



Perfect mastery



BE A CHAMPION
IN EVERY MATCH

OPS IN SOLL
Fly with the eagle!



Rainer Jung, Managing Director

Perfect mastery of surfaces like champions

The new standard of all things

The sophisticated performance setup of the V-Line with its High-Speed-Eagles means a substantial boost in speed for modern cutting technology.

The world's fastest team sport masters mirror-like surfaces with an efficient short-pass game. We also look for short, highly dynamic methods in the cutting process, which we convert into a total victory for our customers using superior tactics. The V-Line is the result of a cohesive team performance. Its actions are lightning-quick with enormous precision in power play mode and it plays with intelligent automation solutions for you in the Champions Cup.

Use the highly profitable machine concept for scoring accurate and

**“The power grows with the goal.
We love the technological edge.”**



FLY WITH THE EAGLE





EagleTec inside

Our customers around the world have relied on the strong innovative capacity of the experts at OPS-INGERSOLL for two decades. The permanent and continuous research and development of unique performance components with state-of-the-art technology provides our customers with highly-profitable trend scouting and thus long-lasting investment security.

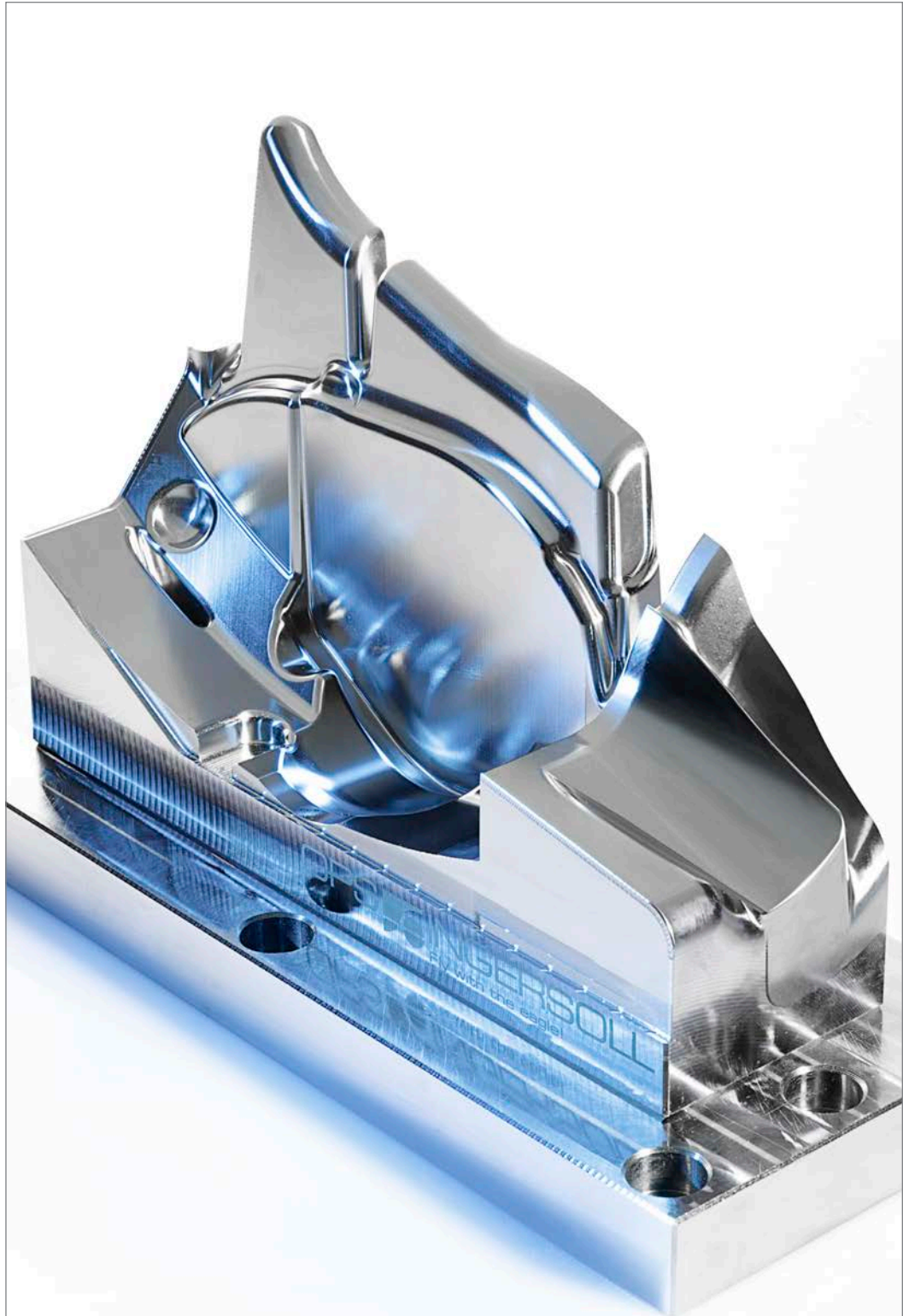
"EagleTec inside" is a commitment and a pioneering promise for every machine that leaves our factory. For our customers and our employees. We want to inspire everyone.

**"Most players are pretty good!
They go where the puck is.
I go where the puck will be."**

Wayne Gretzky
(Winner of multiple world
championships in hockey)

Big Points

Diversity of business sectors



Tool and mould construction

Pressing and metal forming

Aerospace technology

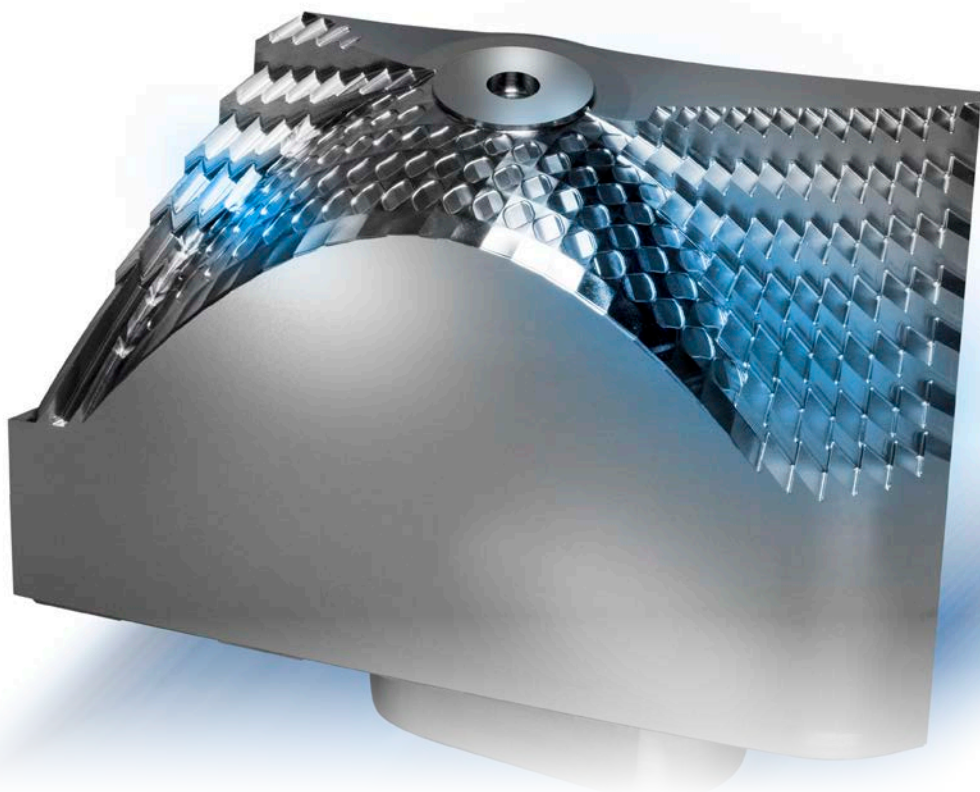
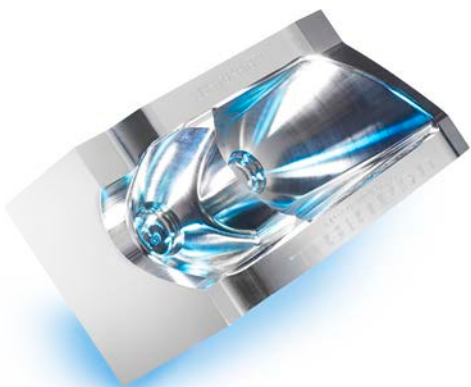
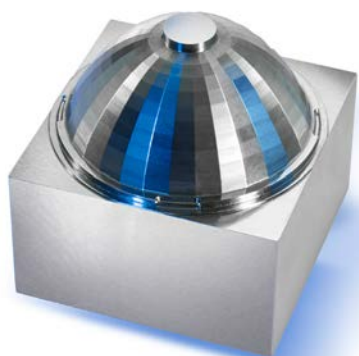
Dental and medical technology

