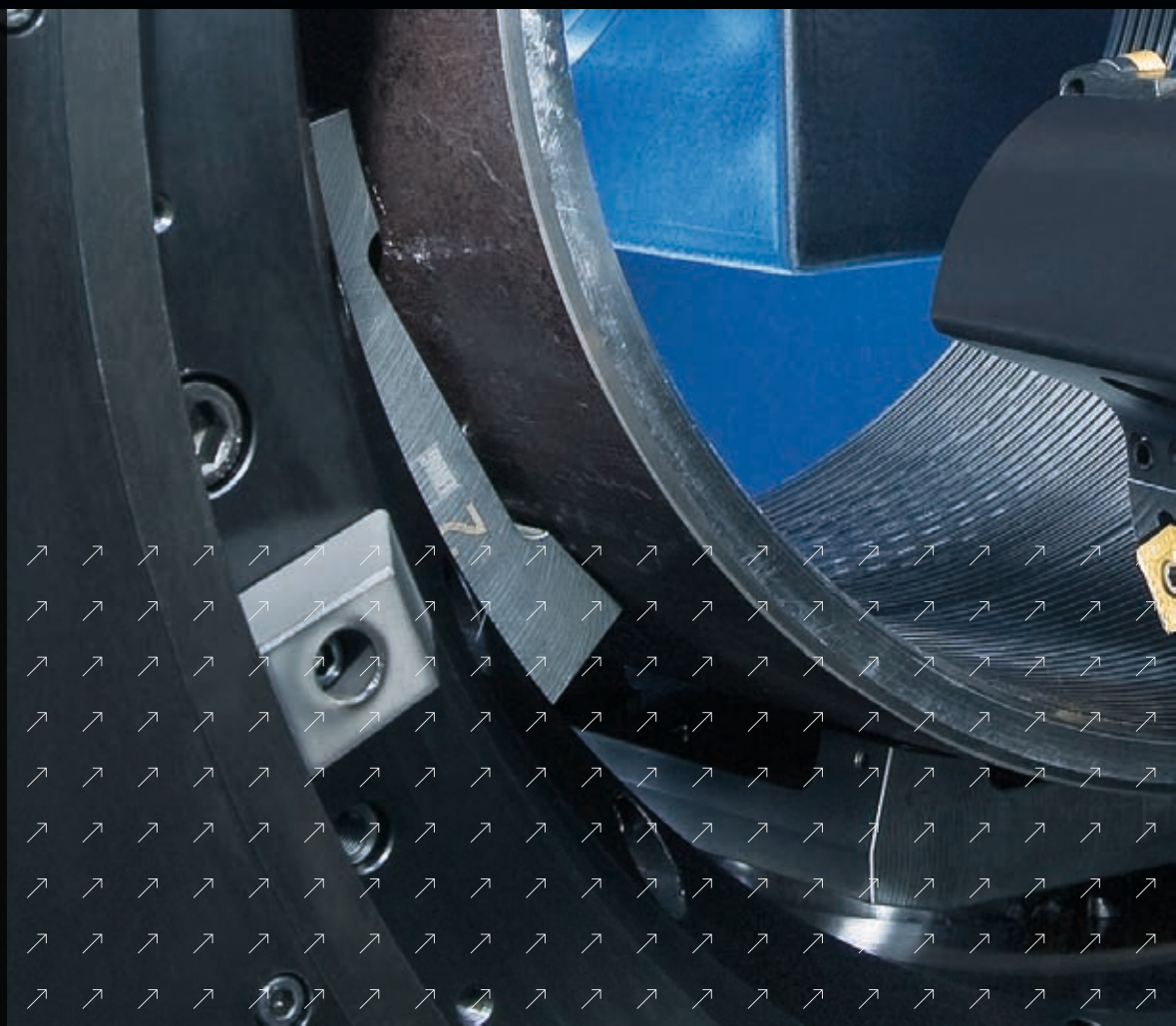
Oil Field Technology and Vehicular Hydraulics

