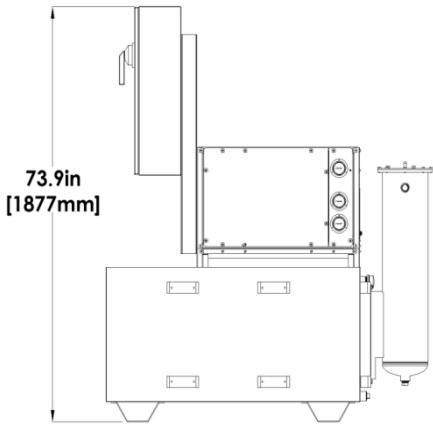
STANDARD PRODUCTS

“LNS HPCs” Modular System





ChipBLASTER J-30/J-60/J-90



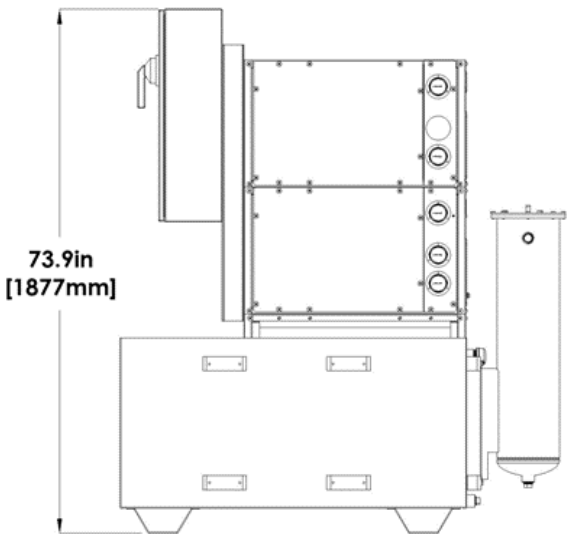
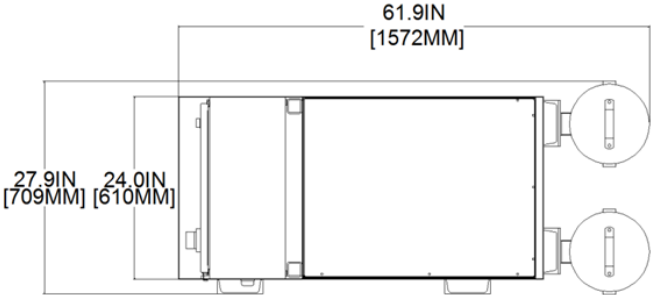
| Model | J-30 |
|-------------|-----------|
| Pressure | 70 bar |
| Volume | 30 l/min. |
| Tank | 380 Liter |
| Motor Power | 7,5 PS |

| Model | J2-60 |
|-------------|---------------|
| Pressure | 70 bar |
| Volume | 2 x 30 l/min. |
| Tank | 380 Liter |
| Motor Power | 2 x 7,5 PS |

| Model | J3-90 |
|-------------|---------------|
| Pressure | 70 bar |
| Volume | 3 x 30 l/min. |
| Tank | 380 Liter |
| Motor Power | 3 x 7,5 PS |



CHIPBLASTER JV-40 / JV-80 / JV-120



Inch [mm]

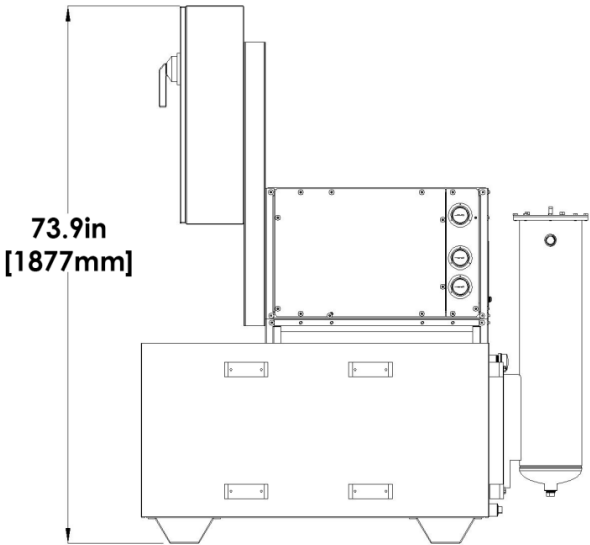
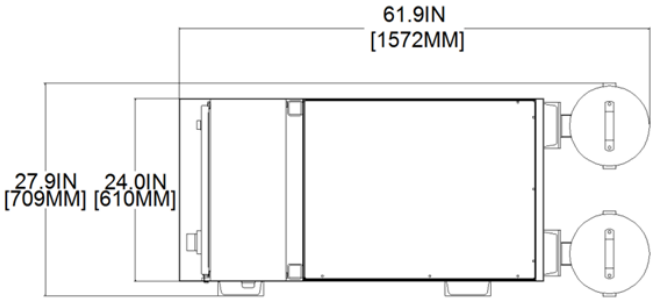
| Model | JV-40 |
|-------------|-----------------|
| Pressure | Up to 100 bar |
| Volume | 11 to 40 l/min. |
| Tank | 380 Liter |
| Motor Power | 7,5 PS |