Moulds for
optical components

Micro-scale processing

Precision part machining

OPS-INGERSOLL offers
efficient solutions to increase



Unique Gantry machine concept

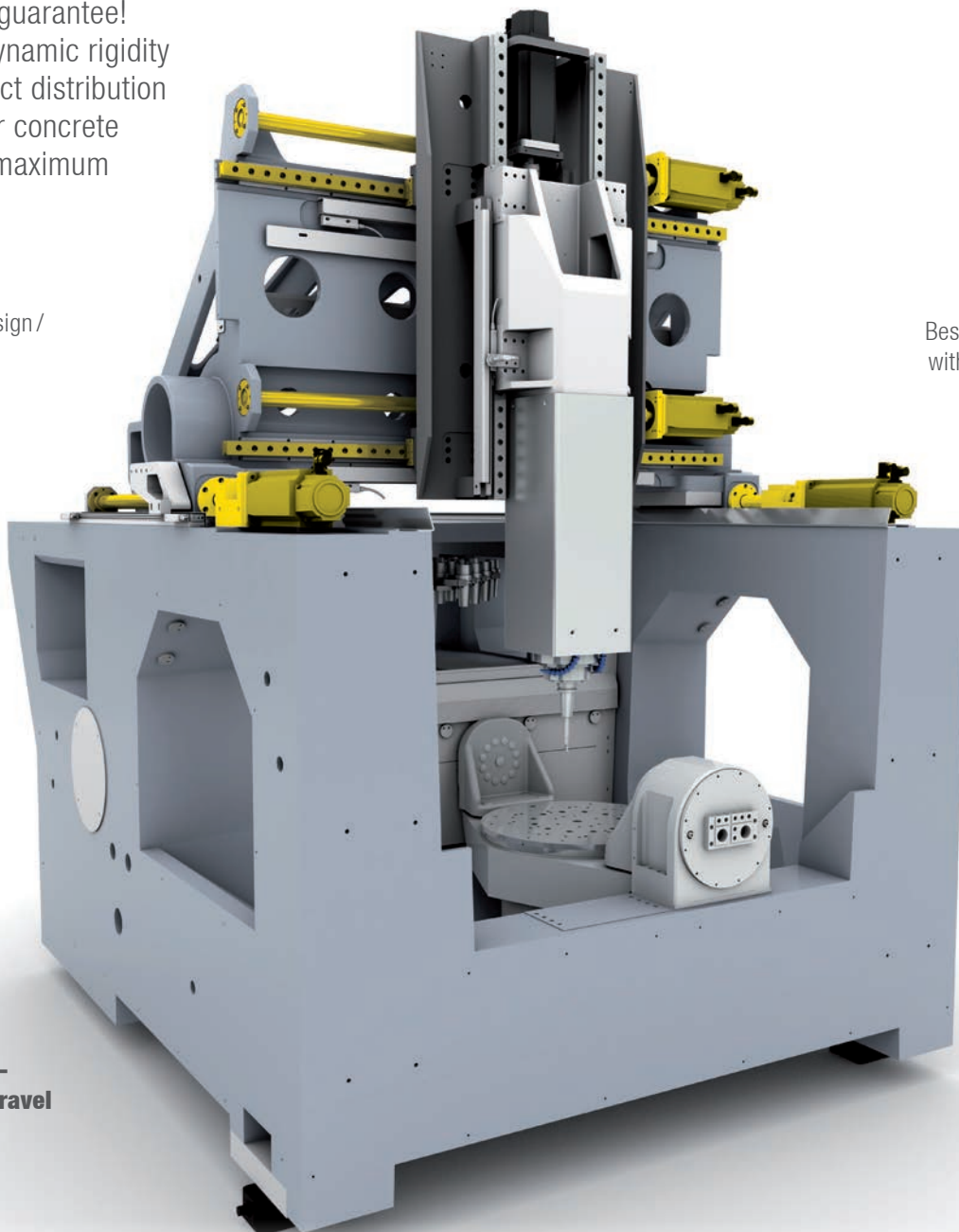
Excellent machine design

“Dimensional”
precision guarantee!
Highest dynamic rigidity
with perfect distribution
in polymer concrete
bed with maximum

Thermo-symmetric design
Temperature compensation / stability

Gantry design /
dual drive

Automation
Best accessibility even
with manual operation



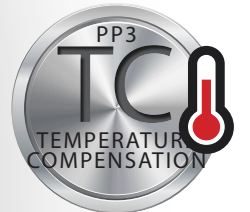
Minimum
footprint –
maximum **travel**

4th/5th axis
Highly dynamic
rotating swivel axis



FLY WITH THE EAGLE

Fully enclosed machine – temperature stability



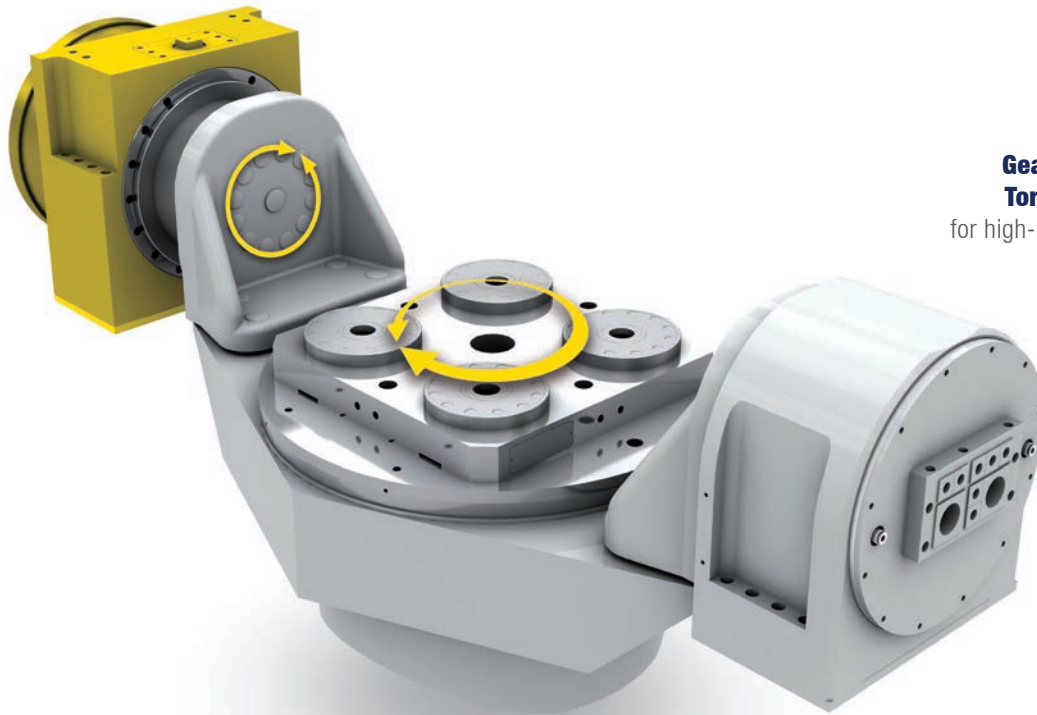
Precision strategies

Various options for cooling, geometry and temperature error correction for machine and cutting spindle, assure the highest machining precision over the entire range of travel