EMAG

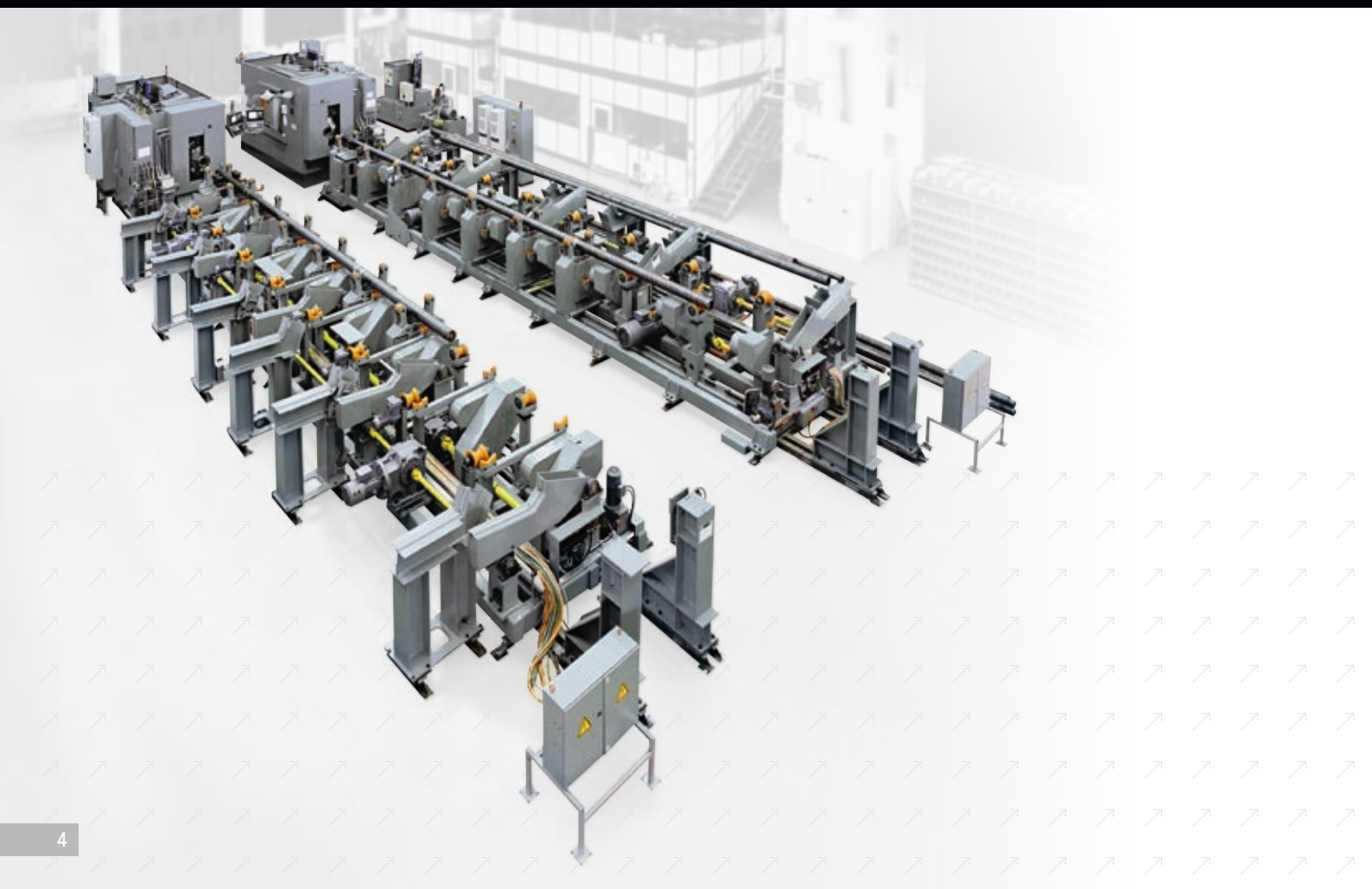
EMAG is well known for their many years of experience in the machining of oil field components (Oil Country Tubular Goods – OCTG).
Their flexible machine concepts and complete systems offer tailor-made solutions for the manufacture of tube ends, couplings, tool joints, drill bits, rock bit cones and pump components.
EMAG also offers machining solutions of greatest reliability and highest quality for components in vehicular hydraulics, such as hydraulic cylinders and piston rods.



