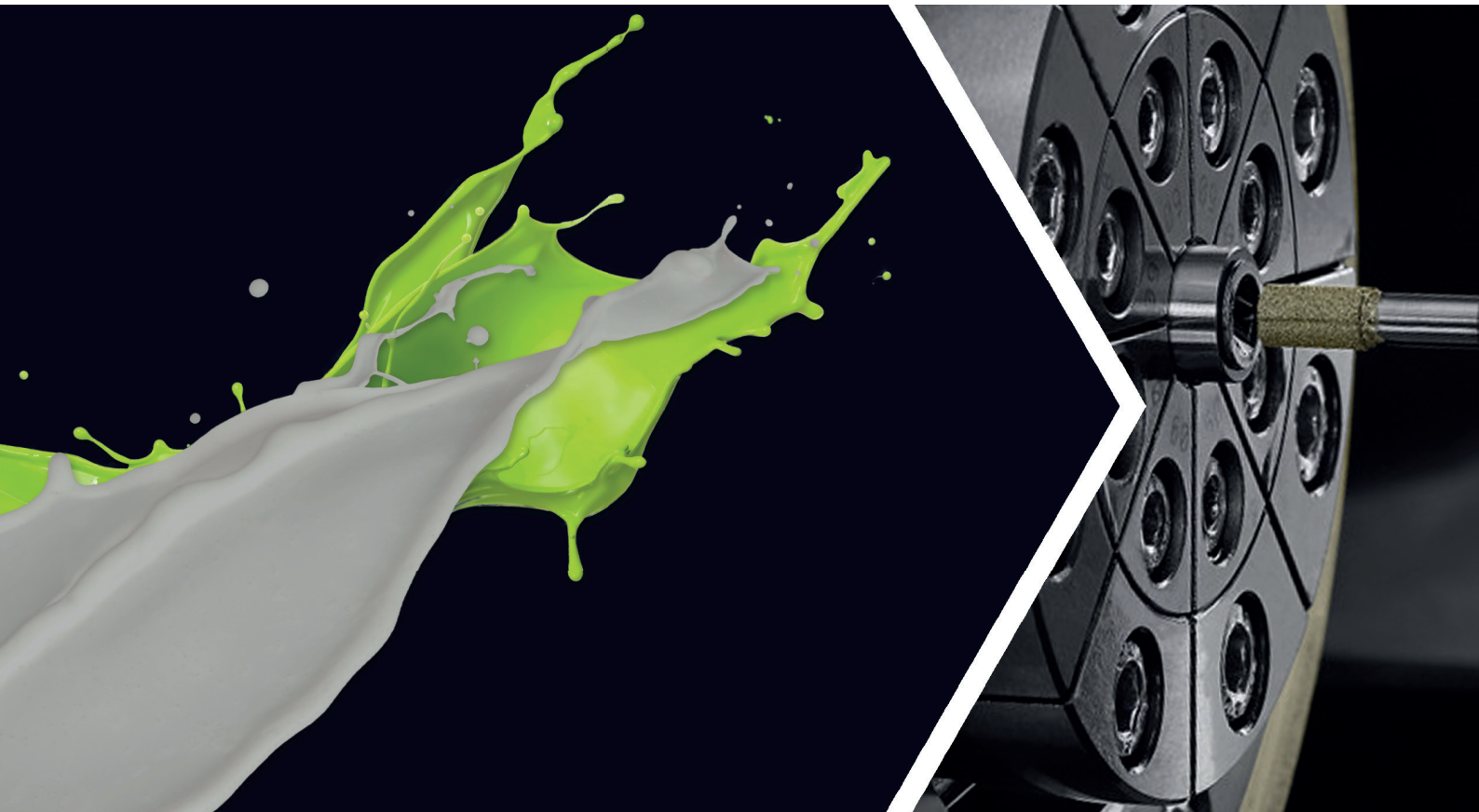


# *Liquid* Solutions

in Grinding – worldwide



Partners in Grinding Technology



Invest in Success





## ML LUBRICATION

ML LUBRICATION develops and produces individually tailored product concepts in cooperation with well-known machine tool manufacturers for the automotive and automotive supply industry.