| Model | JV2-80 |
|-------------|--------------------|
| Pressure | Up to 100 bar |
| Volume | 2 x 8 to 80 l/min. |
| Tank | 380 Liter |
| Motor Power | 2 x 7.5 PS |

| Model | JV3-120 |
|-------------|---------------------|
| Pressure | Up to 100 bar |
| Volume | 3 x 8 to 120 l/min. |
| Tank | 480 Liter |
| Motor Power | 3 x 7.5 PS |

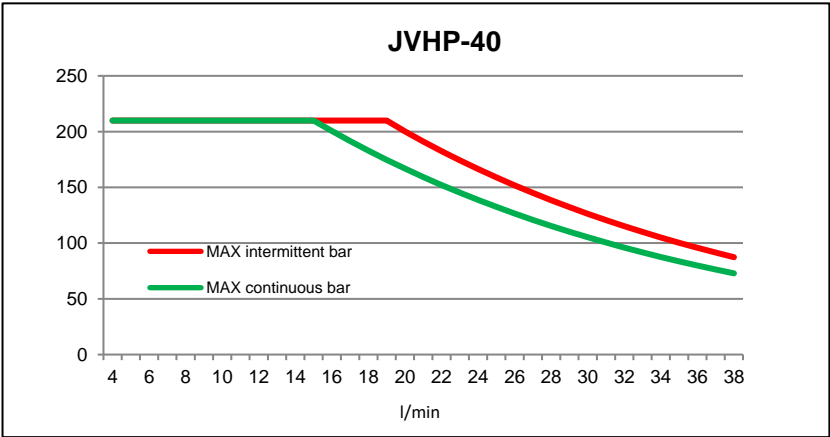


CHIPBLASTER JVHP-40



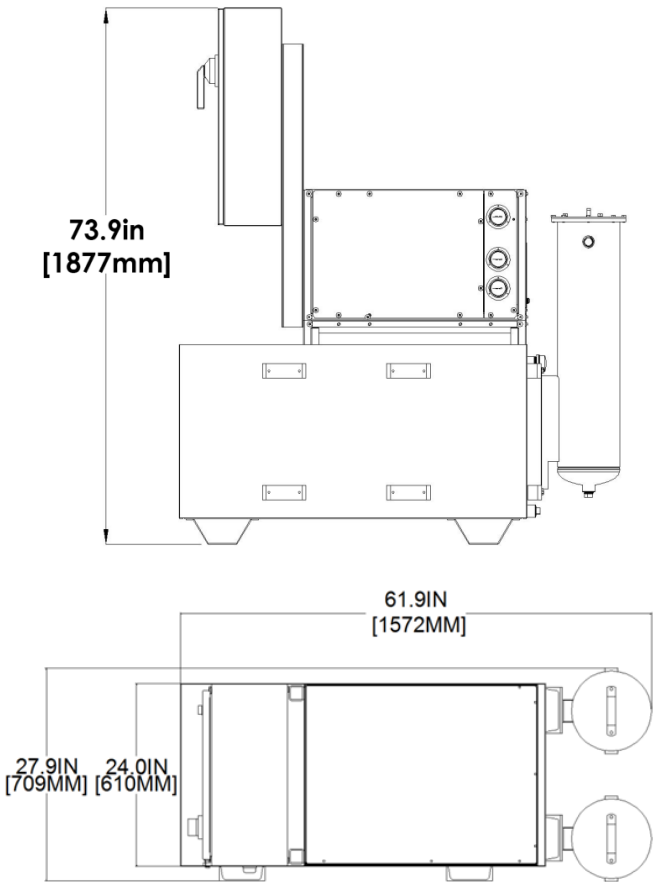
Inch [mm]

| Model | JVHP-40 |
|-------------|----------------|
| Pressure | Up to 200 bar |
| Volume | 4 to 40 l/min. |
| Tank | 380 Liter |
| Motor Power | 7,5 PS |





