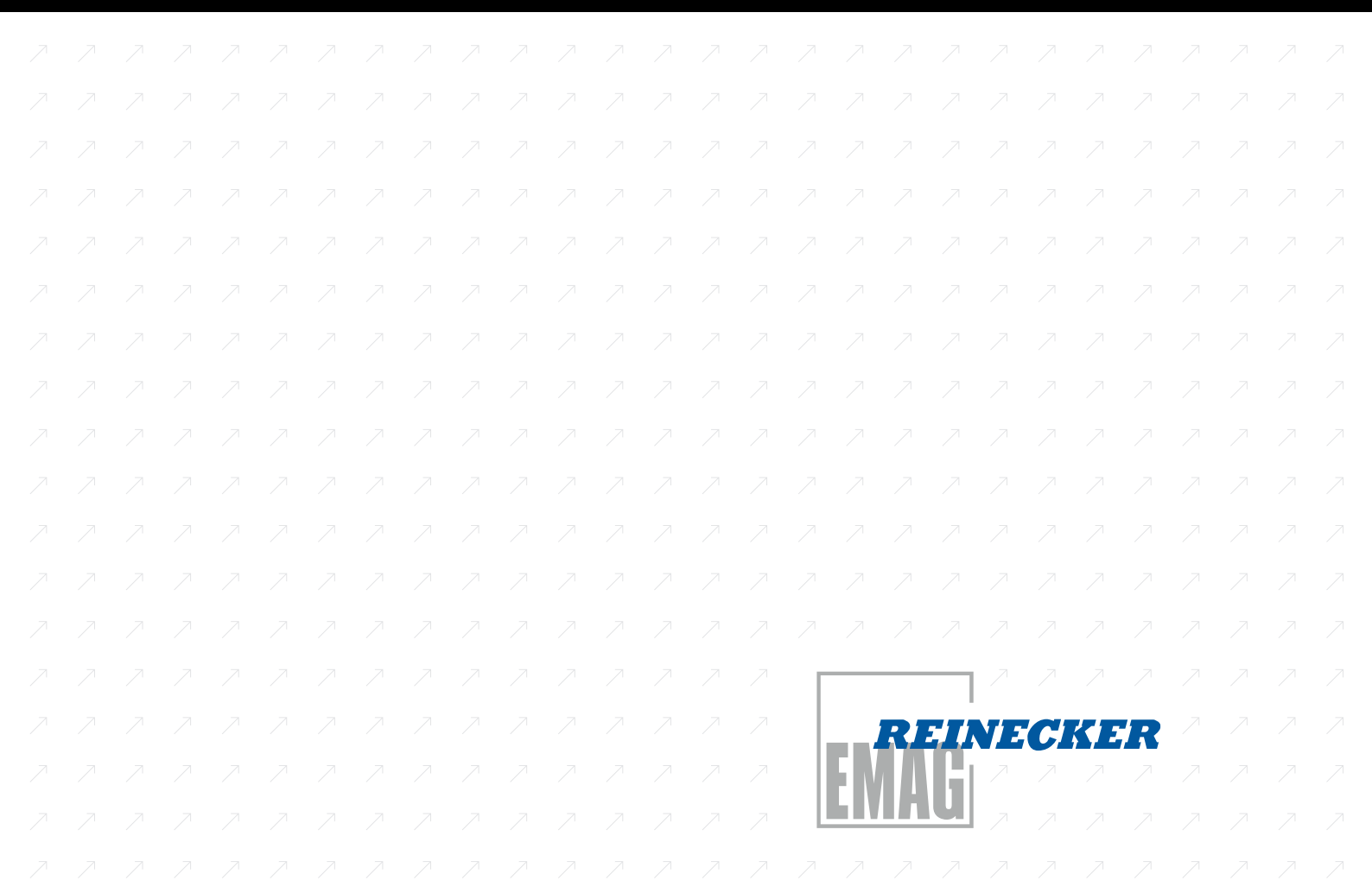
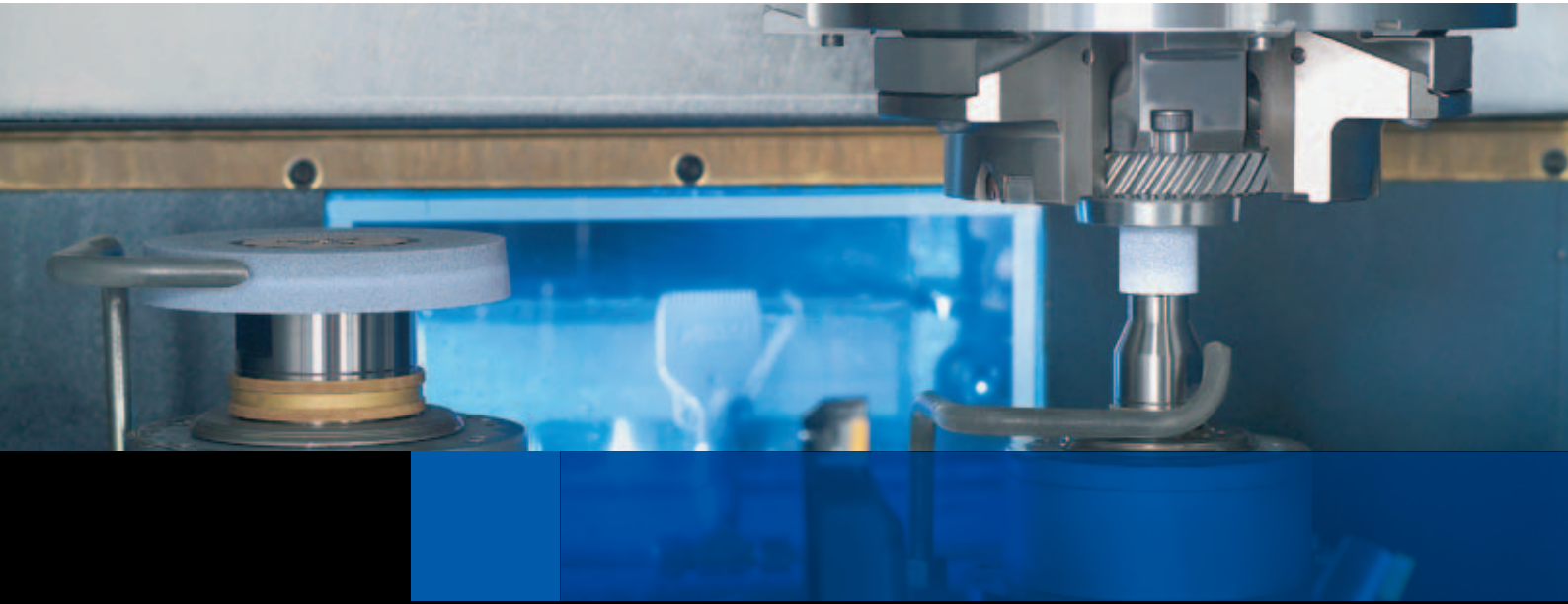