## THE GRINDING OIL SPECIALIST

ML LUBRICATION is an innovative mid-sized privately owned company, located in Schweinfurt/Germany, which is specialized in development, production and worldwide sales of metalworking fluids as well as process media and lubricants for metalworking and processing of other materials.

Schweinfurt, technological origin of the bearing industry, has made ML LUBRICATION what it is today: a specialist for metal working processes, highly focused on grinding operations. As a result of its long-term research and development, ML LUBRICATION offers a wide range of products for all kinds of grinding processes in the automotive, automotive supplier and bearing industry.

Since the beginning of our research and development activities, we realized, that it needs a strong and reliable partner in the machine tool industry to develop individually tailored product concepts for our customers. After several years of cooperation the WILHELM BAHMÜLLER Maschinenbau Präzisionswerkzeuge GmbH proved to be the ideal partner for the evolution of our neat grinding oils. Due to the cooperation with BAHMÜLLER, we at ML LUBRICATION are able to provide a full range of specialized neat metalworking fluids for grinding operations with outstanding performance as well as maximum machine, seal and paint compatibility. Using different base oils and additive systems, our products can fulfill highest environmental standards and maximum requirements in performance. As a strong team ML LUBRICATION and BAHMÜLLER are able to open new technologies, synergy effects and saving potentials to our clients.





## BAHMÜLLER

As a technological leader in the precision grinding of automotive components, we are proud of our contribution to environmental friendly mobility.

## THE TECHNOLOGICAL LEADER IN PRECISION GRINDING

### BAHMÜLLER - INVEST IN SUCCESS

As a family owned business BAHMÜLLER has been successful delivering innovative solutions already for more than 70 years worldwide in three different industries: precision grinding, corrugated board converting and precision tool holders. It is BAHMÜLLER's goal to make our customers even more successful in their businesses by delivering continuously improved and innovative solutions! We live our claim „Invest in Success“ anew every day.



### GRINDING WITH ULTRA-PRECISION

BAHMÜLLER develops precision grinding machines that are retrofit-friendly, integrated compact systems with highly dynamic automation options as ‚turnkey solutions‘ for high-volume serial manufacturing of high-precision components subject to the highest of standards. Our primary goals are unit cost efficiency and production stability. We achieve these goals through the shortest cycle times with superior machine availability, maximized machining and process combination, as well as the implementation of multi-station solutions.

In addition to our maximum precision machine technology, modern neat grinding oils are essential to achieve optimum performance with minimal environmental impact in grinding operations. Metalworking fluids specifically developed for grinding from ML LUBRICATION in our BAHMÜLLER precision grinding machines will drive your process to the highest efficiency at lowest cost. Our close cooperation ensures a unique compatibility between grinding fluid and machine as well as reliable global product supply and technical support.

# Grinding Oils from ML LUBRICATION: Our Technology – Your Advantage

- Base oil**
  - High viscosity index for excellent lubricity at high temperatures
  - Lowest content of aromatic hydrocarbons for outstanding oxidation resistance and optimum health and safety features
  - Low viscosity for best flushing properties to maintain the cutting performance of the grinding wheel as well as for better heat removal and lower oil consumption due to lower dragout
  - High flashpoint to reduce fire hazards
  - Optimum air release to avoid foam problems
- Polar additives**
  - Excellent wetting of grinding wheel and workpieces
  - Significant enhancement of flushing properties due to high polarity
  - Improved lubricity in the low temperature range
- EP/AW-additives**
  - Maximum performance in the mid- and high-temperature range
  - Increased lifetime of the grinding wheel due to reduce wear
  - Well-balanced additive level to prevent overlubrication and burn marks
- Inhibitors**
  - Reliably prevent corrosion of yellow metals and carbide
- Dispersants**
  - Prevent the accumulation grinding sludge and improve the dirt carrying capability
- Antioxidants**
  - Improve the aging stability and oxidation resistance for optimum lifetime of the grinding oils
- Anti-mist additives**
  - Drastically reduce the oil mist formation for cleaner working environment and higher safety standards.