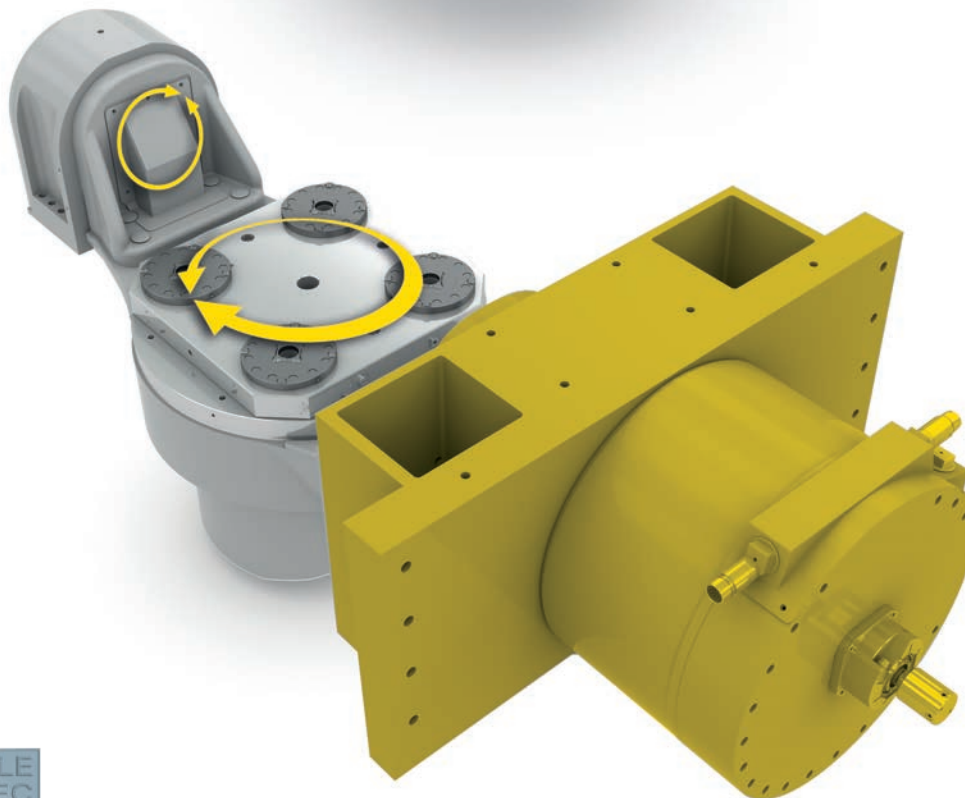


4th/5th axis – energy efficient force transmission

Optional gear or torque drive



**Geared swivel axis /
Torque rotation axis**
for high-precision machining



**Torque swivel axis /
Torque rotation axis**
for high feed rates with
simultaneous machining



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Intelligent load movement

The 4th/5th axis is designed to accommodate loads of up to 1100 lb. (500 kg). The available work space is utilised ideally with the central arrangement and low position of the swivel axis. The swivel angle of up to 140° enables optimal machining conditions from all sides.

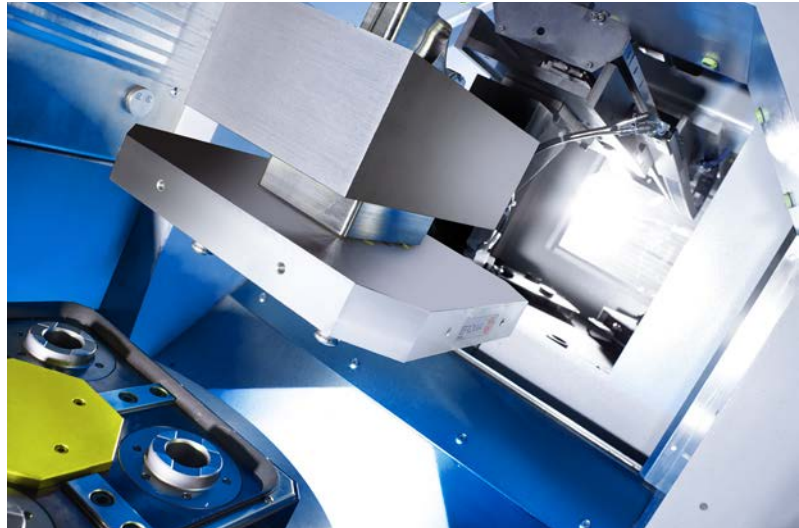
Outstanding automation compatibility without limitation on manual operation



Flexible connection of handling systems

All of our machines are prepared for automation, whether as a single machine, as a cell, or line automation.

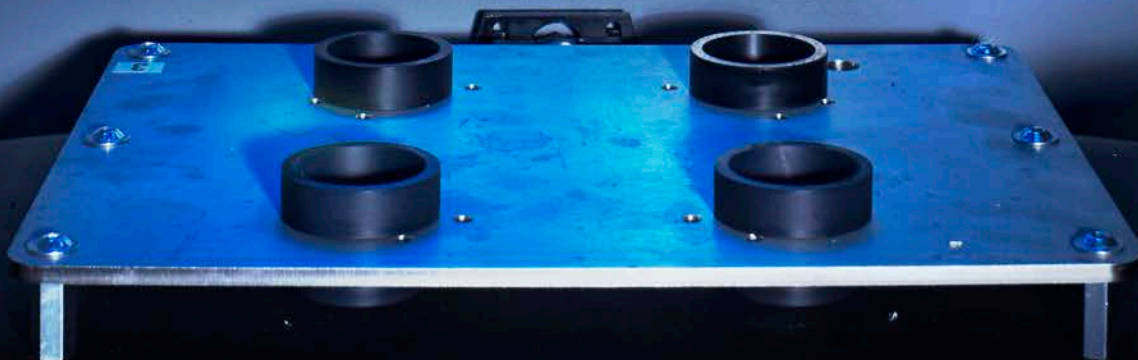
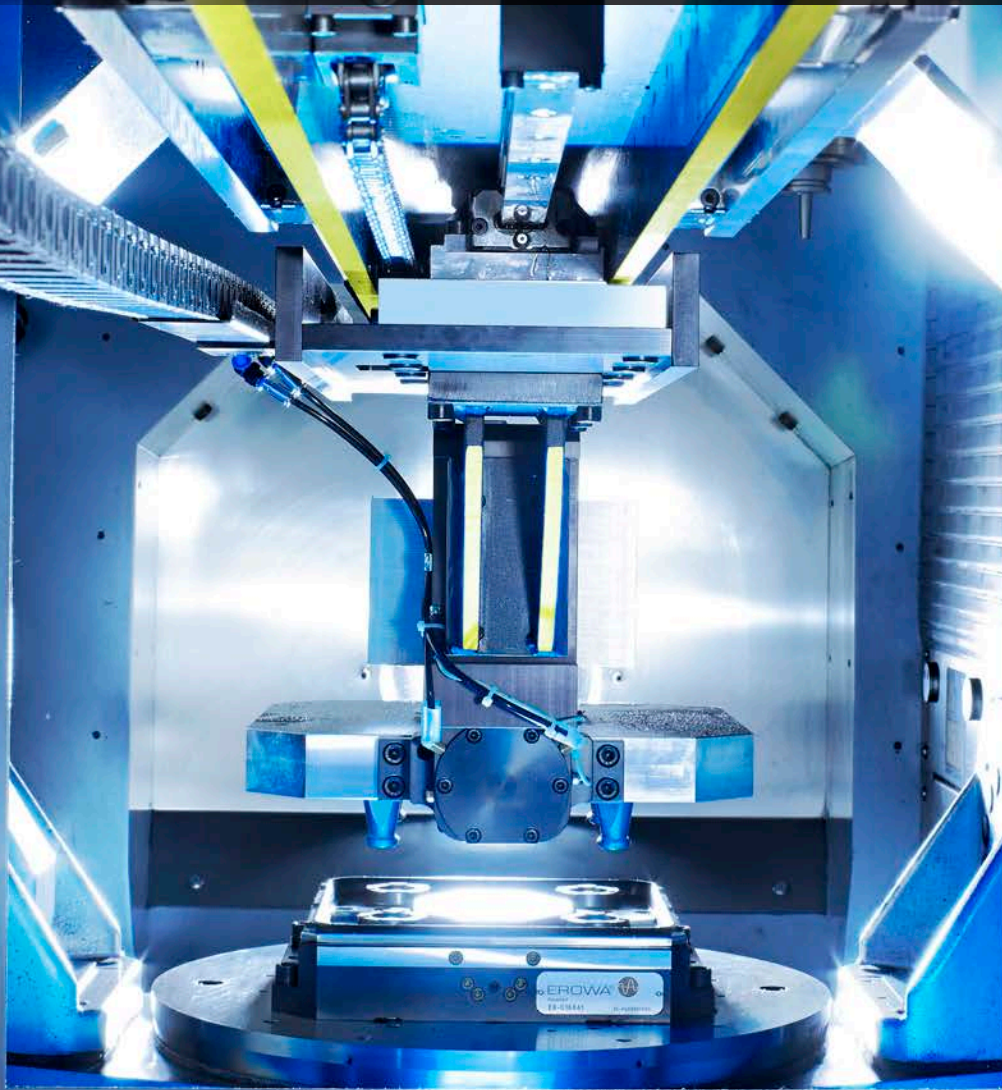
OPS-INGERSOLL can supply the entire process chain, including automation, measuring machine, cleaning station and software.