CHIPBLASTER H-30 / HV30



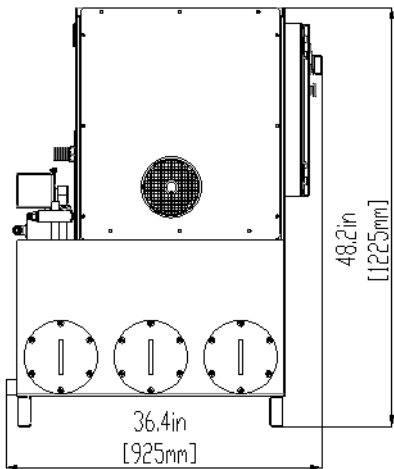
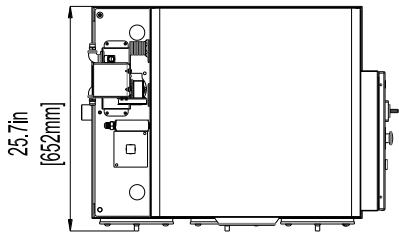
Inch [mm]

| Model | H-30 |
|-------------|-----------|
| Pressure | 70 bar |
| Volume | 30 l/min. |
| Tank | 380 Liter |
| Motor Power | 7,5 PS |

| Model | HV-30 |
|-------------|----------------|
| Pressure | 70 bar |
| Volume | 8 to 30 l/min. |
| Tank | 380 Liter |
| Motor Power | 7,5 PS |



CHIPBLASTER M-30

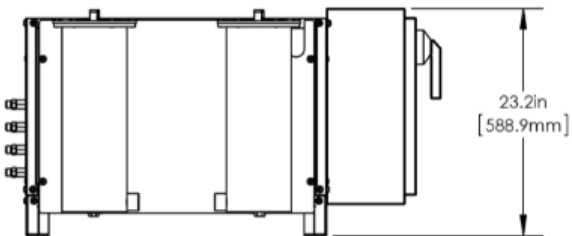
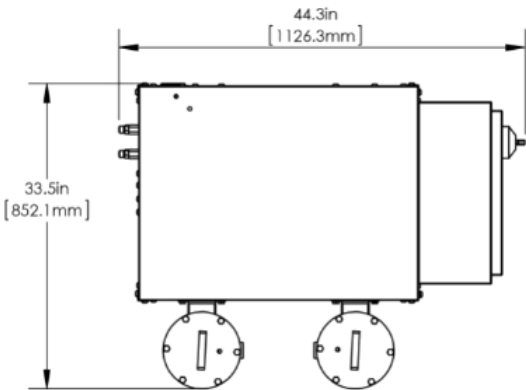


Inch [mm]

| Model | M-30 |
|-------------|-----------|
| Pressure | 70 bar |
| Volume | 30 l/min. |
| Tank | 190 Liter |
| Motor Power | 5 PS |



CHIPBLASTER SB J-40/70 (4 or 8)



Inch [mm]

| Model | SwissBLASTER J-40/70 |
|-------------|----------------------|
| Pressure | 70 bar |
| Volume | 40 l/min. |
| Tank | N/A |
| Motor Power | 7,5 PS |

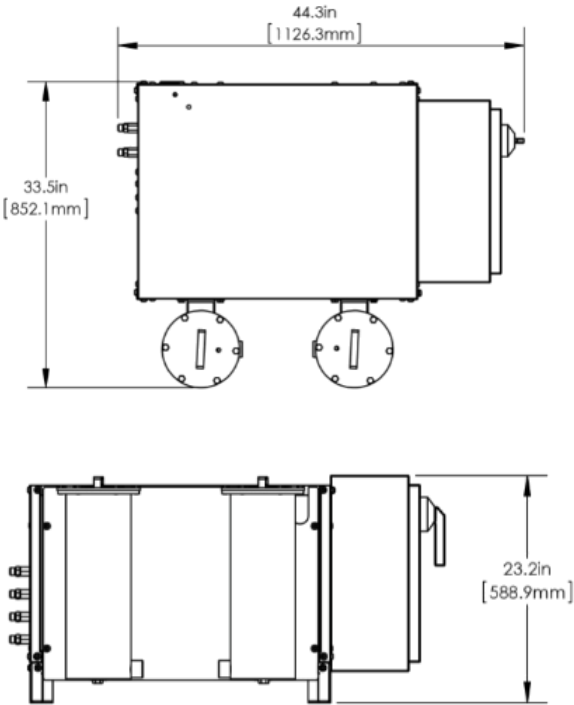


CHIPBLASTER SB J-30/100 (4 or 8)

