grindaix
A QUAKER HOUGHTON COMPANY

LUBRICOOLANT SUPPLY SYSTEMS FOR
GENERATING GEAR GRINDING



Generating gear grinding frequently involves using large volumes of lubricoolant to achieve extensive flooding of the contact area. This appears to be necessary due to the complex geometry of the tooth space, the large contact surfaces between the grinding wheel and workpiece, the expansive contact zones due to simultaneous machining in several tooth spaces and the local movement of contact points in an axial and radial direction within the contact zone due to tool rotation.

As a result of an effect on the microstructure, the tooth flank rim zone is damaged during generating gear grind-ing and the wear resistance of the teeth is reduced. In extreme cases, tooth failure results.

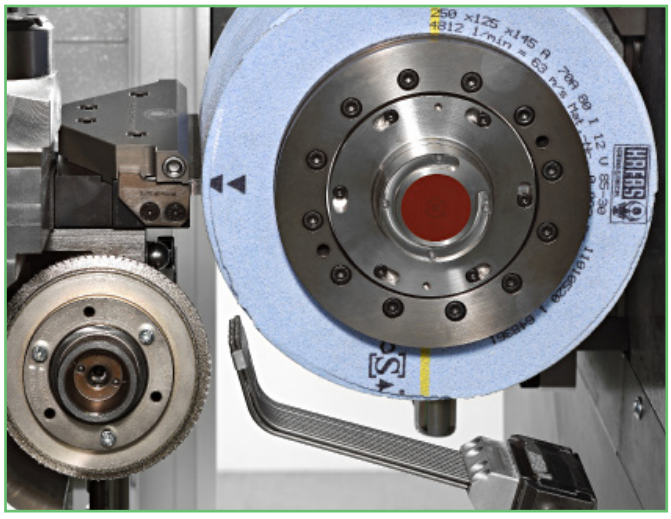
Grinding burn as a result of thermal overload during the machining process should therefore be avoided.

Optimum lubricoolant supply of the contact area is thus particularly important during generating gear grinding. The grindaix nozzles supply the contact area in a targeted way with a high lubricoolant exit speed, thereby considerably reducing the lubricoolant flow rate compared to conventional solutions.

Enhance your Productivity
Reduce your CO_2 Emissions

EXAMPLE VALUES

Pressure	Nozzle Width	Flow Rate	Exit Speed
12 bar	38 mm (2 rows)	105 l/min	25 m/s



At a pressure of twelve bar and a nozzle width of 38 mm (2 rows), the nozzle consumes 105 l/min of lubricoolant (oil). The lubricoolant exit speed lies at 25 m/s. The lubri-coolant requirement increases depending on the nozzle width.
This nozzle is available for any lubricoolant exit speed. The associated pressure as well as the necessary lubri-coolant volume may be found in the grindaix nozzle characteristic curves. The stated values may differ depending on the machine tool, production unit or process, nozzle type, lubricoolant used, etc.

AS MUCH AS NECESSARY, AS LITTLE AS POSSIBLE!

Our grindaix nozzles introduce only as much lubricoolant to your machining sites as necessary. They supply the contact area in a targeted way with a high lubricoolant exit speed, thereby considerably reducing the lubricoolant flow rate compared to conventional solutions. The more targeted lubricoolant supply increases your tool life and improves the cooling effect in the grinding zone. The cycle times are briefer without the occurrence of grinding burn. This has a direct effect on your productivity.

EXAMPLE CHARACTERISTIC LINE

The nozzle diagram provides you with initial assistance in achieving suitable supply of the nozzle with respect to pressure and flow rate.

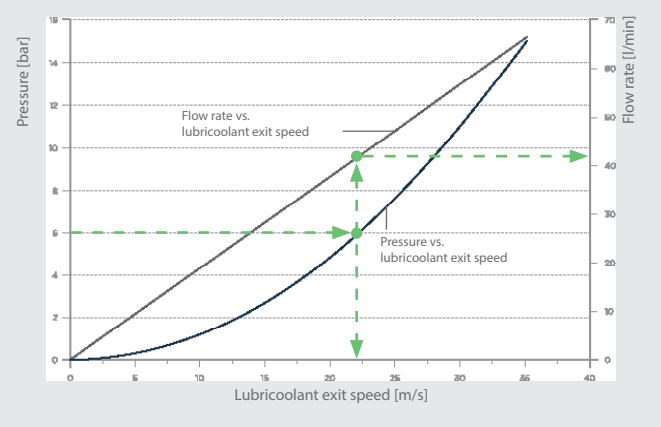
The total pressure (static and dynamic) is represented which would be measured directly in front of the nozzle. This pressure does not correspond to your pump pressure or the delivery height of the pump.

Pressure losses in the supply line between the pump and nozzle as well as the effects of any other lubricoolant discharge along the same supply line are not taken into consideration. These factors may be recorded and evaluated in our COOLANT AUDIT. Only then can your system be optimized with respect to consumption.

ECONOMIC OPTIMIZATION OF YOUR PROCESSES

By reducing the entire lubricoolant consumption of your machine, you not only make cost savings but also free up reserves for your lubricoolant filtration, leading to an increase in filtration quality.

The scaling down or multiple use of peripheral units, such as pumps and coolers, allows you to considerably reduce other resources (oil, water, energy) as well as the CO_2 emissions from your production. The CO_2 emissions are calculated as an equivalent directly from your energy and resource consumption. Thus you also protect the environment.



Starting from the pressure, you can directly find the associated lubricoolant exit speed. The grey line shows the correlation between the lubricoolant exit speed and associated lubricoolant flow rate.

ORDER INFORMATION

Grindaix nozzle for generating gear grinding

Name	Description
ND-SK-	The nozzles are designed individually for the geometry parameters of the generating gear grinding application. All nozzles including characteristic lines.

Auxiliary Equipment

Name	Description
Pressure Sensor	analog/digital
Pressure Sensor Connector	standard ¼“
Compressed Air Connector	nozzle cleaning ø ¼“
Quick-Change System	quick release/interchangeable head
Wear Protection	available in all widths and geometries
Profile Geometry Stabilizer	available in all widths and geometries

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