Multi-flex access

The possibility of loading with tools and workpieces from multiple sides offers ideal conditions for compact automation solutions without limiting the operator's accessibility to the work space. The large front door is a key feature.

Pallets with dimensions of up to 19.7 x 19.7" (500 x 500 mm) can be exchanged automatically. Heavy workpieces are loaded from above by crane.

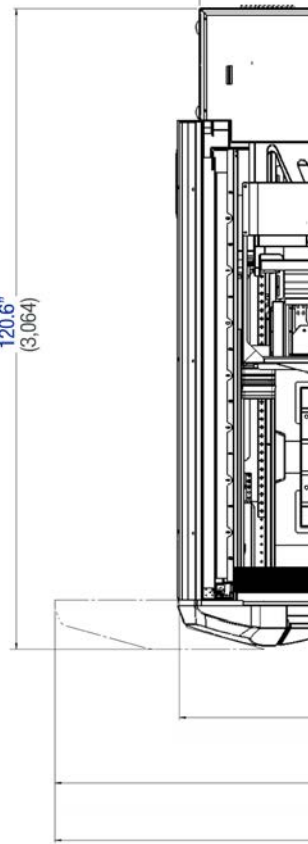


Precision, power, perfection – EagleTec inside!

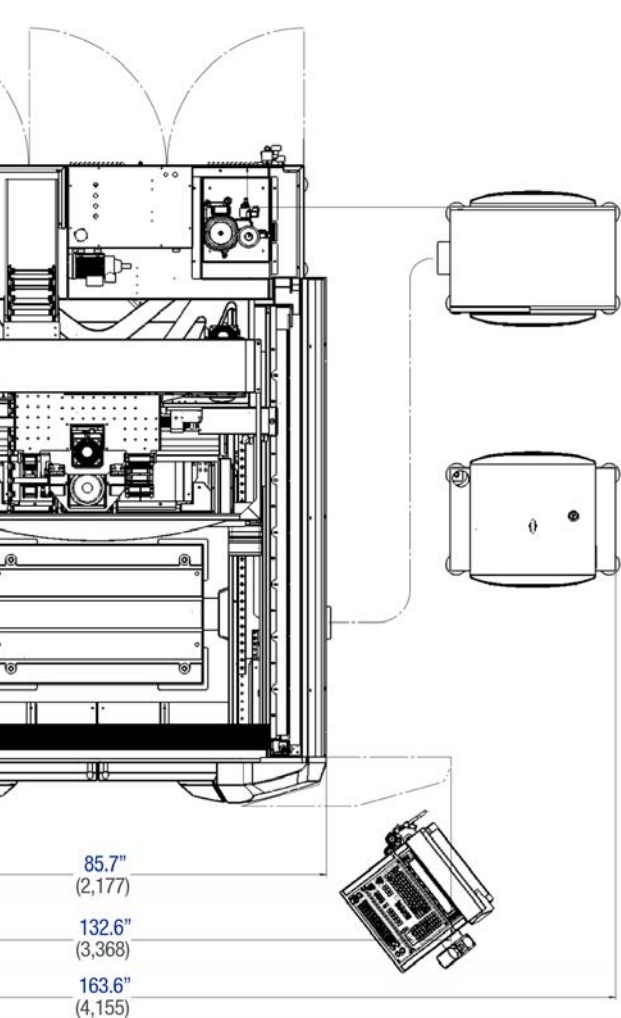
V9 – The universal power pack

Machine Height:
112.2"
(2,850)

120.6"
(3,064)



FLY WITH THE EAGLE



All dimensions specified in **inch** (mm)

Workpiece dimensions

3-AXIS

optional table



X x Y x Z: 31.5" x 23.6" x 19.7"
800 x 600 x 500 mm
max. 4,400 lb. 2,000 kg

5-AXIS



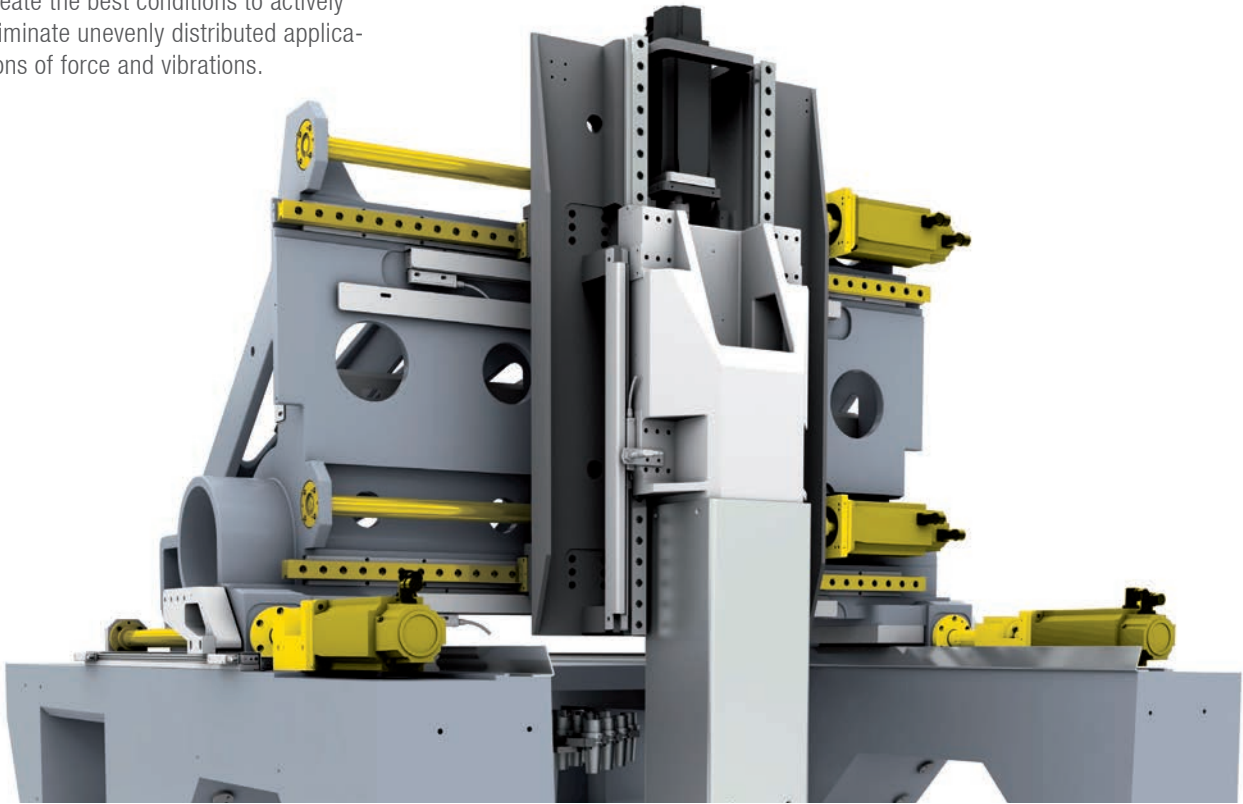
Ø 23.6" 600 mm / H = 21.6" 550 mm
max. 1,102 lb. 500 kg