Vertical Turning and Grinding Centers

VSC 250 DS

VSC 400 DS

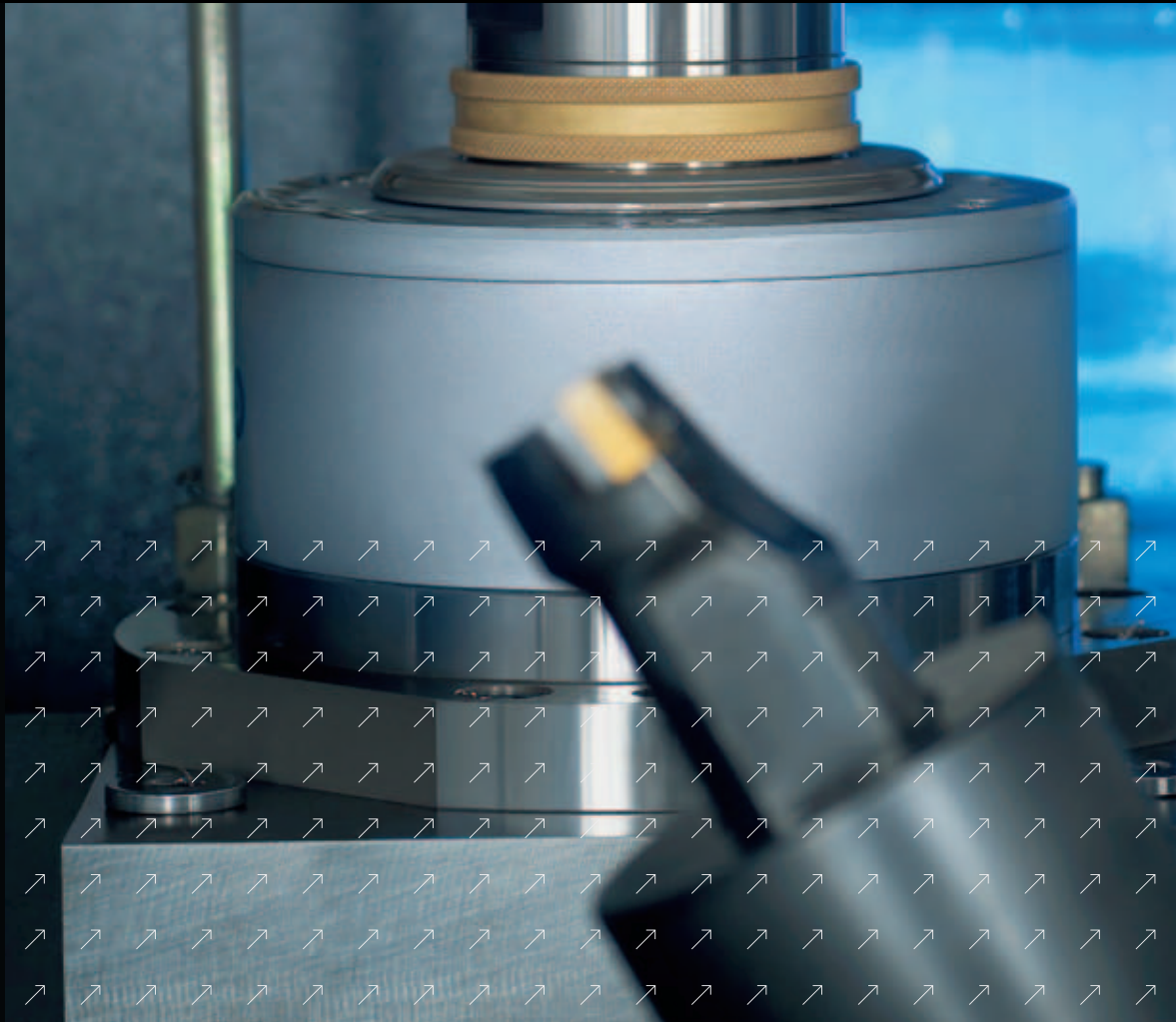
VSC 400 DDS



Vertical turning and grinding- The turning and grinding centers VSC 250 DS, VSC 400 DS and VSC 400 DDS combine the advantages of vertical hard turning with the advantages of grinding – on a single machine, in a single set-up.