OIL FIELD TECHNOLOGY AND VEHICULAR HYDRAULICS

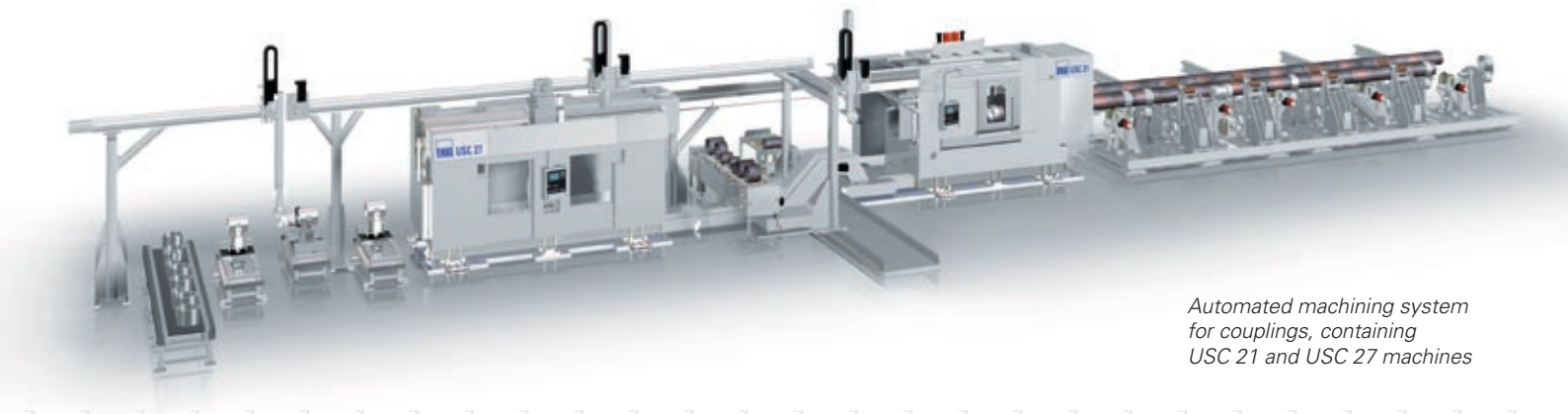
Machines and complete manufacturing systems from a single source.

EMAG offers flexible machine concepts and complete manufacturing systems for the oil field and vehicular hydraulics industries. Over 30 years experience in the machining of oilfield components (Oil Country Tubular Goods – OCTG) and over 5,000 machines in the field emphasise the quality and reliability of these manufacturing systems. Cutting edge technologies and innovative machining concepts guarantee high output rates and great process integrity. Maximum performance – "Made in Germany": EMAG has a vertical integration of 85%.



EMAG machines offer these advantages:

- Modular design
- The ideal platform for multifunctional manufacturing solutions – single- and multi-spindle – up to fully automated production systems
- Very sturdy, vibration-resistant machine base in high quality MINERALIT® polymer granite
- Powerful, direct-driven spindle motors
- Direct-indexing tooling systems
- High-precision, preloaded linear roller guides for maximum precision and great dynamic
- Absolute position feedback systems for constantly maintained high accuracy
- Fluid-cooled, temperature-controlled main assemblies – including spindle motor, tooling systems and electrical cabinet – form the basis for highest workpiece quality
- Safe, no-wear, maintenance-free machining area envelope
- Ideal chip flow conditions, with the chips falling to the bottom



Automated machining system for couplings, containing USC 21 and USC 27 machines

USC 11 / 21 –
The machine concept for the flexible machining of tube ends.