Setup – Technical data

Travel distances	X 31.5" x Y 23.6" x Z 19.7" X 800 mm x Y 600 mm x Z 500 mm
Travel speed	max. 1,181"/min. : 30 m/min
Acceleration	max. 590.5"/s ² : 15 m/s ²
3-Axis T-slot table (option)	T-slot table expandable over 4 th /5 th axis
3-Axis Table clamping surface	X 39.4" x Y 26.0": X 1,000 mm x Y 660 mm
Max. 3-Axis table load capacity	up to 4,400 lb. : 2,000 kg
T-slot	4 x 18 H12
Spindle nose to table distance min./max.	2.7"/ 22.4" : 70/570 mm
Workpiece size 3-axis	X 31.5" x 23.6" x 19.7" (max. 4,400 lb.) X 800 x 600 x 500 mm (max. 2,000 kg)
Workpiece size 5-axis	Ø 23.6" H 21.6" (max. 1,102 lb.) Ø 600 mm; H 550 mm (max. 500 kg)
Connected load	32 kVA
High-frequency spindle selection * standard equipment	HSK E40: 1 - 42.000 rpm - 20 HP (15kW) HSK E50: 1 - 36.000 rpm - 23 HP (17kW)* HSK A63: 1 - 18.000 rpm - 34 HP (25kW) HSK A63: 1 - 26.000 rpm - 34 HP (25kW)
Tool changer selection	88 positions (HSK E40) 72 positions (HSK E50) 48 positions (HSK A63) Optional: external tool changer for all spindles up to 175 positions
Minimum lubrication	Included
CNC control unit	HEIDENHAIN TNC 640
Dimensions	W 85.7" x D 120.6" x H 112.2" W 2.177 x D 3.064 mm x H 2.850 mm
Total weight	25,353 lb. : 11.500 kg
5-Axis Rotary Table	B-axis +140 degrees / -60 degrees Torque-C-axis 100 rpm Workpiece weight: 550 lb. 250 kg (alternatively 1102 lb. 500 kg)
Options	Laser system for tool measurement Automatic cutter cleaning station Infrared measuring sensor PowerInspect - 3D-measuring Graphite exhaust system Oil mist suction unit Wet machining ATS - Aerosol dry lubrication Chip conveyor SMS Alarm Ready-for-Automation Software options HEIDENHAIN EcoTec

Dual Gantry drive

Highly dynamic dual drives optimise the force application points and thereby create the best conditions to actively eliminate unevenly distributed applications of force and vibrations.



High-level cutting spindles

From HSK E40 / HSK E50 to HSK A63.

All spindles are optionally available with internal coolant supply. The following types of media can be used: air, water or aerosol - an unique cutting medium for very low consumption.





Mastering precision factors

Minimal path deviations and perfect vibration damping result in the highest surface quality and a long cutting tool life.

V-Line provides the highest flexibility in the cutting process

Change to a new dimension of the future





Internal or external?!

Maximum capacity! Integrated in the machine bed, it takes up minimal space! An external changer is optionally available for tool capacities of up to 175 positions. It can also be designed as a combined workpiece and tool changer.

Precision, power, perfection – EagleTec inside!

V5 – The highly dynamic precision marvel

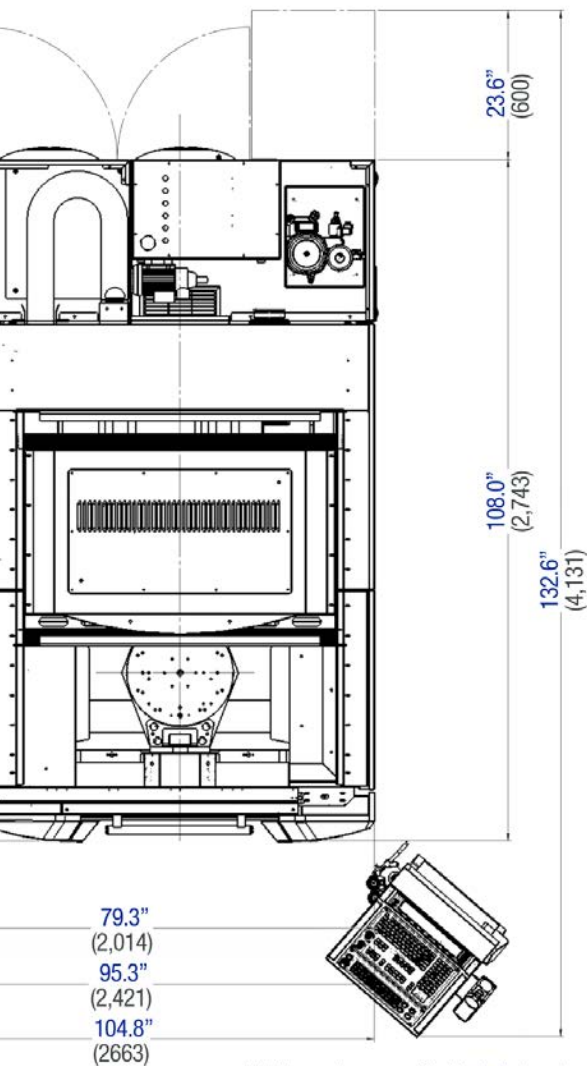


Machine Height:
96.5"
(2,450)

31.7"
(805)



FLY WITH THE EAGLE



All dimensions specified in **inch** (mm)

Workpiece dimensions

3-AXIS

optional table



X x Y x Z: 21.6" x 15.7" x 15.7"
550 x 400 x 400 mm
max. 1102 lb : 500 kg,

5-AXIS



Ø 15.7" : 400 mm / H 15.0" : 380 mm
max. 550 lb. : 250 kg

Setup – Technical data

Travel distances	X 21.6" x Y 15.7" x Z 15.7" X 550 mm x Y 400 mm x Z 400 mm
Travel speed	max. 1,181"/min. : 30 m/min
Acceleration	max. 592"/s ² : 51 m/s ²
3-Axis T-slot table (option)	T-slot table expandable over 4 th /5 th axis
3-Axis Table clamping surface	X 25.6" x Y 19.7": X 650 mm x Y 500 mm
Max. 3-Axis table load capacity	up to 1102 lb. : 500 kg
T-slot	5 x 14 H12
Spindle nose to table distance min./ max.	2.0" / 17.7" 50/450 mm
Workpiece size 3-Axis	X 21.6" x Y 15.7" x Z 15.7" (max. 1,102 lb) X 550 x Y 400 x Z 400 mm (max. 500 kg)
Workpiece size 5-Axis	Ø 15.7" ; H 15.0" (max. 550 lb) Ø 400 mm; H 380 mm (max. 250 kg)
Connected load	32 kVA
High-frequency spindle selection	HSK E40: 1 - 42.000 rpm
Spindle power	20 HP : 15 kW
Tool changer selection	32/100 positions (HSK E40)
Minimum lubrication	Included
CNC control unit	Heidenhain TNC 640
Dimensions	W 79.5" x D 110.2" x H 96.5" W 2.020 mm x D 2.800 x H 2.450 mm
Total weight	15,873 lb. : 7.200 kg
5-Axis rotary table	B-axis -120 degrees / +60 degrees C-axis 40 rpm Workpiece weight: 550 lb. : 250 kg
Options	Laser system for tool measurement Automatic cutter cleaning station Infrared measuring sensor PowerInspect - 3D-measuring Graphite exhaust system Oil mist suction unit Wet machining ATS - Aerosol dry lubrication Chip conveyor SMS Alarm Ready-for-Automation Software options HEIDENHAIN EcoTec