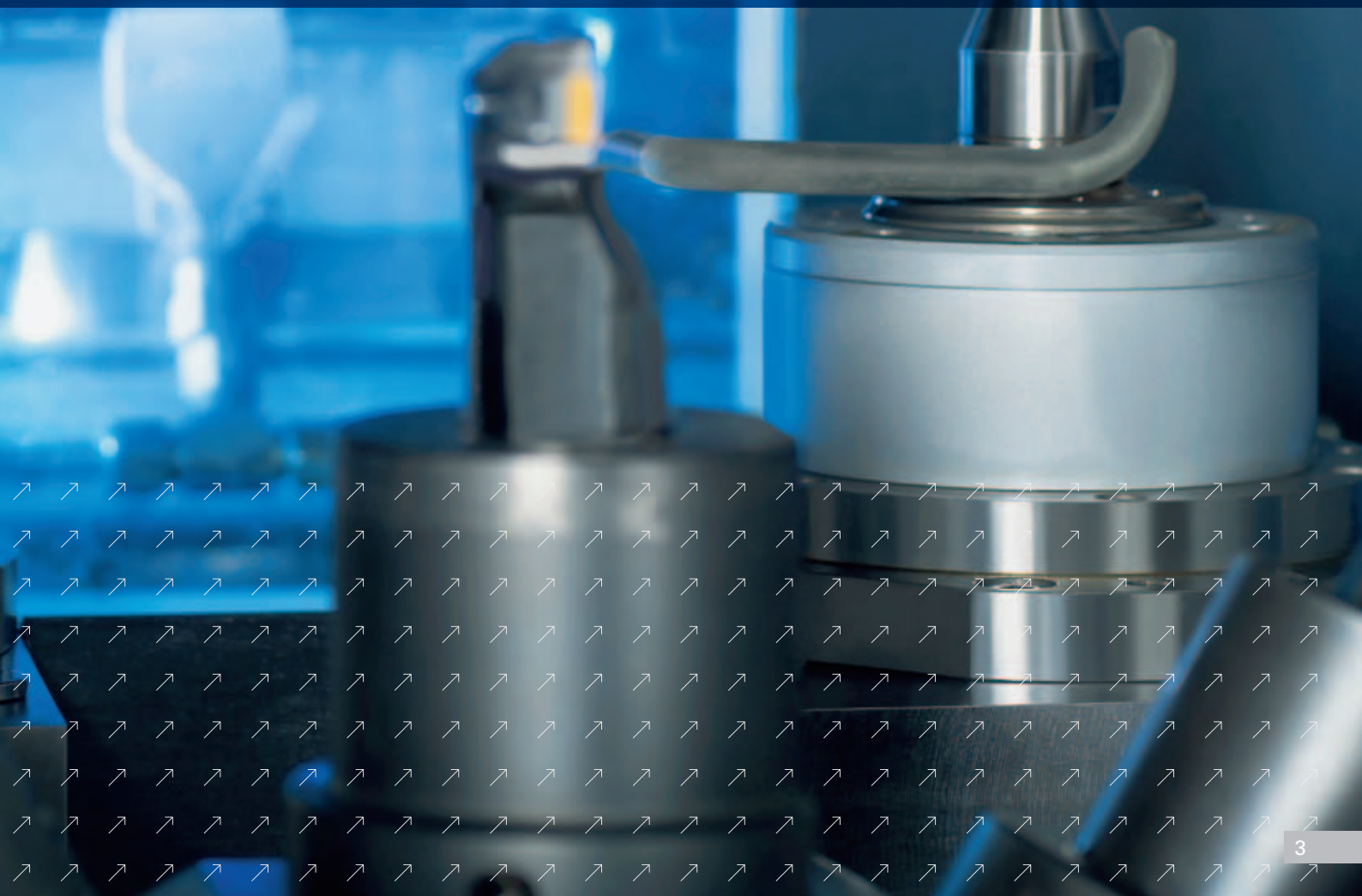


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V S C 4 0 0 D D S





VERTICAL TURNING AND GRINDING CENTERS

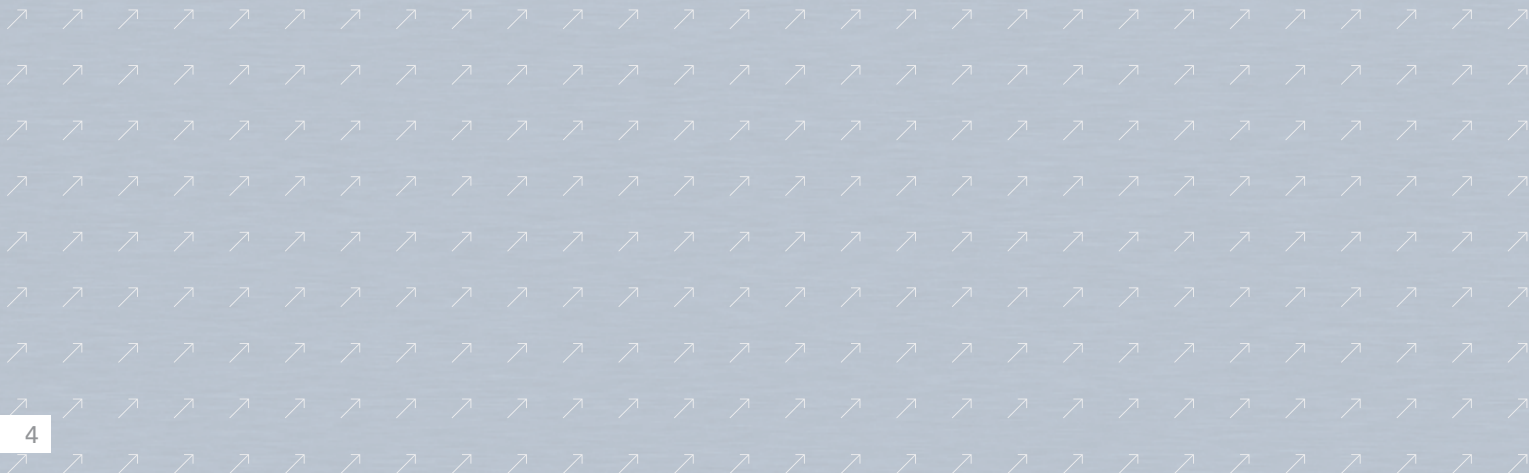


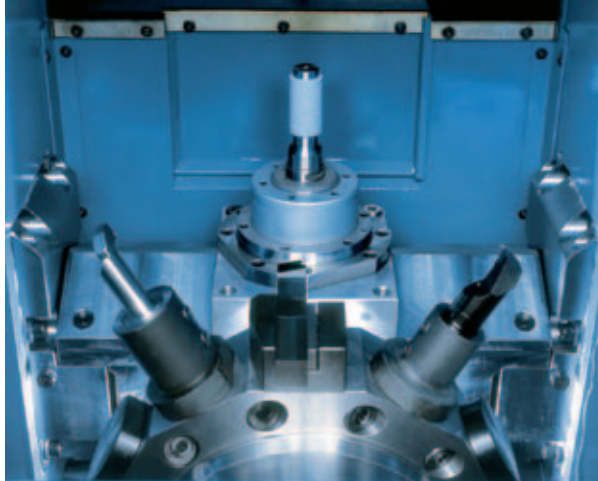
Efficient flexibility.

Quality requirements are steadily increasing, particularly for components in the automotive industry and its sub-contractors. To fulfill the quality requirements, EMAG relies on complete-machining in a single set-up. The use of different technologies – such as turning and grinding, for example – leads to a considerable shortening of the process stream, with all its advantages for the user. These include less

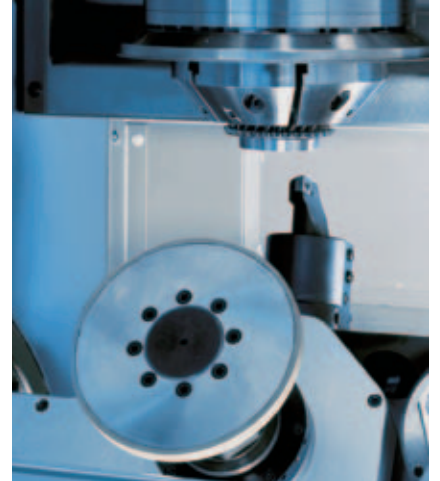
capital outlay and lower unit production costs, shorter throughput times, a better quality component and a higher degree of process integrity, a smaller footprint and less maintenance.

V S C 2 5 0 D S
V S C 4 0 0 D S





Disc-type turret for 12 turning tools and one fixed spindle for internal grinding work.



Hard turning and grind-finishing.