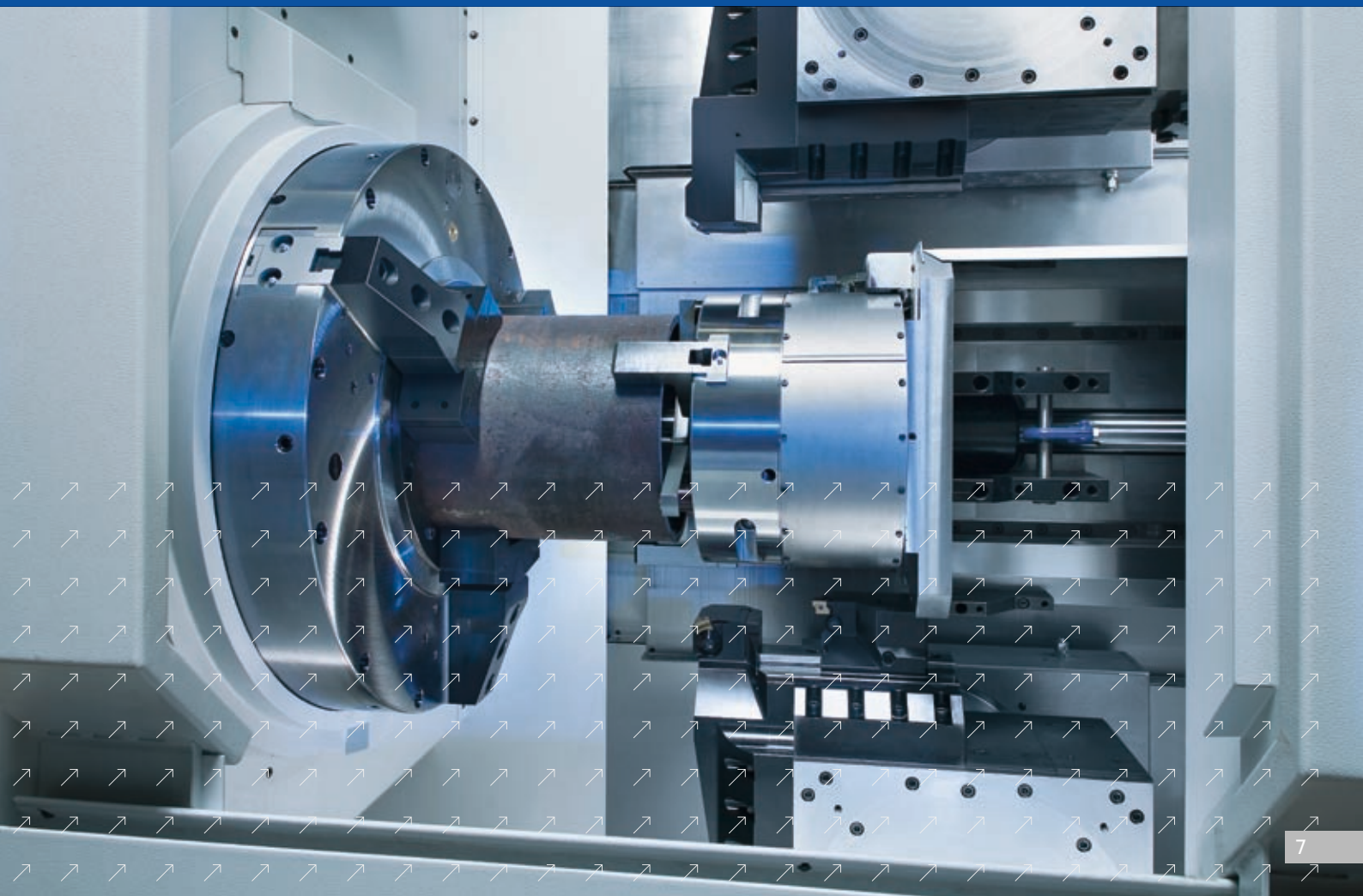
The USC series most distinctive feature is its rigid machine construction. All machine modules are mechanically exceptionally sturdy. This is down to the machine base in MINERALIT® (polymer granite).
External and all internal machining operations can be carried out on a single machine. This concept makes the USC ideal for the complete-machining of all common threads to API and GOST standards, as well as of all proprietary threads.

