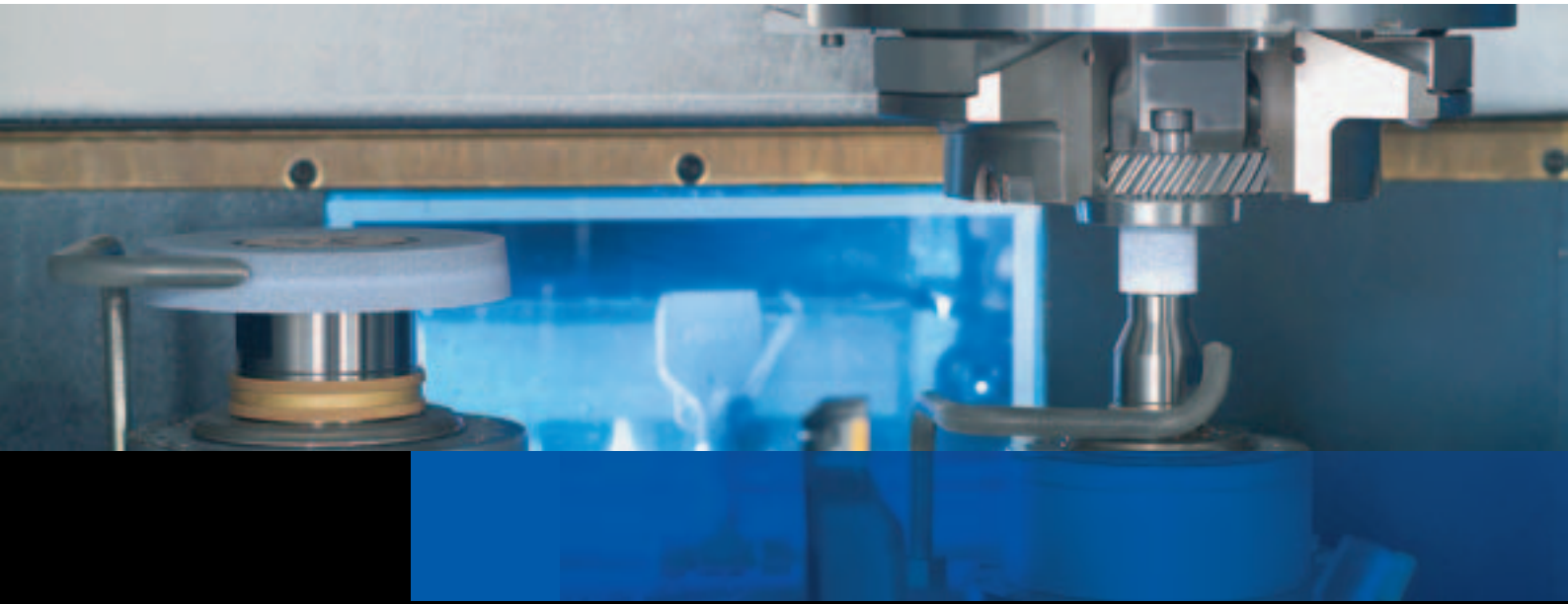


Vertical Turning and Grinding Centers

VSC 250 DS

VSC 400 DS

VSC 400 DDS



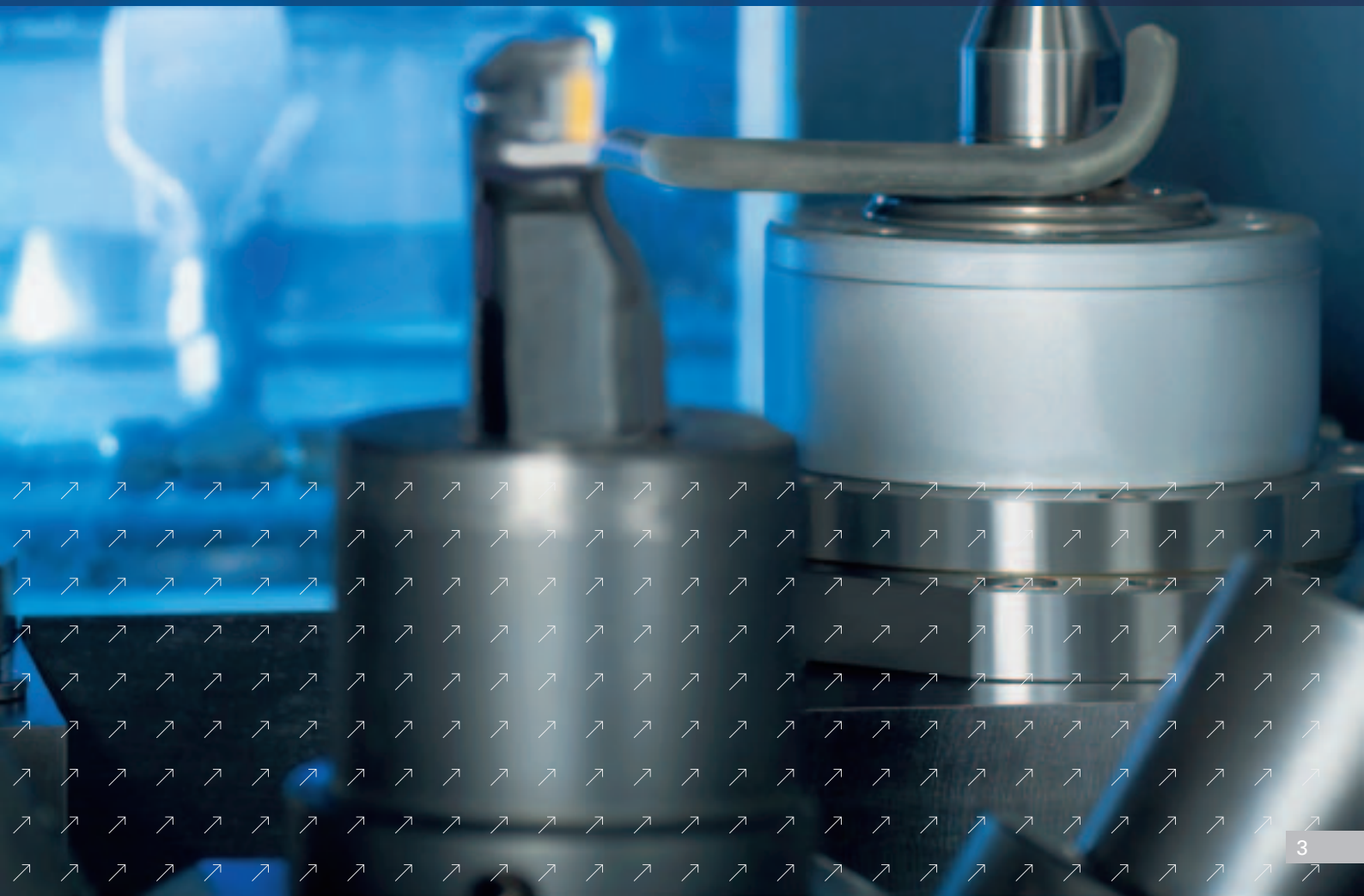
Vertical turning and grinding- The turning and grinding centers VSC 250 DS, VSC 400 DS and VSC 400 DDS combine the advantages of vertical hard turning with the advantages of grinding – on a single machine, in a single set-up.