| Model | SwissBLASTER J-30/100 |
|-------------|-----------------------|
| Pressure | 100 bar |
| Volume | 30 l/min. |
| Tank | N/A |
| Motor Power | 7,5 PS |



CHIPBLASTER SB J-20/140 (4 or 8)



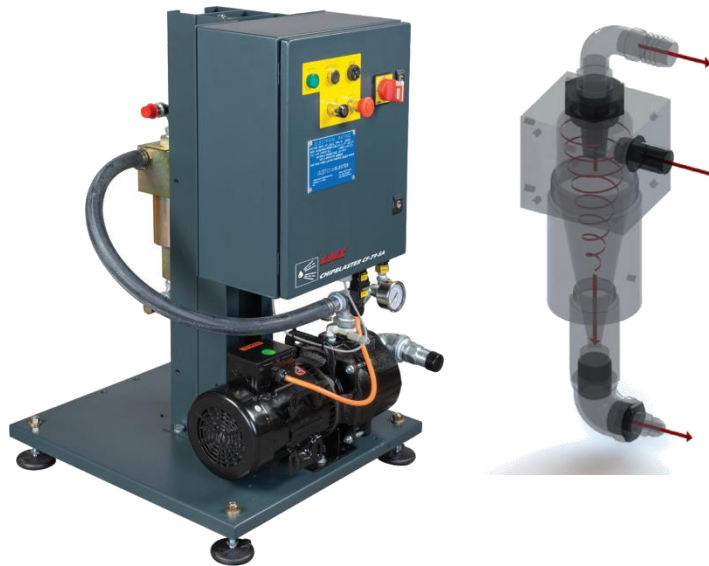
Inch [mm]

| Model | SwissBLASTER J-20/140 |
|-------------|-----------------------|
| Pressure | 140 bar |
| Volume | 20 l/min. |
| Tank | N/A |
| Motor Power | 7,5 PS |

**LNS**

CHIPBLASTER CF-79 SA

Emulsion Application only



By applying proven scientific principles, the stand-alone CHIPBLASTER CF-79 SA cyclonic filtration system:

- Filters the coolant upto 2 microns
- Reduces machine downtime
- Increases tool life
- Eliminates filter media and maintenance costs