The main drive of the tube machining center forms an integral part of the spindle unit and guarantees high power and torque ratings. The direct drive consists of a highly dynamic, frequency-controlled, maintenance-free AC asynchronous spindle motor.
The tubes are safely clamped in pneumatically, hydraulically or mechanically operated front- and rear-end chucks.

TUBE ENDS

Technical data

		USC 11 190	USC 21 290	USC 21 450
Nominal diameter	Inch	2 3/8 - 7	4 1/2 - 10 3/4	5 1/2 - 16
Max. spindle diameter	mm	190	290	450
Travel in X	mm	250	350	350
Travel in Z	mm	300	600	600
Main drive power rating	kW	76	120	120



Tailor-made solutions for the complete-machining of couplings and tool joints.

EMAG offers customised machining solutions for almost all sizes of couplings and tool joints. To achieve this, the company uses a wide range of vertical turning and center drive machines. Manufacturing system configurations that are engineered to suit individual machining requirements ensure a high degree of operating efficiency.
Where components are produced on vertical turning machines (VL, single- or two-spindle VSC, and VLC), their pick-up spindles ensure that they load themselves. The important advantage of these machine and system concepts are the short traverses, which lead to the shortest possible workhandling and machining times.
The center drive machine USC 27 stands for efficiency and flexibility. It catches the eye with its simultaneous, two-sided complete-machining of couplings and tool joints.

COUPLINGS

Technical data

		VL 5	VL 7	VSC 400 CM	VSC 400 DUO CM	USC 27 290	USC 27 380	VLC 800 CM
Chuck diameter	mm	250	400	450	450	–	–	800
Spindle diameter	mm	–	–	–	–	290	380	–
Nominal diameter	Inch	2 3/8 - 4 1/2	2 3/8 - 7	2 3/8 - 9 5/8	2 3/8 - 9 5/8	4 1/2 - 9 5/8	5 1/2 - 13 3/8	7 - 20
Travel in X	mm	570	850	850	850	300	300	1,755
Travel in Z	mm	200	315	315	315	800	800	750

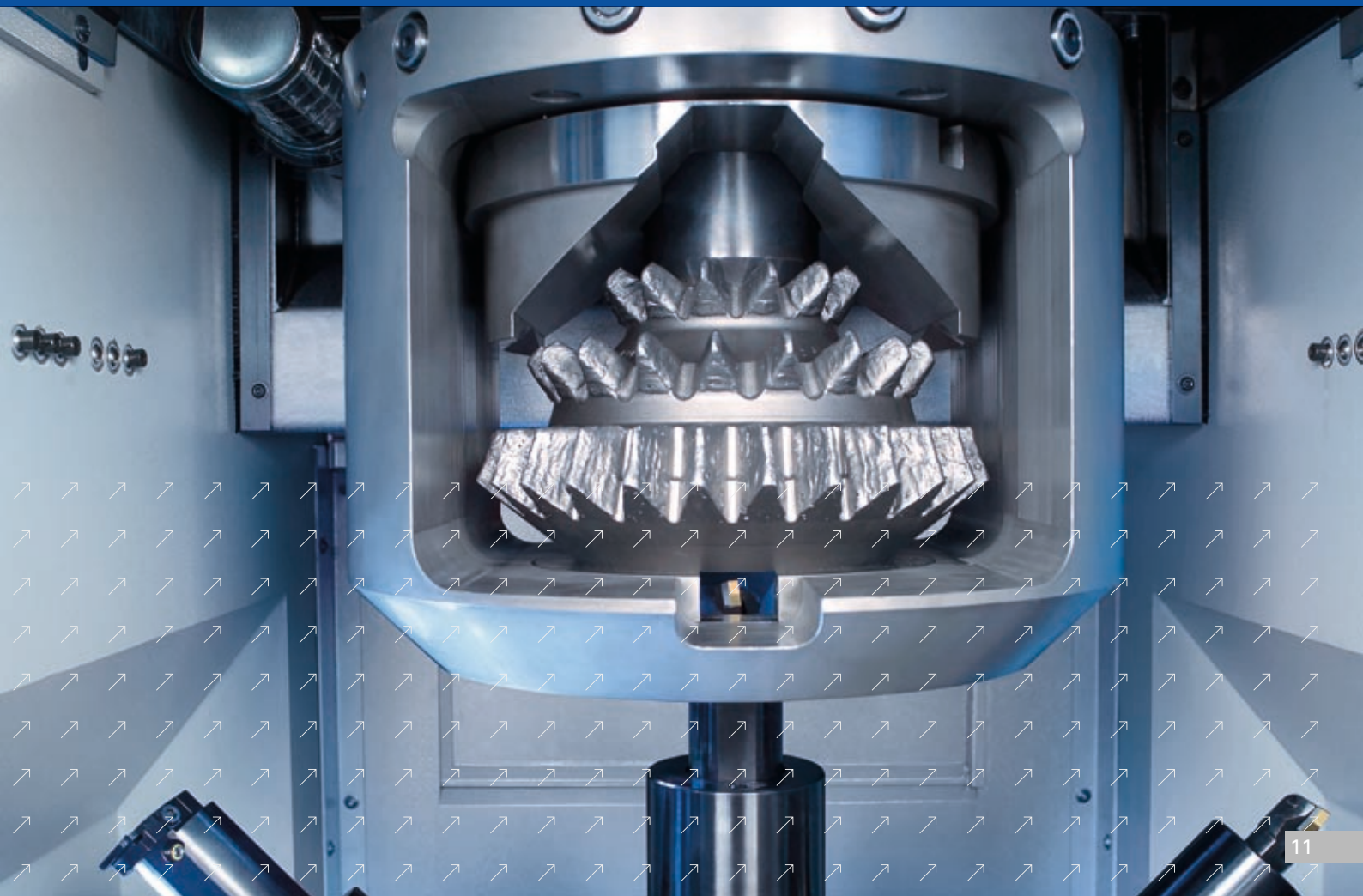
The complete-machining of rock bit cones.