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





VERTICAL TURNING AND GRINDING CENTERS

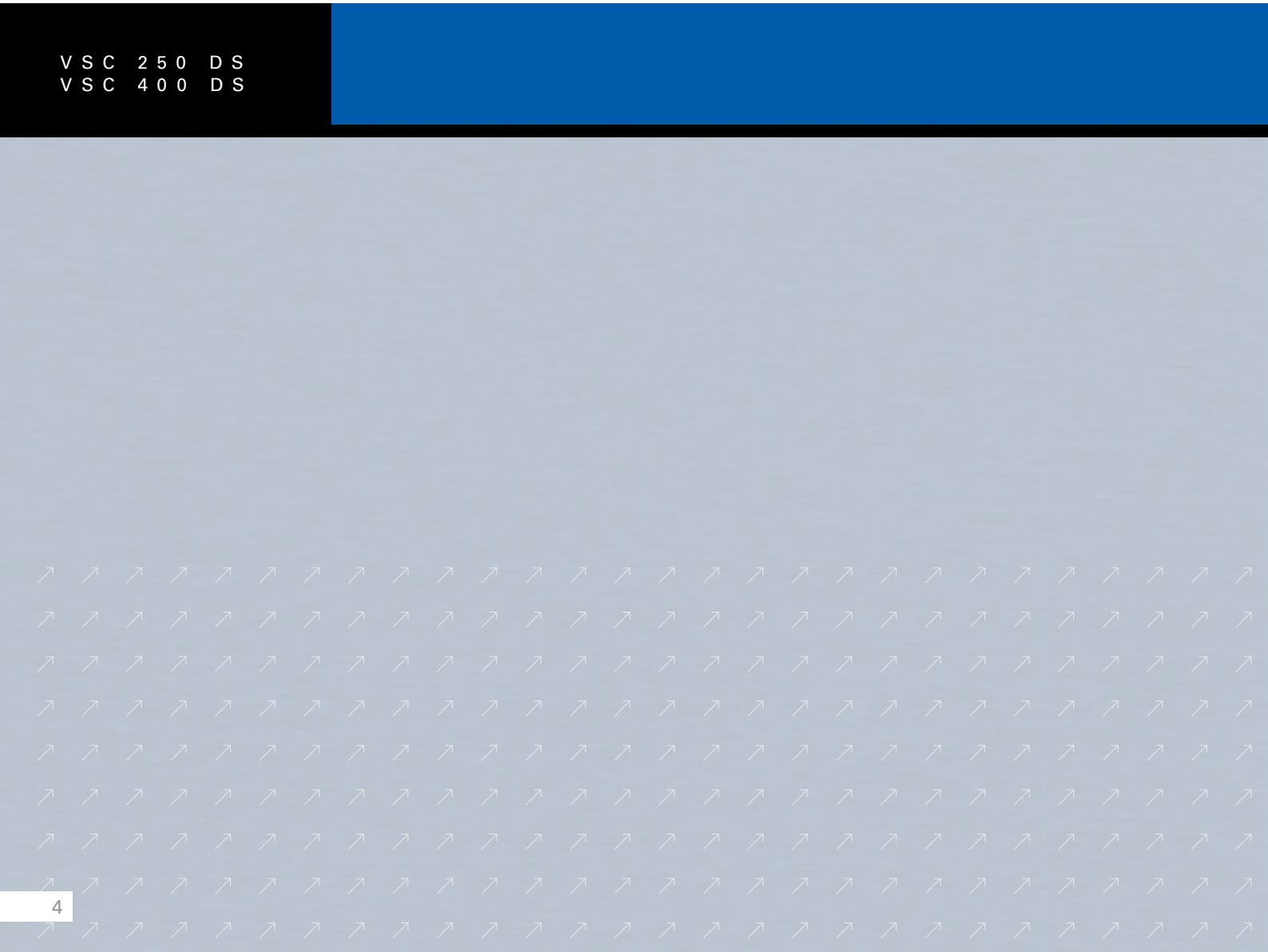


Efficient flexibility.

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.