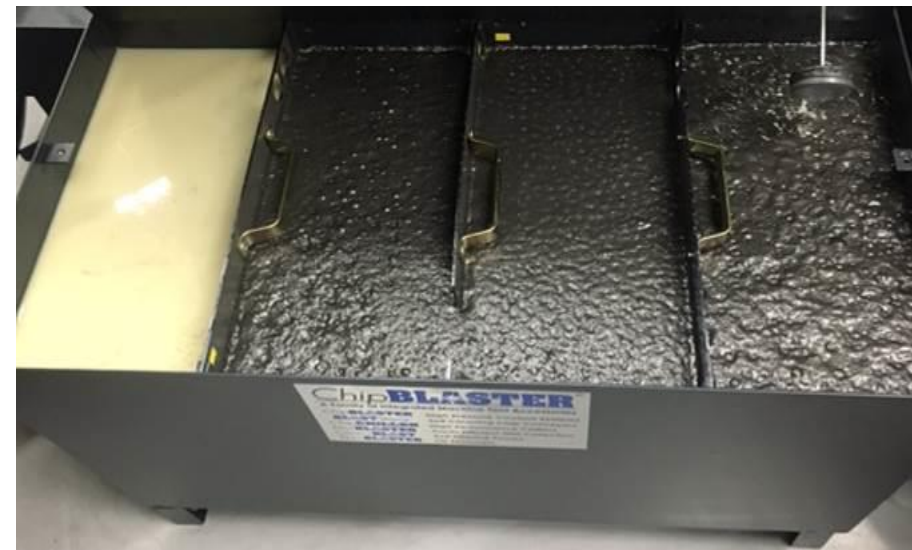
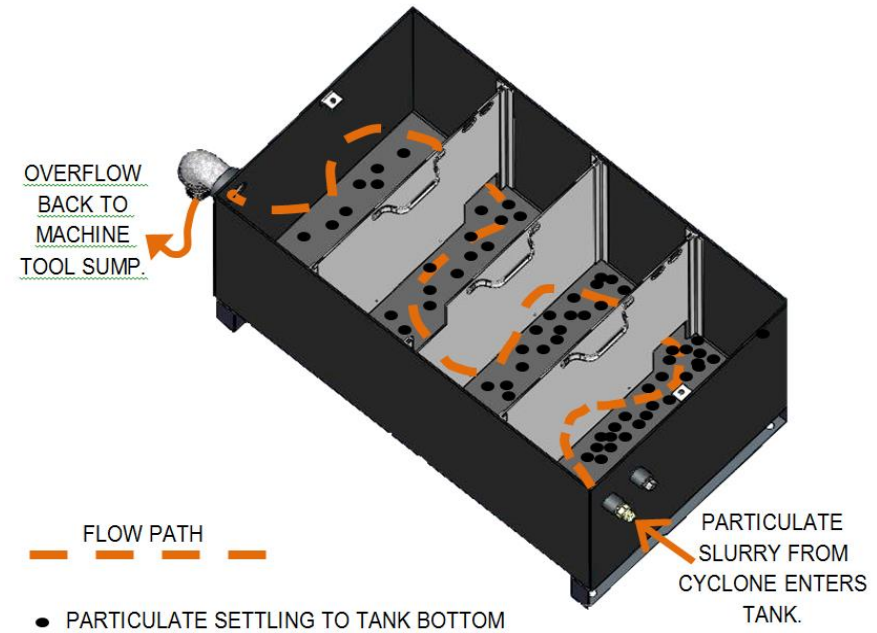
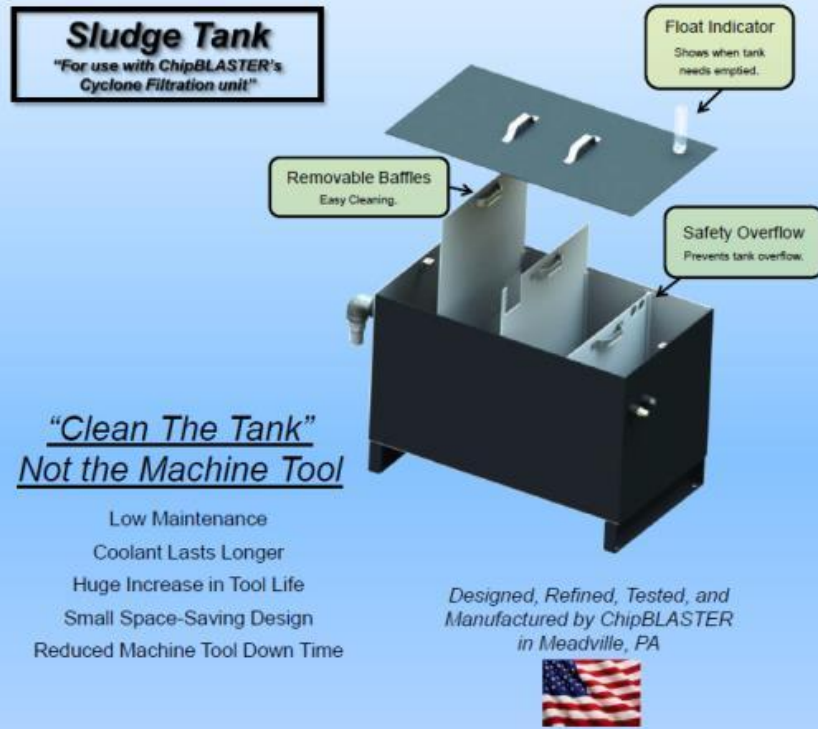
Filtering Efficiency & Ratings