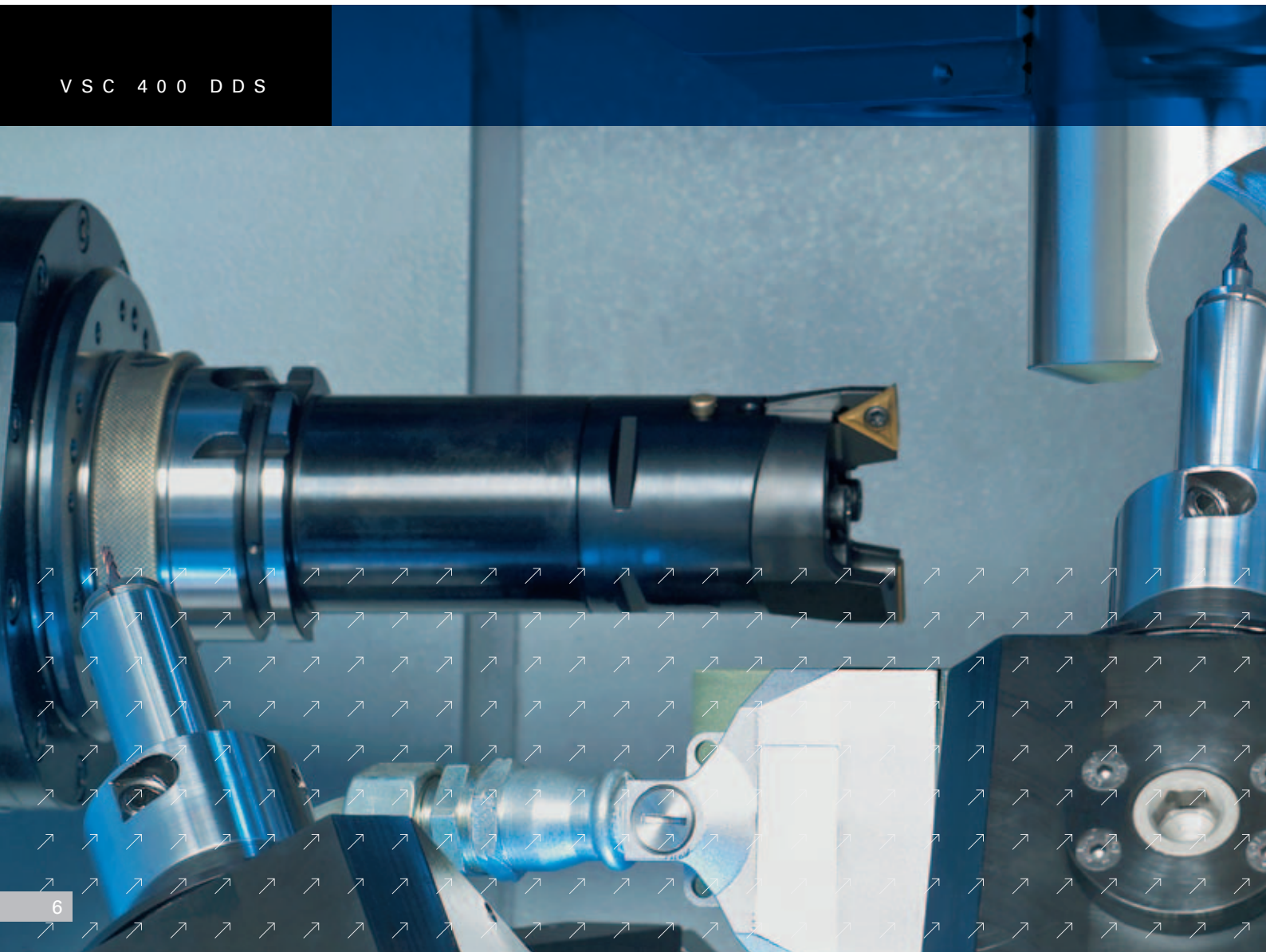
Hard turning, scroll-free turning, grinding.

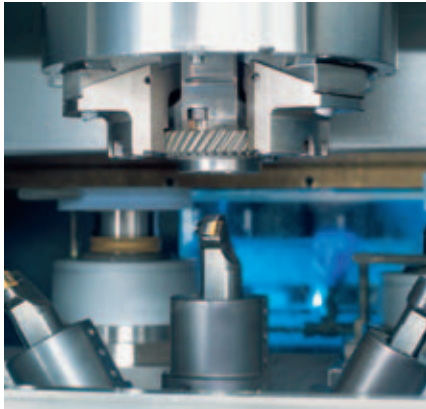
The VSC DS series is specially designed for the low-cost, process capable, precision machining of medium to large component batches. Typical examples of such workpieces are: gearwheels, chain wheels, sliding sleeves, parts for CVTs, link pins, con-rods, rocker arms, bearing rings and piston rings. In each case, workpiece and quality requirements decide which of the available machining processes is the best and the most economical. The advantage for the

customer is in the flexibility that allows them to select the best technology for every application: hard turning, scroll-free turning and grinding – and all on a single machine.

VSC 400 DDS with linear Y-axis and laterally aligned turning tools.

