

MAXTREME

MACHINE TO THE EXTREME





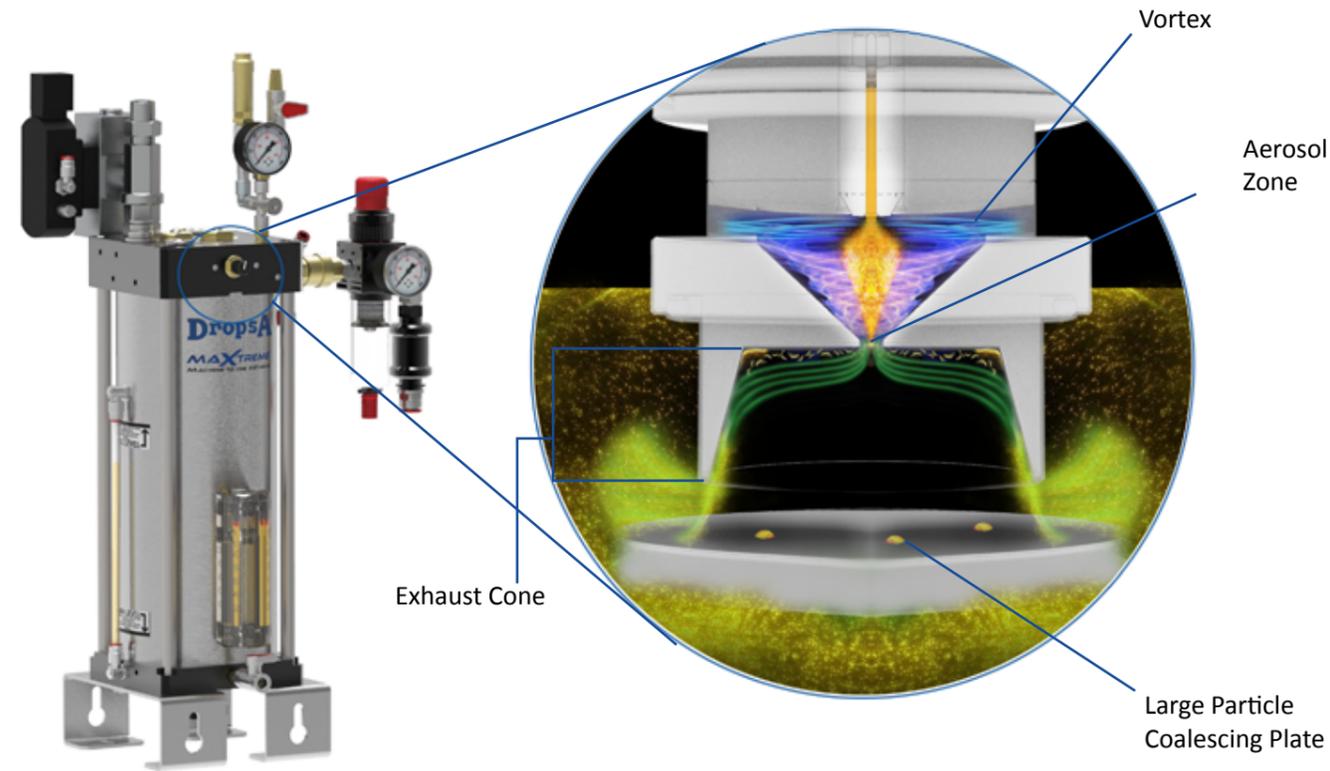
MINIMAL QUANTITY LUBRICATION(MQL) & NEAR DRY MACHINING

Near dry machining is a recent technology designed to replace traditional coolant and pure oil flood systems in machining environments with an controlled compressed air stream that carries minimal quantities of cutting oil in an “aerosol” format to the cutting surface. This ensures lubrication of the cutting surface and allows high performance machining often surpassing coolant based machining with increased tool life and reduced cycle times. Removing coolant from the process also provides important environmental benefits and reduces costly waste product costs.

Lubricating Aerosol is transported to the cutting surface by **External** (via nozzles located around the tool) or **Internal** also known as “through-the-tool” methods.

Internal Lubrication is the most difficult to achieve due to oil particles coalescing inside the tool. **MaXtreme** solves this by generating ultra-fine particles that can pass through the rotating tool unhindered by centrifugal force.

The MaXtreme incorporates years of research and development in aerodynamic and fluid-dynamics effects to produce ultra-fine aerosol oil particles (sub-micron in diameter) that allow for high performance machining.