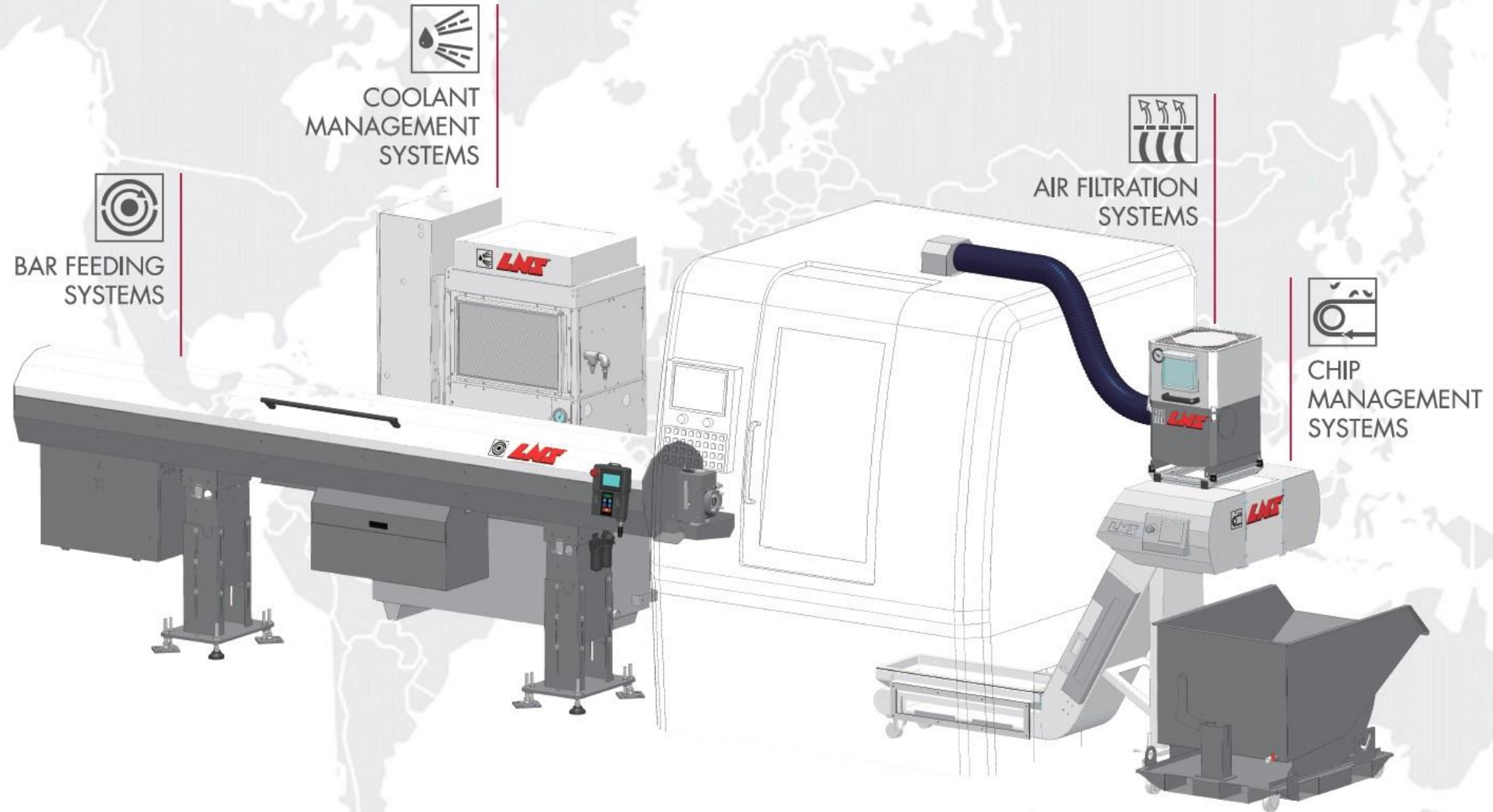
Up to 100% for filtering coolant to 10microns

Up to 95% filtering coolant to 5 microns

Up to 50% filtering coolant to 2 microns

Keep Sludge Out Of Your Machine Tool!







**ELECTRONICS
INDUSTRY**



AEROSPACE INDUSTRY



**MACHINE TOOL
INDUSTRY**



**MEDICAL & IMPLANTS
INDUSTRY**



**ENERGY, OIL
& GAS INDUSTRY**



AUTOMOBILE INDUSTRY



**HEAVY ENGINEERING
INDUSTRY**



**LUXURY
& HIGH PRECISION**

YOUR ONE-STOP-SHOP



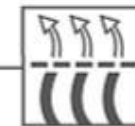
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