V S C 4 0 0 D D S

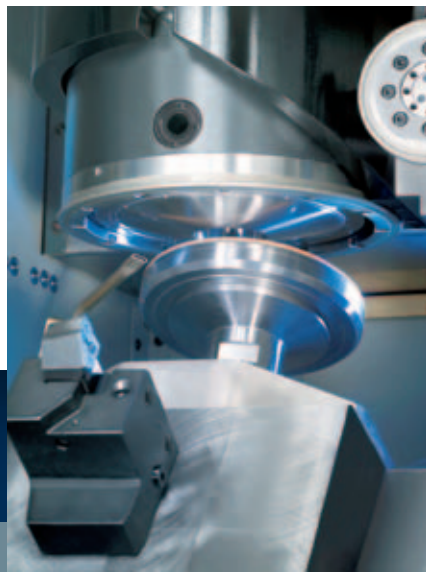




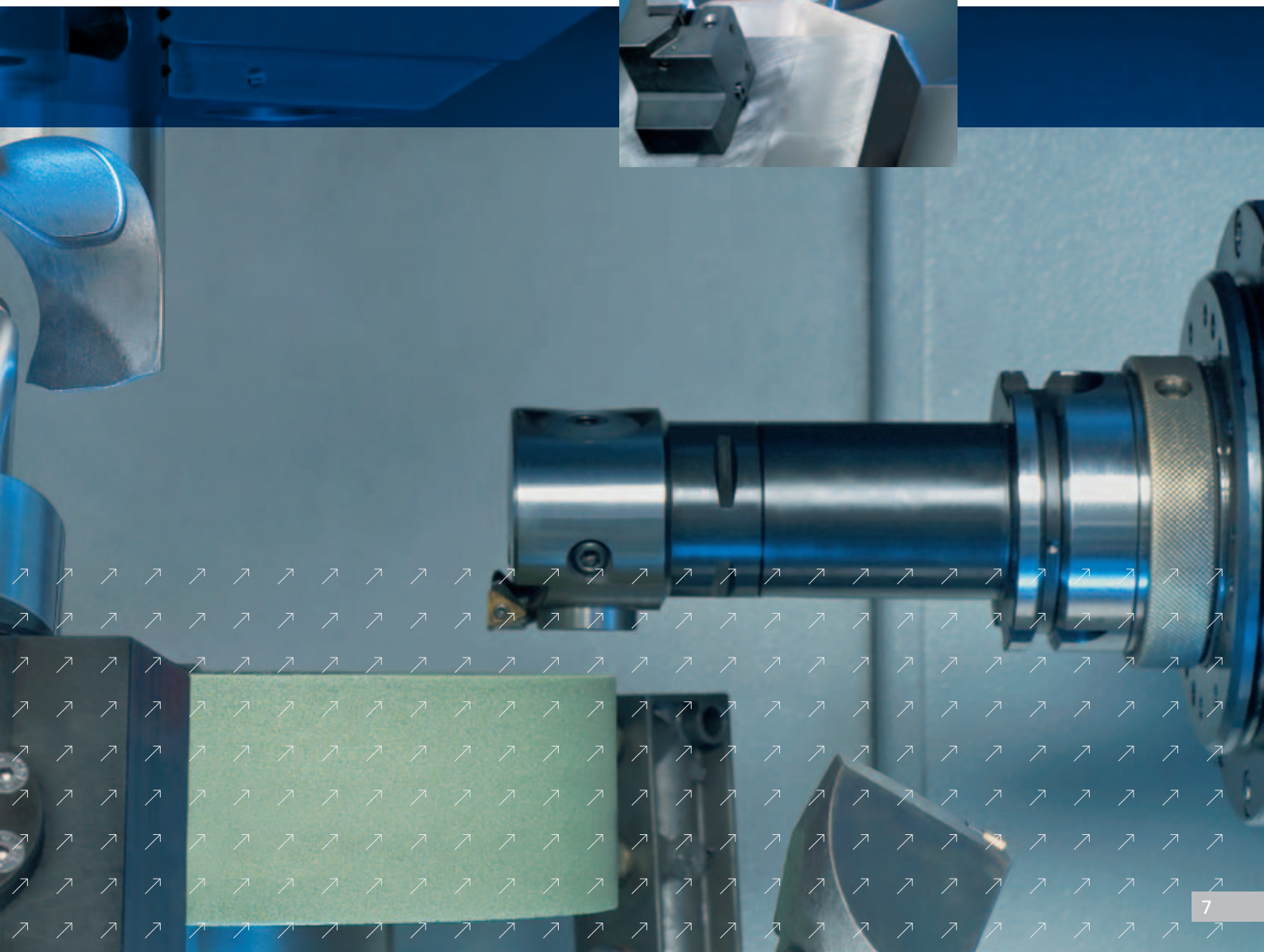
Hard turning



Internal polygon grinding



Peel-grinding with CBN wheel



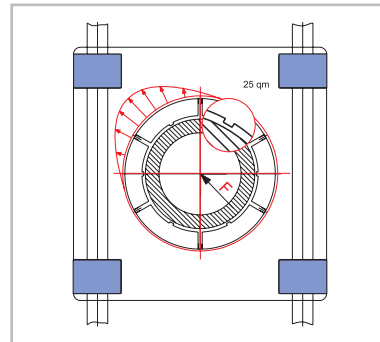
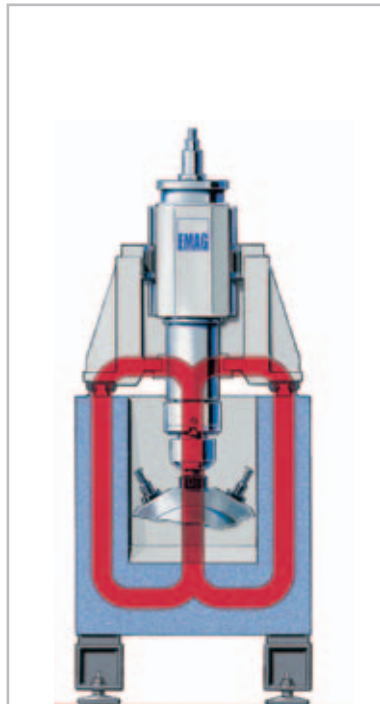
Complete manufacturing processes – VSC DS.

Whether the job includes the high metal removal rates of turning and milling or a gentler grinding process – the VTC machine series offers the possibility to integrate most metal cutting processes on the machine. Depending on production requirements the VSC DS can be equipped with turning, milling, drilling, grinding and even honing or hardening modules – it could also use combinations of them, of course. For each requirement the best possible technology is available. The advantages are obvious. One main advantage is that complete machining in a single set-up eliminates reclamping errors.

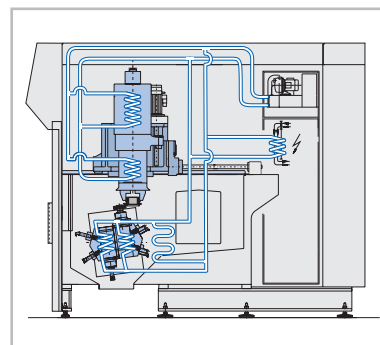
Measuring is also included in the machine, making quality control an integral part of the process. The measuring probe is located between the machining area and the pick-up station and is well protected. The workpiece is measured in its original set-up, outside the machining area. It can also be checked and measured anytime between machining operations.

V S C 2 5 0 D S
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 V S C 4 0 0 D D S