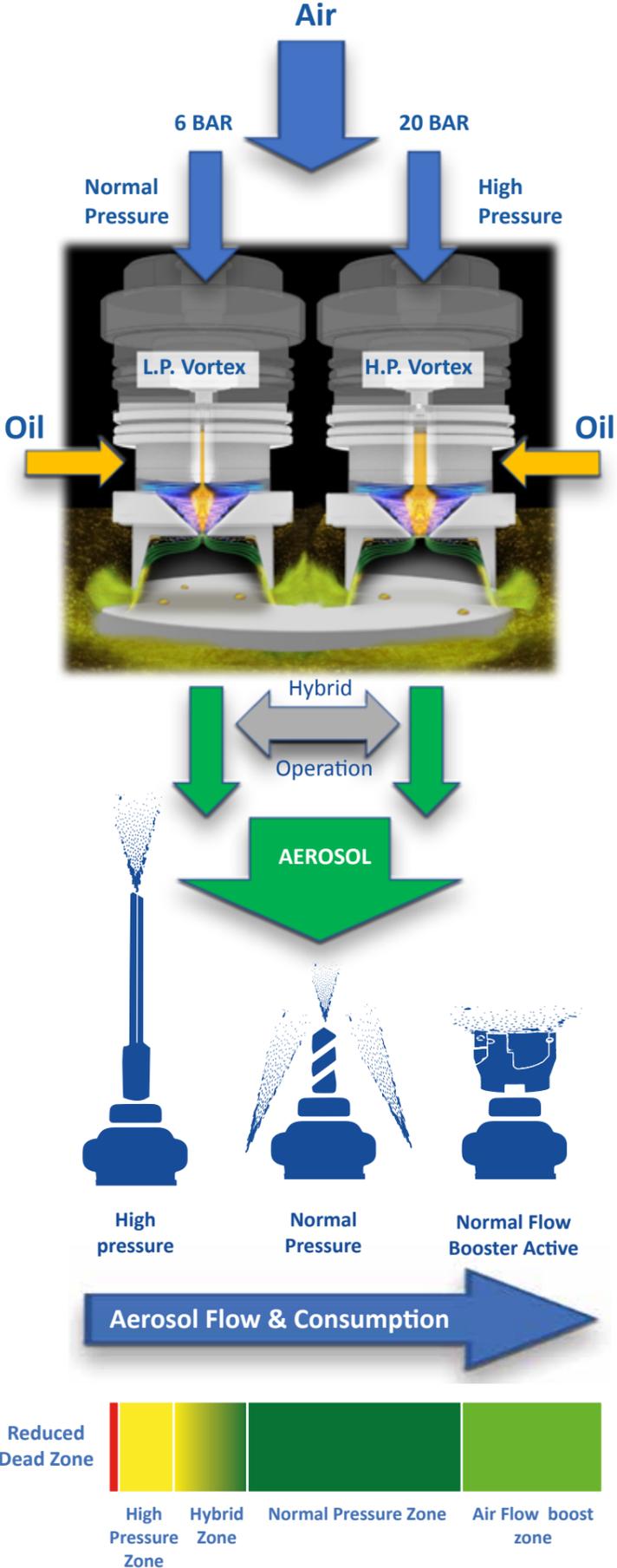


PARTICLE PROFILING

Ultra-fine aerosol particles are the key to good **Internal** or through-the-tool lubrication. In fact, sub micron particles are essential to high performance applications – where the aerosol is delivered through a rotating tool and spindle arrangement. MaXtreme uses novel fluid and aerodynamics characteristics to generate sub-micron aerosol particles. The innovative Vortex generator mixes oil at a specific distance from the highest velocity point of the vortex maximizing the acceleration of the particles into the vortex’s center.

At the outlet of the vortex a rapid de-compression zone initially removes large particles by forcing them to coalesce in a static area of the exhaust cone whilst the remaining aerosol is rotated in a controlled deceleration in the exhaust cone using coanda effect accompanied by a specific surface finish used to help further reduce the particle size into sub-micron particles.

A final coalescing plate is used to collect large particles that are subsequently recycled.



REVOLUTIONARY TECHNOLOGY

Thanks to a completely new approach to aerosol generation technology MaXtreme is helping revolutionize new and existing machine installations.

MaXtreme is the ready-to-go solution for the most demanding and high performance near-dry machining applications requiring external, internal, through-the-tool minimal quantity lubrication.

DUAL VORTEX OPTION

The revolutionary system for internal and external high-end Near Dry Machining applications.

In certain application a second vortex nozzle optimized for higher pressures can be added to allow aerosol and higher flow rates on small tool applications.

This works in a hybrid configuration with the primary nozzle to deliver consistent and rich aerosol even at low flow rates reducing the ‘dead-zone’ to extremely low flow rates.

AUTO-ADAPTIVE and HYBRID FUNCTION

The auto-adaptive and hybrid features mean that no adjustment between tool changes or complex programming set-ups are needed. The system is fitted and it adjusts itself.

How it works - Aerosol is produced using a novel Vortex generator that has an enhanced operating envelope. A particular design of Exhaust cone-nozzle combined with controlled surface finish fractures the oil particles decelerating at a controlled rate into sub-micron aerosol.

When flow rates become very high (typically of very large tools) an air booster valve opens to supplement the air flow for chip and heat removal and thereby reducing the aerosol density not required on such kind of machining operations.

Benefits of MQL



Cleaner / safer work environment

- Cleaner / safer work environment
- No haze in the air
- No coolant on the floor
- Coolant handling
- No coolant disposal costs
- No separation of coolant from chips
- No need for coolant filtration systems



Improved System Processes

- Reduces down time
- Speeds up production
- Can see parts being made



Improved Tool Life



Improved Finished Product/Quality

APPLICATIONS AND IMPLEMENTATION

With numerous applications in the field, we invite you to come and see one for yourself.

Each dry machining implementation is followed by one of our near-dry machining consultants that provide step-by-step support throughout the process, including:

- Evaluating your current production machinery, process and coolant system.
- Understanding the best product for your application.
- Looking at chip removal solutions, if necessary.
- Machine conversion or new machine configuration.
- Help in interfacing machine and program controls.
- Tooling inspection and tool geometry advice for dry machining.



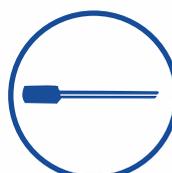
Drilling



Milling



Turning



Gun Drill



Milling Cut



Many Others
Applications