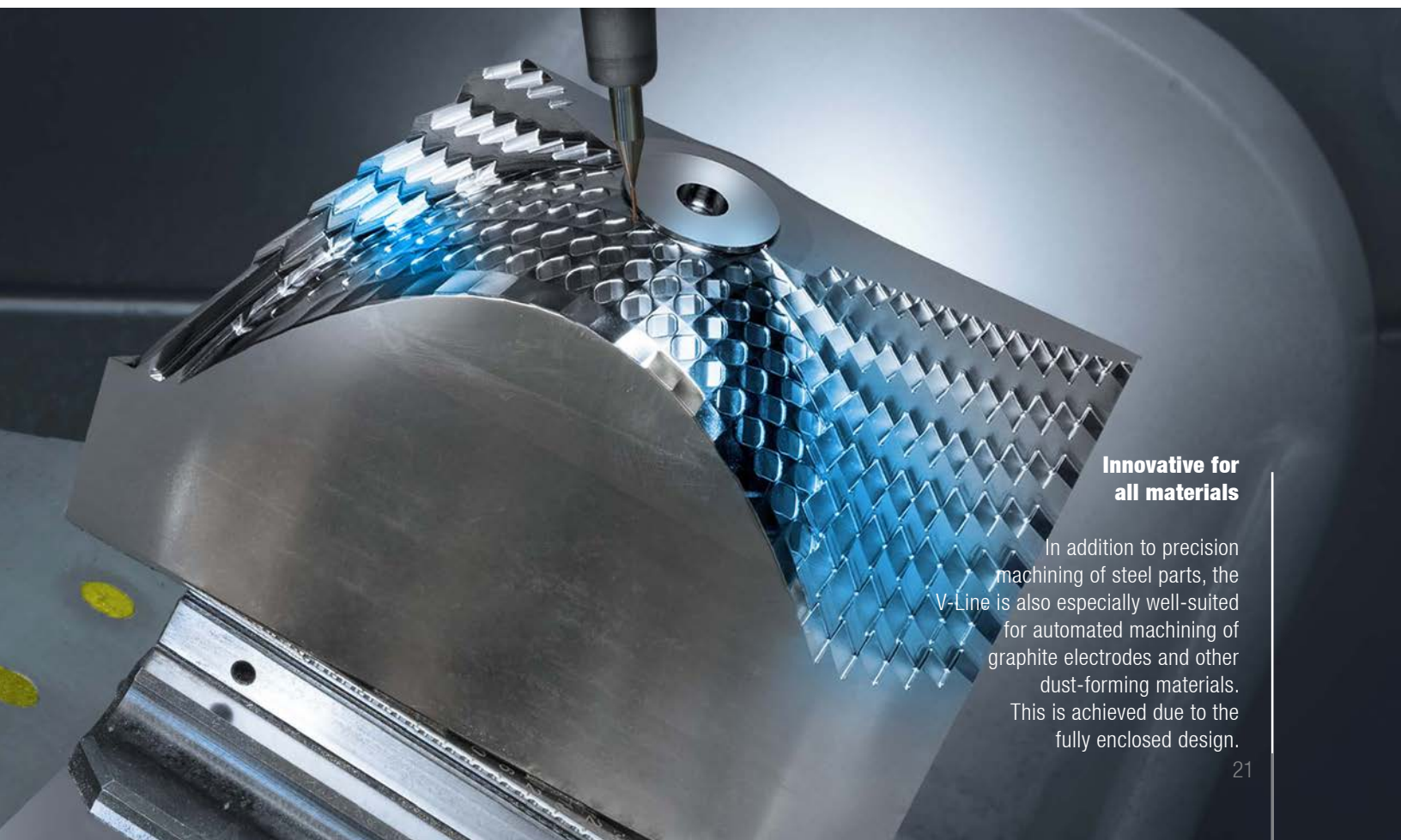
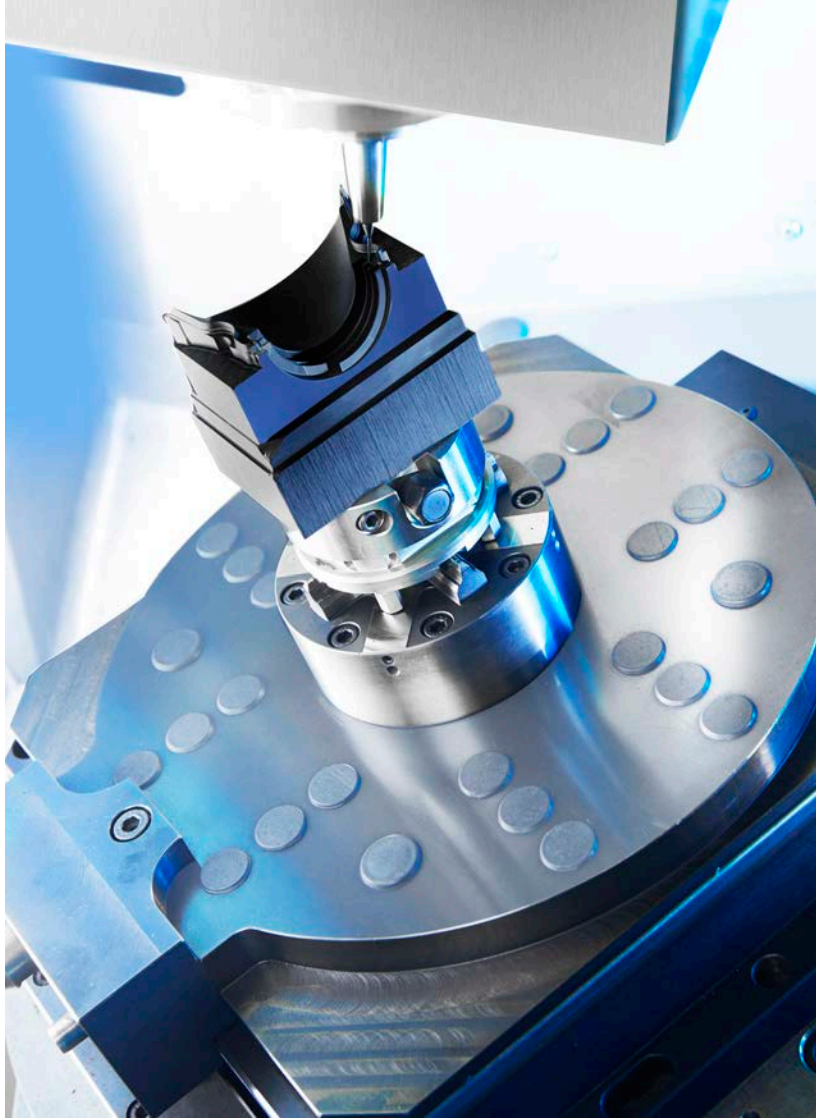
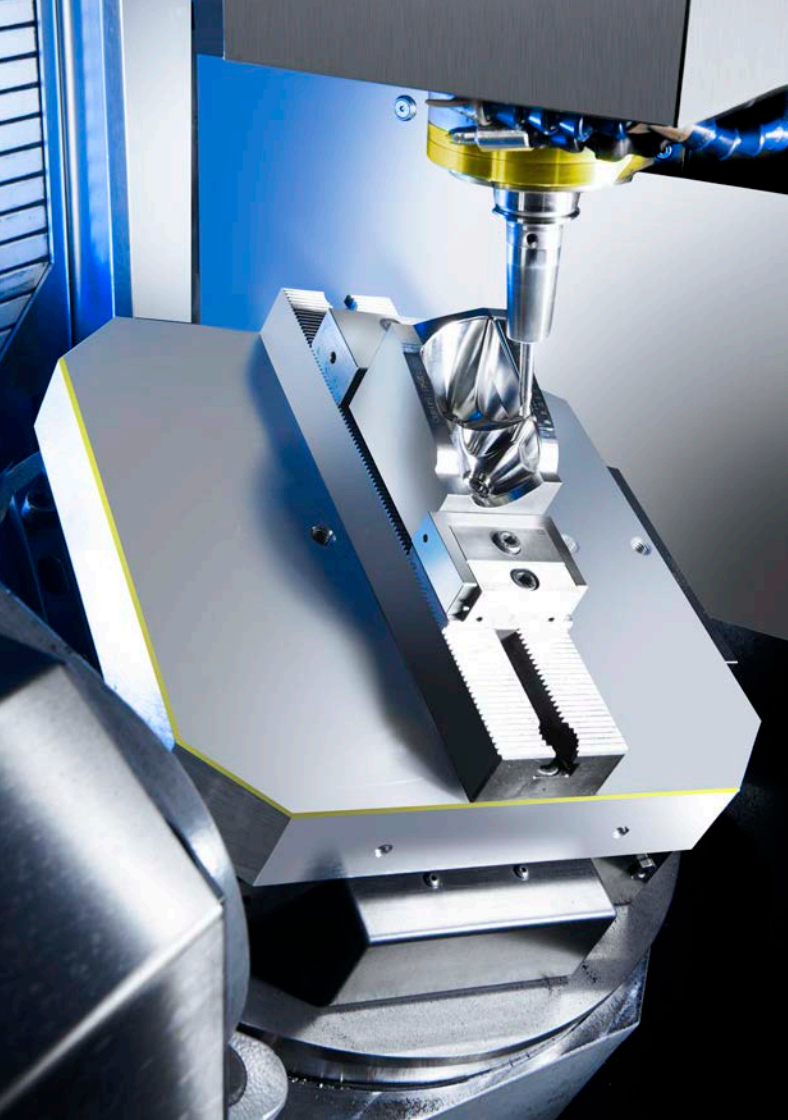
V5 – even more highlights

Compact outer dimensions with maximum travel, up to 550 lb. 250 kg change weight with 4th/5th axis with pallets of 15.7" x 15.7" 400 x 400 mm. Outstanding accessibility for automation and operator is also provided here. Special protected laser measuring system.