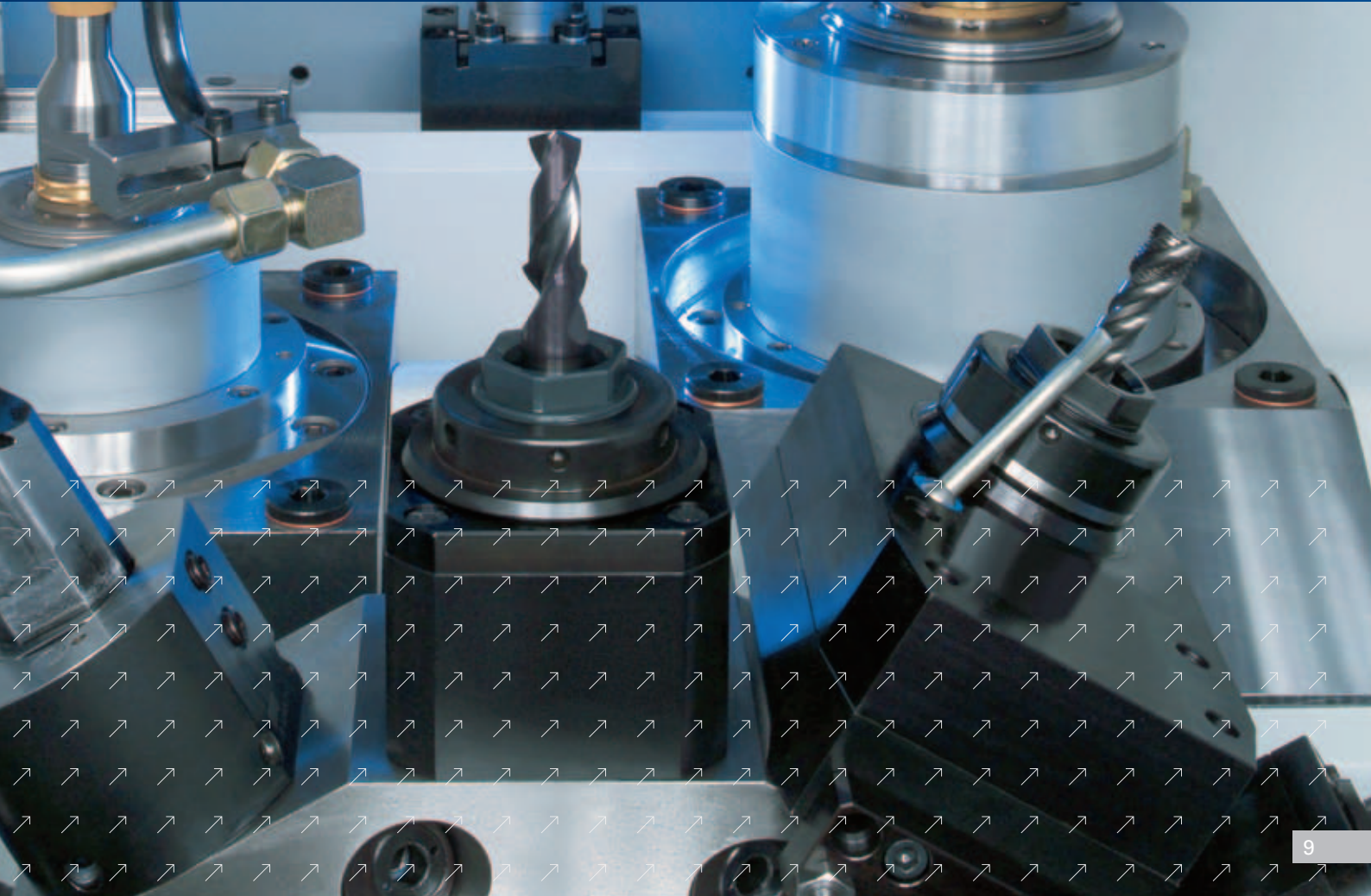
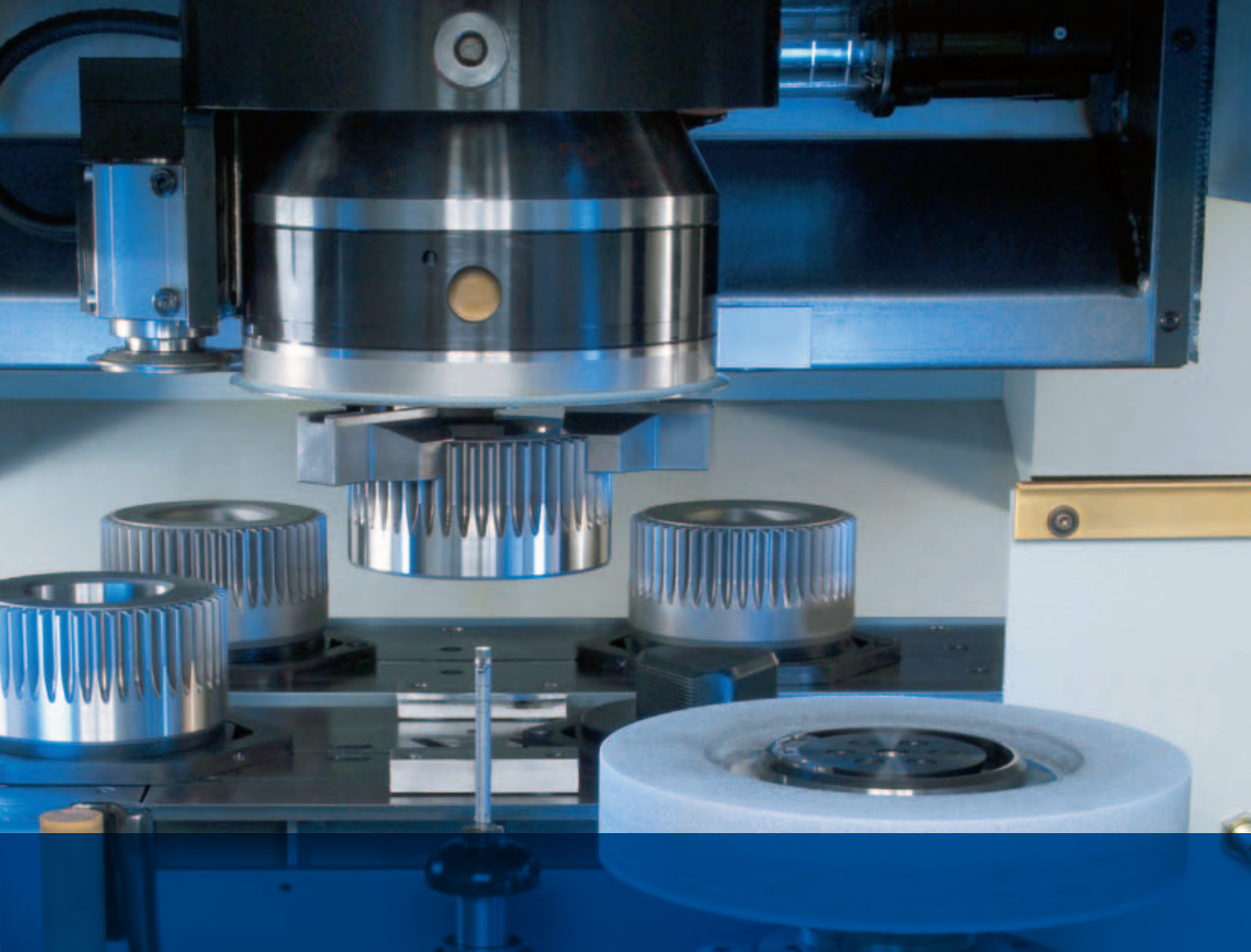
The symmetrical force distribution of the closed-loop construction is a necessary prerequisite for high static and dynamic rigidity



The hydrostatic guideway principle.