For the machining of drill bits and rock bit cones EMAG offers a choice of tailor-made machine and system concepts.
The drill bits are internally and externally pre-machined in two set-ups, using VSC series machines. The bearing seats on these components are hard turned on VSC machines and / or ground on VSC DS machines. The workpieces are quickly loaded and unloaded using the pick-up spindle and its special chuck that accommodates even variations in the external workpiece contour and thus guarantees that the internal contour is of the highest precision. Drill bits and rock bit cone segments are also machined quickly and economically on VLC machines. The use of a Y-axis in conjunction with drilling / milling attachments and grinding spindles allows for the application of cost-effective combination- and complete-machining cycles.

ROCK BIT CONES

Technical data

		VSC / VSC DUO	VSC DS / DDS	VLC 630
Chuck diameter	mm	200 / 500	250 / 400	500 / 630
Swing diameter	mm	260 / 520	260 / 420	820
Travel X	mm	850 / 1,000	680 / 850	2,350
Travel Y	mm	–	– / 315	500
Travel Z	mm	200 / 400	200 / 315	500



The machining of pump components.

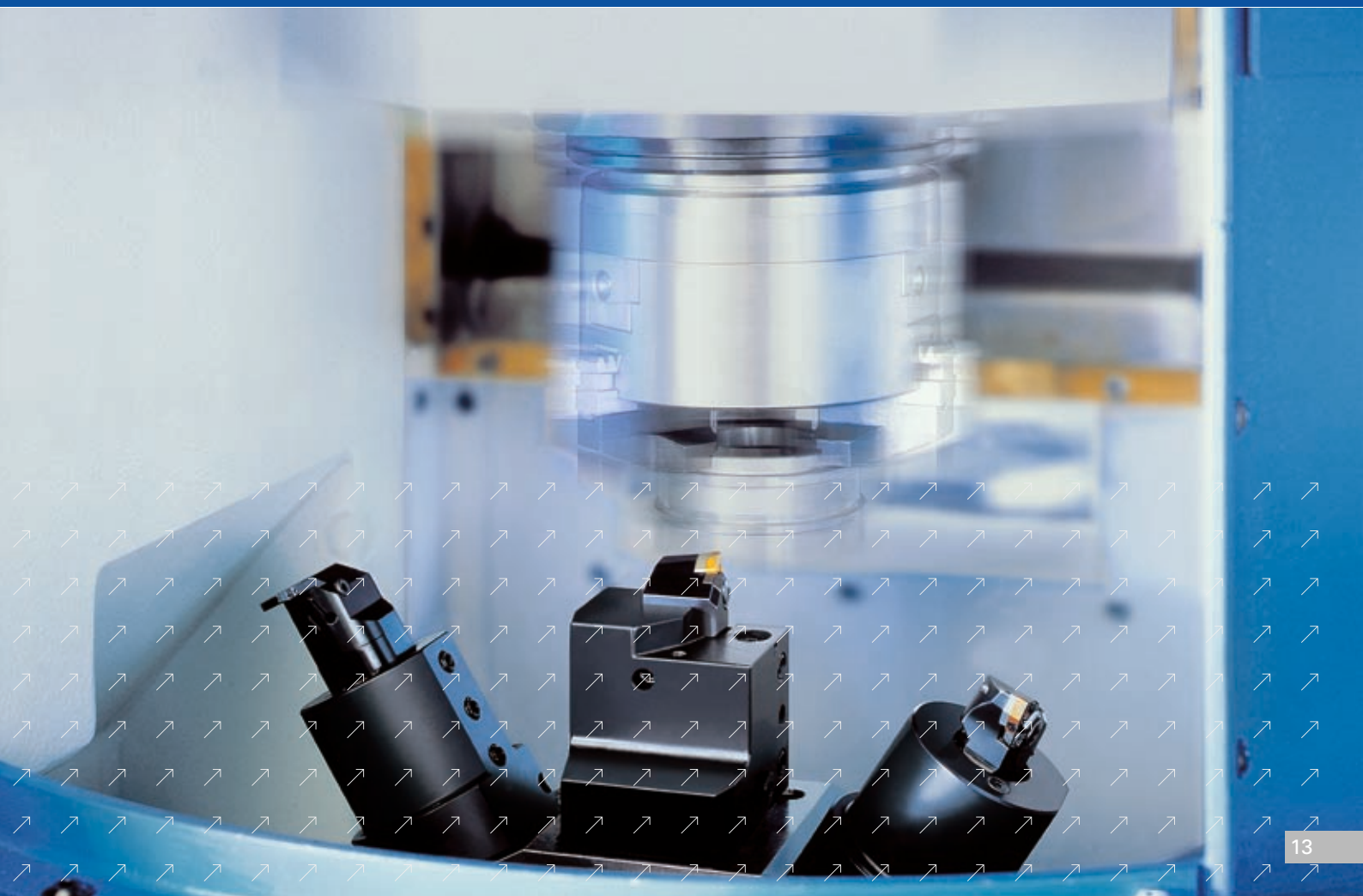
Various sizes of pump components – such as impellers, casings and end pieces – are complete-machined on flexible stand alone machines or on interlinked production systems.
VL 3 and VL 5, the pick-up turning machines for chucked components of 30 to 220 mm diameter, are characterised by high output rates, constantly maintained high accuracy and operational safety.

VSC DUO – the highly flexible two-spindle machine for a variety of operations – features two separate machining areas, each with its own independently programmable overhead slide.

PUMP
COMPONENTS

Technical data

		VL 3	VL 5	VSC / VSC DUO
Chuck diameter	mm	170	250	200 / 500
Swing diameter	mm	210	260	260 / 520
Travel X	mm	400	570	850 / 1,000
Travel Z	mm	200	200	200 / 400