Quick double-gripper

For the shortest tool change times, particularly during production applications.

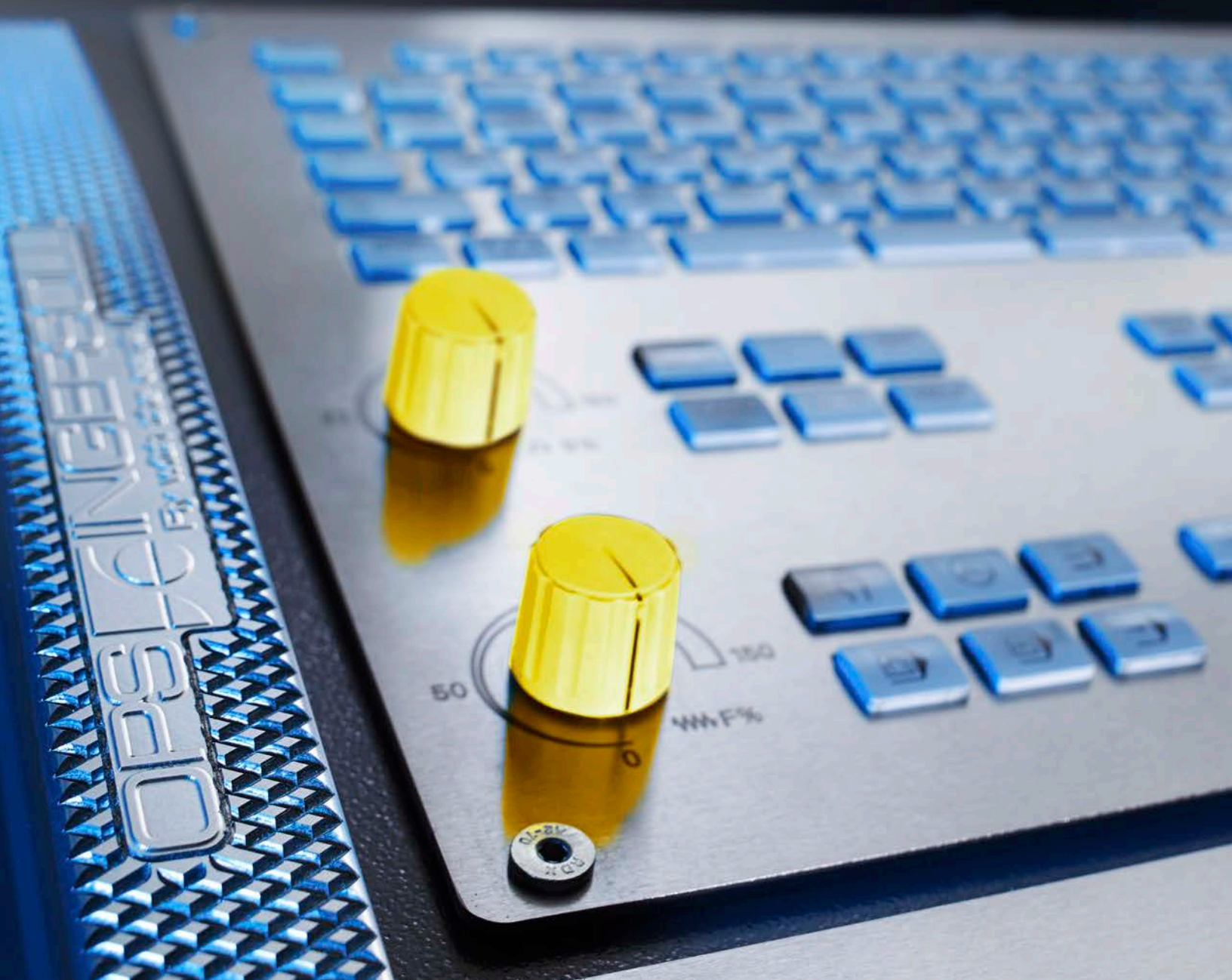


**Innovative for
all materials**

In addition to precision machining of steel parts, the V-Line is also especially well-suited for automated machining of graphite electrodes and other dust-forming materials. This is achieved due to the fully enclosed design.

High speed symbiosis

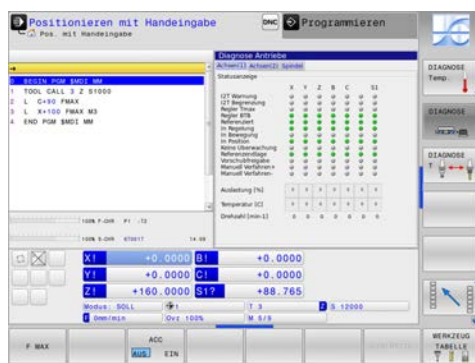
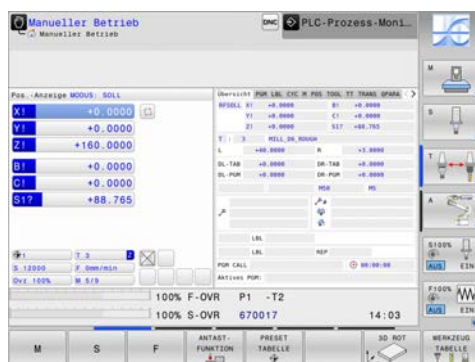
Perfectly matched for each other
HEIDENHAIN



TNC 640

The control unit of the latest generation

With strategies especially optimised for HSC and 5-axis machining, top results are achieved even with workpieces having different sizes. The specific concept of the V-Line in combination with the new features of the control unit, enables outstanding surfaces and precision with simultaneous optimisation of the machining time.





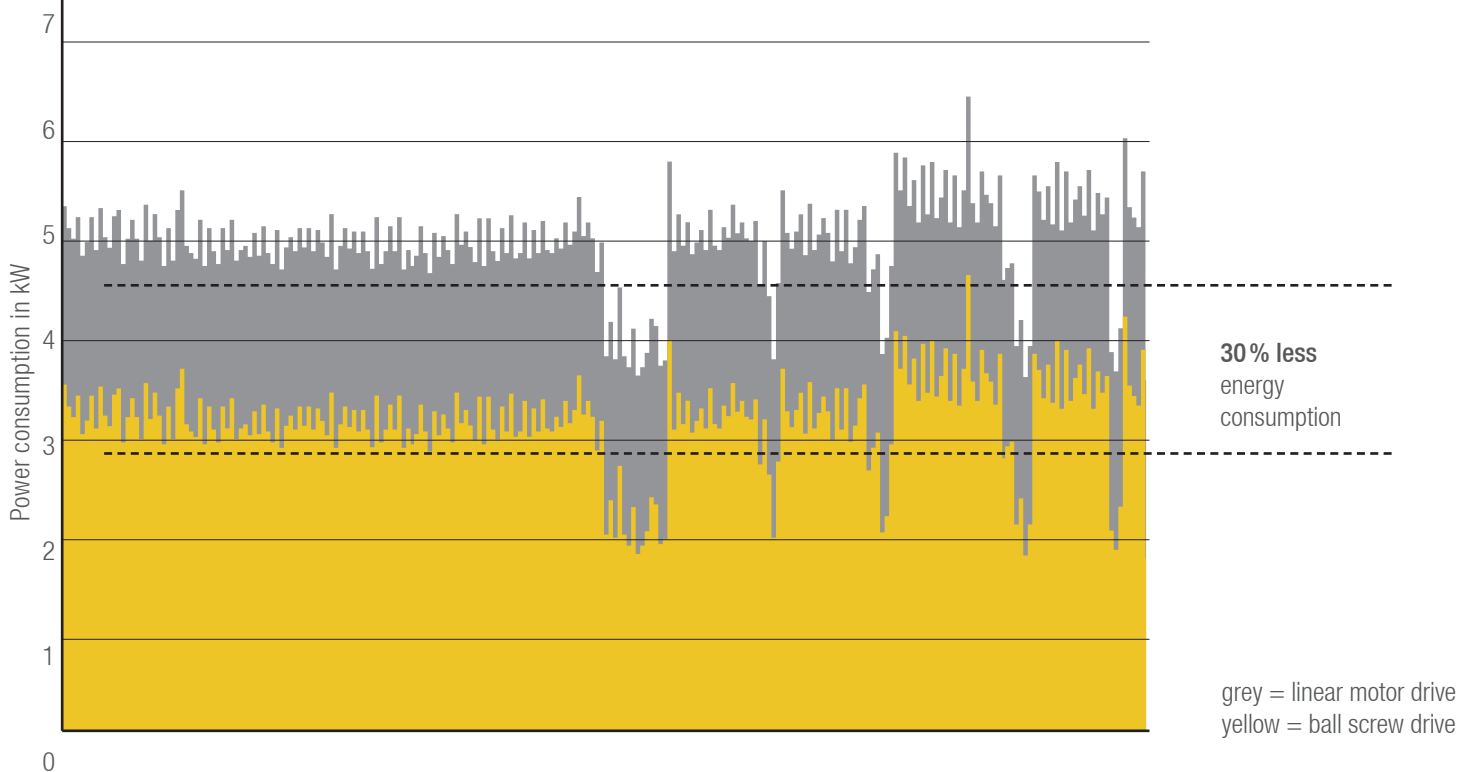
Best accessibility
for easy maintenance.