All accuracy defining machine elements are connected to the fluid-cooling circuit.

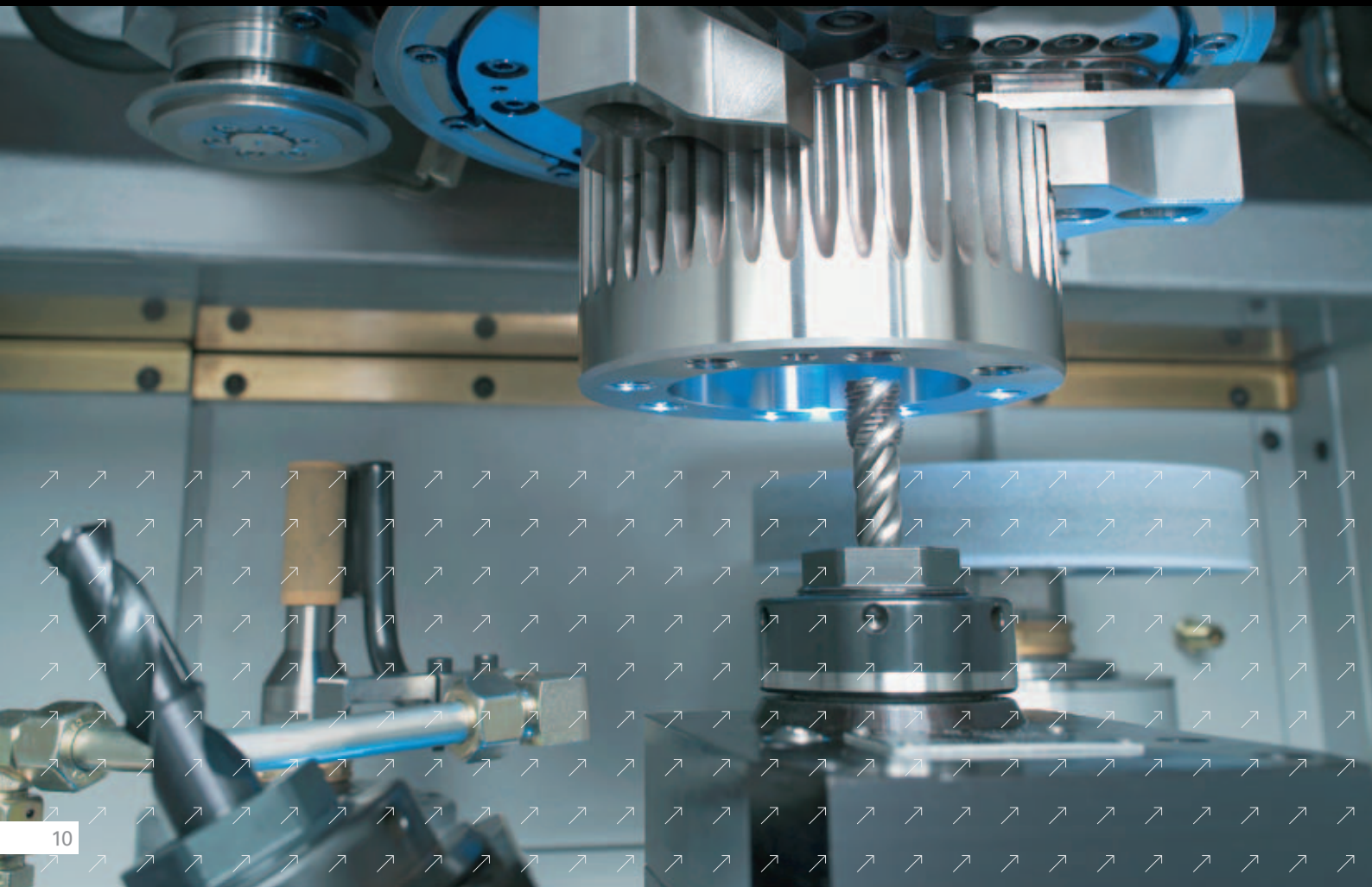


The vertical arrangement of the work spindle and the fact that the tools are located below the workpiece ensure optimal chip flow conditions during both hard turning and grinding. All machine modules are mechanically stable and particularly vibration resistant. This is helped by the MINERALIT® polymer concrete machine base. The polymer granite base has excellent vibration damping properties and the sturdy design of the work spindle also helps. The work spindle forms an integral part of a sturdy quill with high-precision,

hydrostatic guideway in Z – a construction that adds to the vibration damping quality.

The tooling systems are firmly integrated into the machine base and provide a stable basis for demanding turning and grinding work. This is an important requirement for time-saving hard pre-turning operations and ensures that good surface finishes are generated with the hard finish-turning or grinding operations. The number and type of fixed tooling systems employed can vary according to machining requirements.

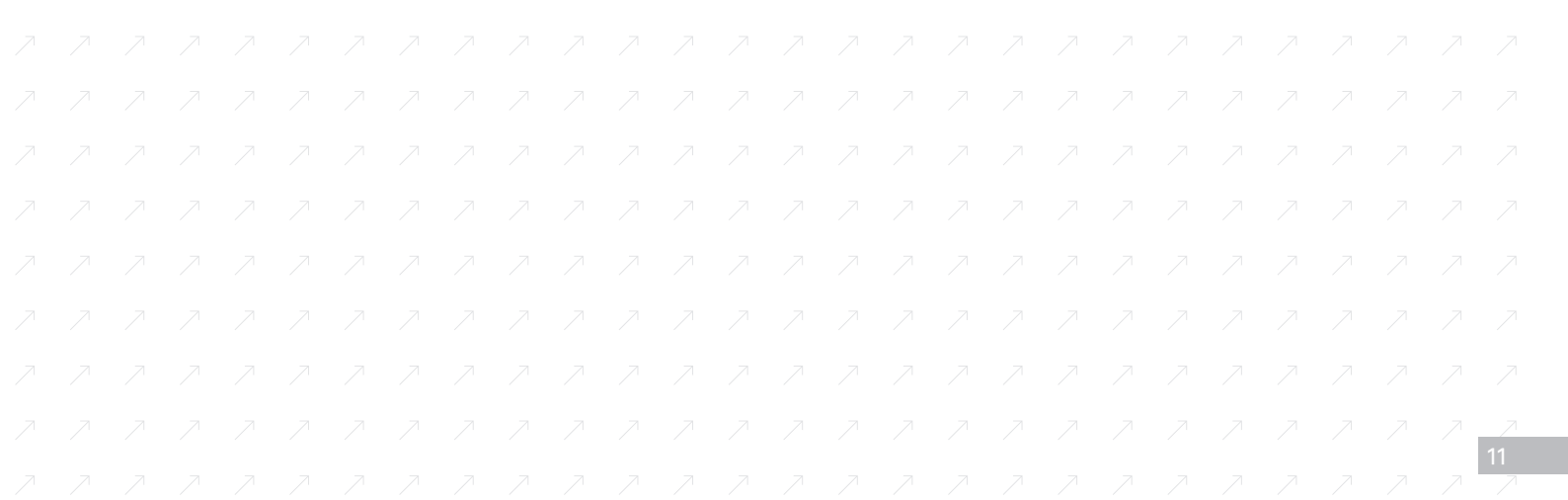
V S C 2 5 0 D S
V S C 4 0 0 D S
V S C 4 0 0 D D S





The whole machine is thermally stable, because the work spindle, grinding spindles, turret and machine base are all fluid-cooled. The operating temperature is quickly reached and then maintained within the limits of the ambient temperature by a powerful cooling unit.