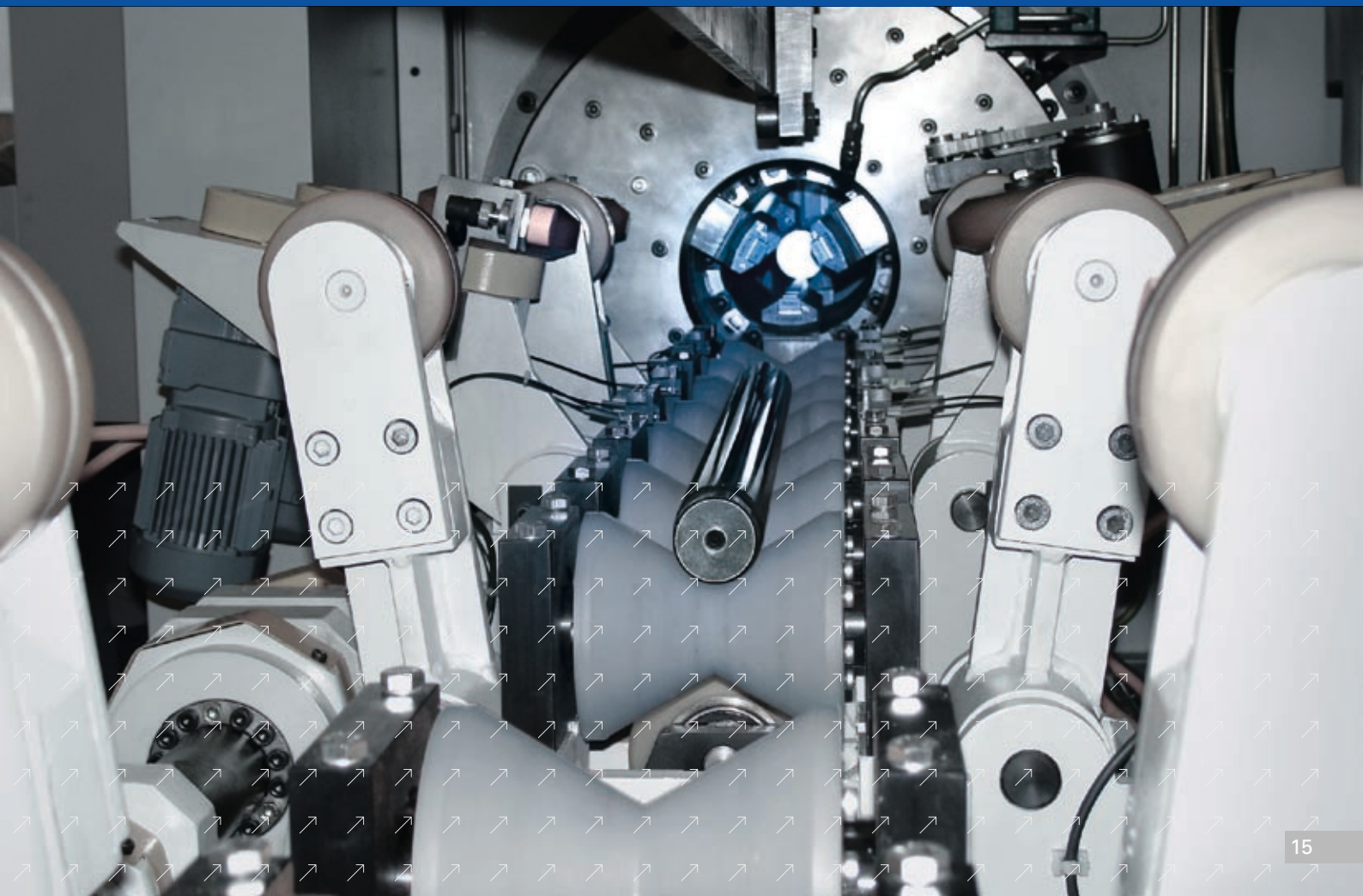
Components for vehicular hydraulics made on USC machines.

The tried and tested machine concept of the USC series is ideal for the machining – to the highest standard – of hydraulic cylinders and pistons of varying diameter and length and down to a still viable minimum batch size of one. The flexible component loading device is fully automatically controlled. Component transport and clamping systems adjust to the dimensions of the workpiece without having to be reset.

VEHICULAR HYDRAULICS

Technical data

		USC 11 190	USC 21 290	USC 21 450
Max. spindle diameter	mm	190	290	450
Travel in X	mm	250	350	350
Travel in Z	mm	300	600	600
Main drive power rating	kW	76	120	120



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