## High-Performance Grinding Oils

	Viscosity at 40°C	Flashpoint [°C]	Base oil	Copper corrosion	Yellow metals	Aluminium	Cast iron	Steel	High-alloy steel	Carbide	Grinding	Cutting	Honing	Remarks
<b>EMOL-O-GRIND 167/1</b>	3	103	MO	1	•	•	•	•	•		•			High performance neat oil for lapping and grinding of bearing balls and rollers
<b>EMOL-O-GRIND 168/8</b>	4	128	GTL	1	•	•	•	•	•	•	•			Precision neat grinding oil for diesel/fuel injectors, turbocharger rotor and shaft, valve seats and bearings based on new Gas-To-Liquid technology
<b>EMOL-O-GRIND 168/3</b>	5	130	MO	1	•	•	•	•	•		•			Precision neat grinding oil for diesel/fuel injectors, turbocharger rotor and shaft, valve seats and bearings
<b>EMOL-O-GRIND 178/2</b>	5	152	PAO	1	•	•		•	•	•	•			High-performance neat oil for carbide and HSS tool grinding based on synthetic polyalphaolefines
<b>EMOL-O-GRIND 178/5</b>	8	158	MO	1	•	•	•	•	•	•	•			High-performance neat oil for carbide and HSS tool grinding as well as for universal grinding operations
<b>EMOL-O-GRIND 178/8</b>	10	188	GTL	1	•	•	•	•	•	•	•			High-performance neat oil for carbide and HSS tool grinding as well as for universal grinding operations based on new Gas-To-Liquid technology
<b>EMOL-O-GRIND 167/80</b>	12	164	MO	4		•	•	•	•	•		•		High-performance neat oil for gear and tooth flank grinding

Base oil types: MO – Mineral oil, E – Ester oil, PAO – Polyalphaolefin, GTL – new Gas-to-Liquid technology

## Honing and Multi-Purpose Oils

	Viscosity at 40°C	Flashpoint [°C]	Base oil	Copper corrosion	Yellow metals	Aluminium	Cast iron	Steel	High-alloy steel	Carbide	Grinding	Cutting	Honing	Remarks
<b>EMOL-O-HON 920 NV/S</b>	3	108	MO	1	•	•	•	•	•		•		•	High-performance neat oil for racetrack honing of bearings and for ball grinding
<b>EMOL-O-HON 925/5</b>	4	132	MO	3		•	•	•	•				•	Specialized honing oil for operations with non-sulfurized stones
<b>EMOL-O-HON 920 HV/5</b>	5	134	MO	2		•	•	•	•		•		•	New additive technology high-performance honing oil and precision grinding oil
<b>EMOL-O-HON 980</b>	5	138	MO	1	•	•		•	•		•		•	Combined honing and grinding oil
<b>EMOL-O-GRIND 174</b>	10	209	E	2		•	•	•	•		•	•		Ester based multi-purpose oil for grinding, lapping and cutting operations
<b>EMOL-O-GRIND 194/6</b>	15	180	MO	1	•	•	•	•	•	•	•	•		Multi-purpose neat oil for cutting and grinding operations
<b>EMOL-O-HON 945</b>	18	154	MO	2				•	•				•	Specialized honing oil for operations with non-sulfurized stones

## Full Product Range for Metalworking

### EMOL-O-CUT

Water miscible semi synthetic metalworking fluids

ML LUBRICATION developed a portfolio of outstanding semi synthetic metalworking fluids for grinding, general and heavy duty machining of cast iron, steel, yellow metals and aluminium with excellent long-term stability.

### EMOL-O-GRIND, EMOL-O-CUT

Water miscible fully synthetic metalworking fluids

ML LUBRICATION supplies a broad range of modern mineral oil free fully synthetic metalworking fluids for grinding and general machining of cast iron steel.

### EMOL-O-CUT

Water miscible fully synthetic metalworking fluids

ML LUBRICATION offers a wide range of classical soluble oils for general and heavy duty machining of cast iron, steel, aluminium and yellow metals.

### EMOL-O-DRAW

Water miscible fully synthetic metalworking fluids

ML LUBRICATION's product range includes proven neat oils for all kind of machining processes from general machining to heavy duty deep hole drilling, broaching and severe drawing operations on high alloy steel.

### EMOL-O-COR

Water miscible fully synthetic metalworking fluids

ML LUBRICATION's product portfolio offers a fully range of dewatering and anti-corrosion products for temporary rust protection.

### EMOL-O-POR

Water miscible fully synthetic metalworking fluids

ML LUBRICATION is able to supply modern water based and solvent based cleaners for all applications in the metalworking industry.

