

# SKF LubriLean

Minimal quantity lubrication improves ecological and economic efficiency



SKF LubriLean DigitalSuper



SKF LubriLean VarioSuper



# Easy and environmentally-friendly factory design

*Consistent use of SKF LubriLean minimal quantity lubrication (MQL) on equipment of production lines instead of coolants makes easy, efficient and environmentally-friendly factory design possible. From the beginning.*

## Cost-effective

- No need for coolants
- No need for coolant recycling

## Easy architecture

- Manufacturing at groundfloor level (no basement necessary)

## Environmentally-friendly

- Avoids coolant entering the environment

## Resource-saving

- Up to 92% reduction in energy usage and CO<sub>2</sub> emissions compared to wet machining
- Up to 56% less contamination of ambient air for the machine operator



SKF LubriLean DigitalSuper



**Conventional factory**  
Production lines equipped with coolant system

**Progressive factory**  
Production lines consistently equipped with SKF LubriLean minimal quantity lubrication .

# Comparing wet machining and minimal quantity lubrication (MQL)

Example: Machining a PSG3 base plate in production, Berlin plant



## With MQL

Emissions: -55,6%

CO<sub>2</sub> discharge: -92,35%

Energy consumption: -92,35%

		Wet	MQL	Measuring point
Emissions	[mg/m <sup>3</sup> air]	4,3	1,8	Operator Control panel Exhaust airstream
		3,9	1,8	
		15,9	7,1	
CO <sub>2</sub> discharge	[g/workpiece]	48,96	3,75	
Energy consumption	[kW/workpiece]	1,06	0,08	

## Duration [s]

Tool change	50	80	30	20	180	60	20	40	30	20	20	30	40	30	650
4 x pilot bore D=6,0	4 x bore D=7,0	Bore on both sides D=15,0	Thread milling G 3/8	8 x bore D=6,8, core M8	4 x through-hole D=9,0	Bore D=5,0	Predrilling D=11,7	Continued drilling D=8,5	Continued drilling D=6,8, core M8	Stepped drilling D=19,05	Thread mill, both sides G1/4	Connec. bore both sides D=5,0	Angle bore D=4,2	Average	

## Wet machining

Medium: emulsion; pump: 3 high-pressure pumps without frequency converters, output of 3,6 kW, 5,55 kW and 7,95 kW

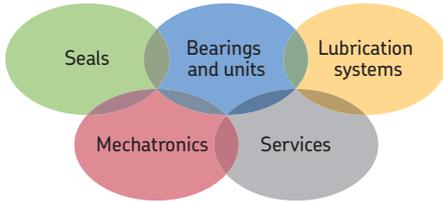
Flow rate required for tool [l/min]	11	11	40	16	11	20	11	20	20	14	40	16	11	5	17,57
Delivery rate of pump in permanent mode [l/min]	28,8	40	40	40	34	28,5	28,5	34	34	28,5	40	34	28,5	28,5	33,36
Delivery pressure [bar]	70	30	30	30	50	70	70	50	50	70	50	30	70	70	
Input power of active pump [kW]	7,95	3,6	3,6	3,6	5,55	7,95	7,95	5,55	5,55	7,95	5,55	3,6	7,95	7,95	5,89
															1,06 kW/workpiece

Design with filter, centralized system

## Machining using minimal quantity lubrication

Medium: aerosol; MQL device: SKF LubriLean DigitalSuper (compressor 6,43 kW – 1 m<sup>3</sup>/min)

Flow rate required for tool [l/min]	80	100	200	100	80	80	50	120	80	60	150	120	50	30	92,86
Air consumption per machining step [l/min]	66,7	133,3	100	33,3	240	80	16,7	80	40	20	50	60	33,3	15	69,17
Input power of compressor [kW] relative to air consumption	0,43	0,87	0,65	0,22	1,56	0,52	0,11	0,52	0,26	0,13	0,33	0,39	0,22	0,1	0,45
															0,08 kW/workpiece



## The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

### Additional brochures for further information

- 1-5102-EN LubriLean - Minimal Quantity Lubrication for customized dry machining processes
- 1-5109-EN SKF LubriLean DigitalSuper

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