Reduce basic energy consumption, conserve resources, save money. EcoTec thinks and regulates for you and is designed to ensure that energy is only consumed when it is actually needed. It monitors and regulates optionally selectable warm-up programs, program-mable wake-up functions, idle states after program end, and much more. Intelligently designed to reduce energy consumption to an absolute minimum!

The highly efficient drive technology reduces energy requirements by one-third

Ball screw drive in comparison with linear motor drive



Cooling lubricant concepts and chip removal individually for each application

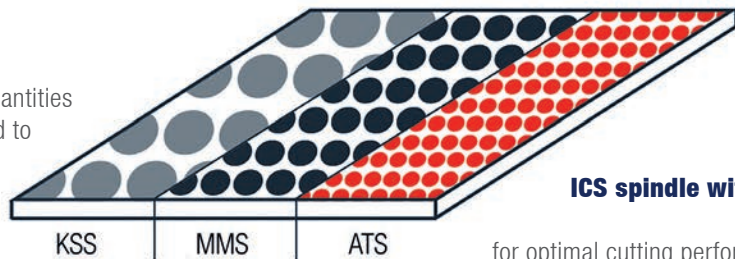


**Variable and compact water management
system in various configurations.**

Lubricant application comparison

The formula for ATS: **Reduce heat instead of combating it.**

An extremely fine aerosol is created with smallest quantities of lubricant. This is constantly regulated and supplied to the tool blade without any loss. Optimal lubricating particle application effectively reduces the creation of friction heat.



ICS spindle with ATS

for optimal cutting performance
and the best surface quality
(ICS spindles up to 42.000 rpm)



We offer optimal cooling lubricant concepts for every application.

Service management

North American service is provided by:

**MC MACHINERY
SYSTEMS, INC.**

a subsidiary of  Mitsubishi Corporation

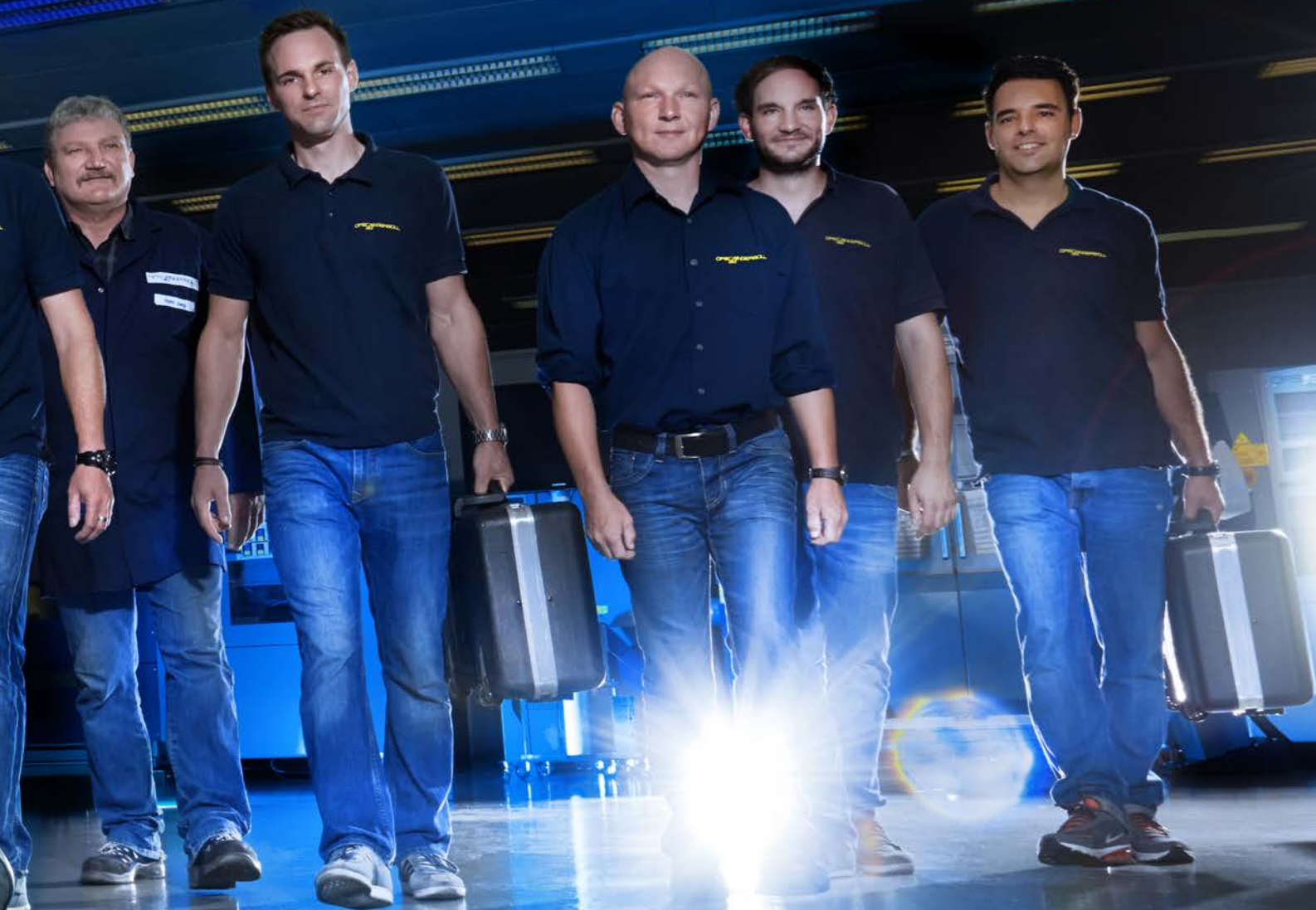
Spare parts

As a guarantee of the availability of your machines, a rapid and flexible supply of spare parts is of essential importance to your economic success. Thanks to our comprehensive stock of spare parts, we can react to your requirements on short notice.

Application support

An important part of the OPS-INGERSOLL / MC Machinery Systems service spectrum is the know-how transfer of our application technology. Our team of experts consists of experienced tool and mold makers, who advise and support you

FAST DIRECT FLEXIBLE PERFECT



Maintenance

Regular maintenance intervals reduce downtime and increase reliability and thus the service life of your machines.

Training

All North American training is done on site so we can provide you with practical training on your work to refine your expertise and operator skills. Benefit from the know-how of our experts!

The Success Factory

Outstanding customer solutions are created here. This is where passionate and experienced mechanical engineering experts live. This is our home!

Quality finale

Well thought-out, highly efficient production processes assure the high quality of all machines from the design to the delivery. This assures enthusiastic customers!





TEAM EAGLE

League champions with
perfect mastery of surfaces



The EXPERT Principle

Complete process
performance

The 4 success factors for profitable process organisation:

- 1 EAGLE technologies
- 2 Automation solutions
- 3 Process experts
- 4 Application know-how



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OPS INC.  SOLL
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