As on all machines of the VSC series, the pick-up principle ensures that the EMAG REINECKER VSC DS turning and grinding center loads itself. There is consequently no need for cost-intensive, space-devouring gantry loaders or other loading devices that necessitate time consuming resetting work.



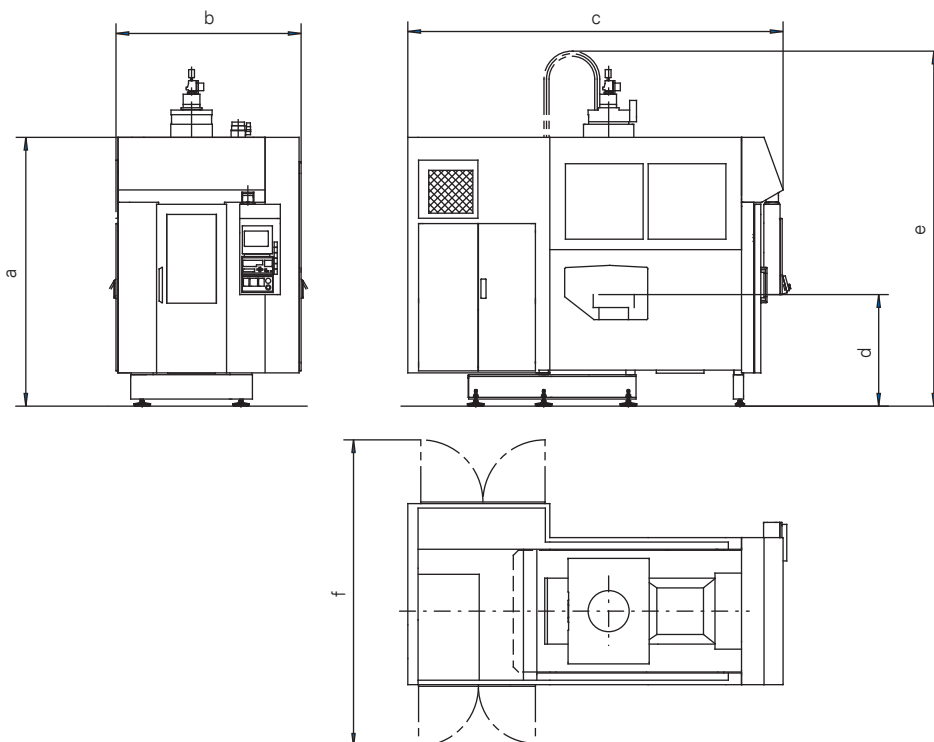
Technical data.

Capacity		VSC 250 DS	VSC 400 DS	VSC 400 DDS
Chuck diameter, max.	mm	250	400	400
	in	9.8	15.7	15.7
Max. swing diameter (incl. dressing tool)	mm	260	420	420
	in	10.2	16.5	16.5
Travel in X	mm	680	850	850
	in	26.8	33.5	33.5
Travel in Y	mm	–	–	315
	in	–	–	12.4
Travel in Z	mm	200	315	315
	in	7.9	12.4	12.4
Main spindle				
Spindle nose to DIN 55 026	Size	6	11	11
Spindle bearing, front	dia. in mm	100	140	140
	dia. in inch	3.9	5.5	5.5
Drehzahl max.	rpm	3,500	3,000	3,000
Main drive				
Power rating, max.	kW	39	58	58
	hp	52	78	78
Full power at a spindle speed of	rpm	800	900	900
Torque, max.	Nm	460	620	620
	ft-lb	339	457	457
Braking torque, steady state	Nm	340	480	480
	ft-lb	251	354	354
Feed drive				
Rapid-traverse rate X / Z	m/min	45 / 30	45 / 30	45 / 30
	ipm	1,772 / 1,181	1,772 / 1,181	1,772 / 1,181
Rapid traverse speed Y	m/min	–	–	30
	ipm	–	–	1,181
Feed force X / Z	kN	5.5 / 11	11 / 11	11 / 11
	lbf	1,236 / 2,473	2,473 / 2,473	2,473 / 2,473
Feed force Y	kN	–	–	11
	lbf	–	–	2,473
Ball screw X / Z	dia. in mm	40 / 40	50 / 40	50 / 40
	dia. in inch	1.6 / 1.6	2.0 / 1.6	2.0 / 1.6
Ball screw in Y	dia. in mm	–	–	40
	dia. in inch	–	–	1.6
Turning and grinding unit				
Turning tools / live tools	Quantity	1 – 12	1 – 12	1 – 12
Tool registers, cylindrical shank	dia. in mm	40	40 / 50	40 / 50
	dia. in inch	1.6	1.6 / 2.0	1.6 / 2.0
Grinding spindles	Quantity	1	1	1 – 2

Capacity		VSC 250 DS	VSC 400 DS	VSC 400 DDS
Operating voltage	V	400	400	400
Control voltage DC	V	24	24	24
Control voltage AC	V	230	230	230
Frequency	Hz	50	50	50
Power consumption	kW hp	30 36	45 60	45 60
Supply line fuse	A	80	100	100

Dimensions and weights

		VSC 250 DS	VSC 400 DS	VSC 400 DDS
Dimension a	mm in	2,450 96.5	2,650 104.3	2,650 104.3
Dimension b	mm in	1,700 66.9	1,825 71.9	2,000 78.7
Dimension c	mm in	3,200 126.0	3,700 145.7	3,990 157.1
Dimension d	mm in	1,020 40.2	1,100 43.3	1,100 43.3
Dimension e	approx. mm approx. in	3,000 118.1	3,500 137.8	3,500 137.8
Dimension f	approx. mm approx. in	2,900 114.2	3,100 122.0	3,300 129.9
Weight	kg lb	8,000 17,637	10,000 22,046	12,500 27,558



Subject to technical changes

At home in the world.

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