# ML LUBRICATION and BAHMÜLLER



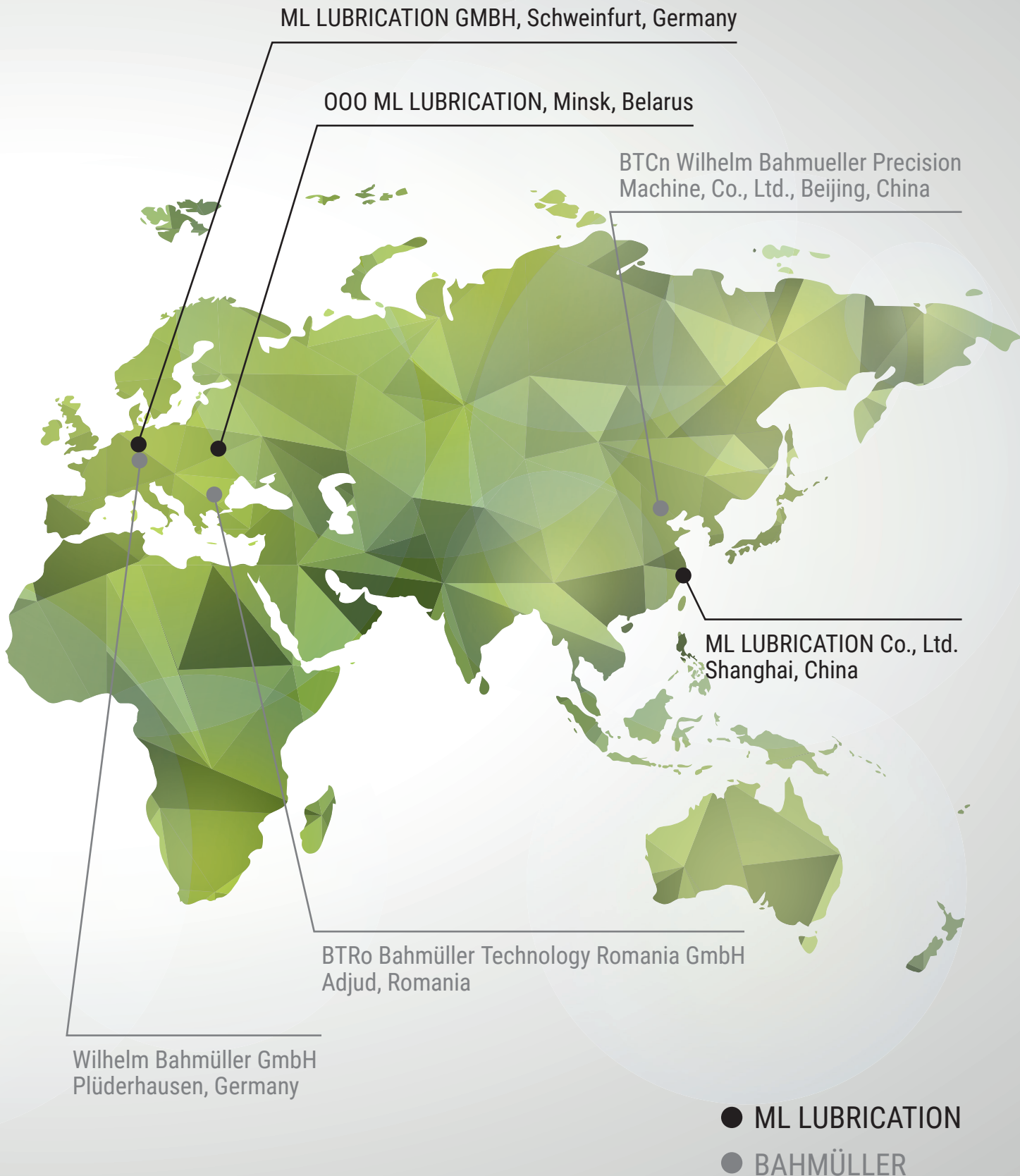
BTI Bahmueller Technologies Inc.  
Charlotte NC, USA

ML LUBRICATION Inc.  
Tucker GA, USA

● ML LUBRICATION

● BAHMÜLLER

# WORLDWIDE PARTNERS FOR GRINDING



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## PARTNERS

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IN GRINDING TECHNOLOGY



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