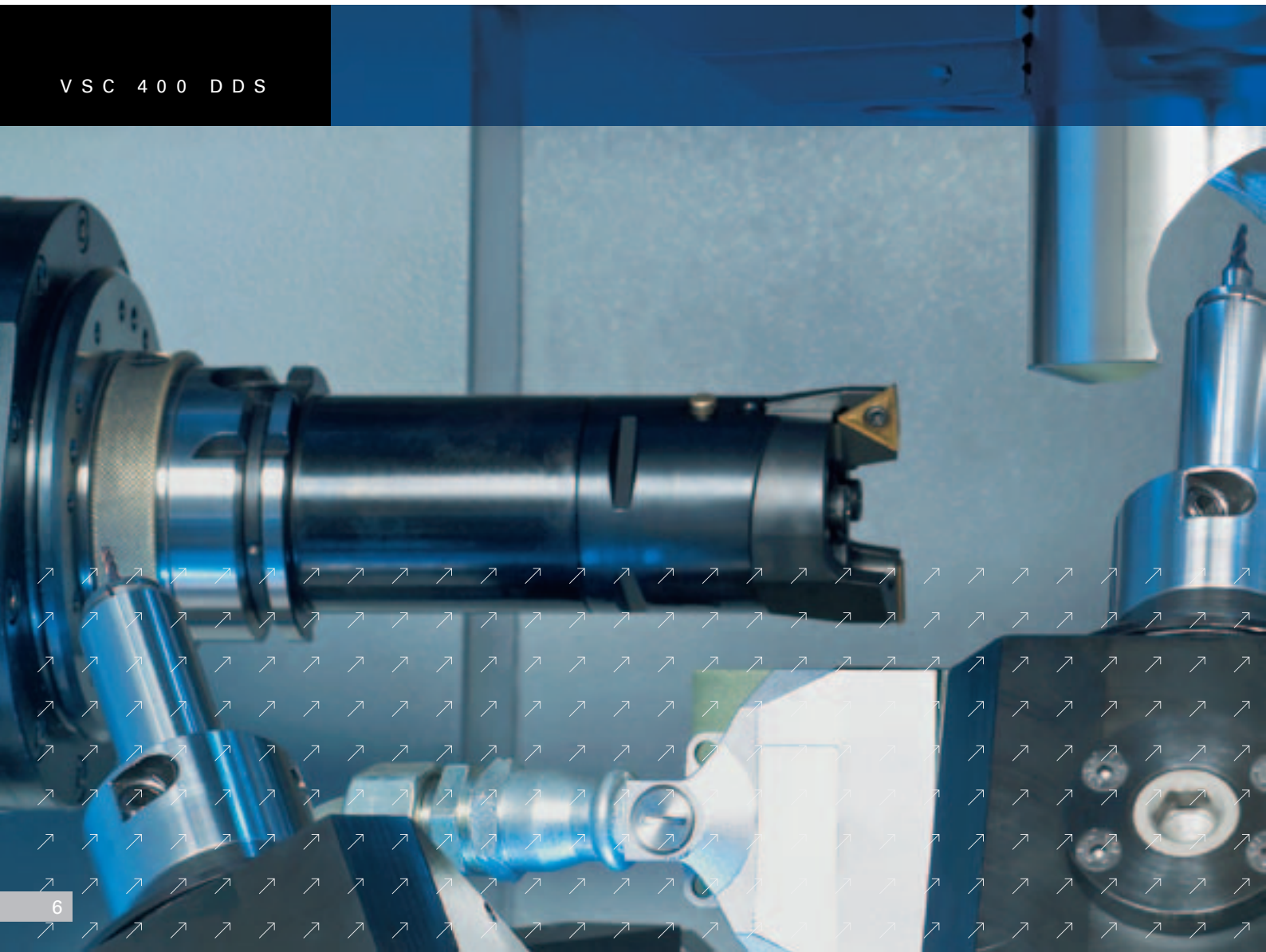
Hard turning, scroll-free turning, grinding.

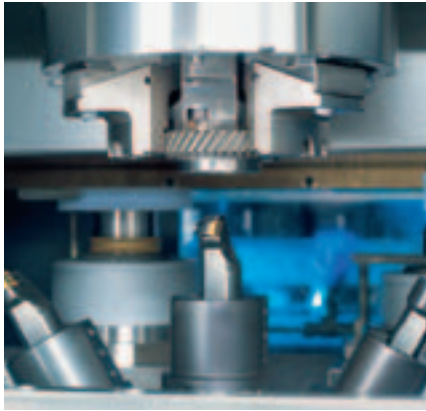
The VSC DS series is specially designed for the low-cost, process capable, precision machining of medium to large component batches. Typical examples of such workpieces are: gearwheels, chain wheels, sliding sleeves, parts for CVTs, link pins, con-rods, rocker arms, bearing rings and piston rings. In 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

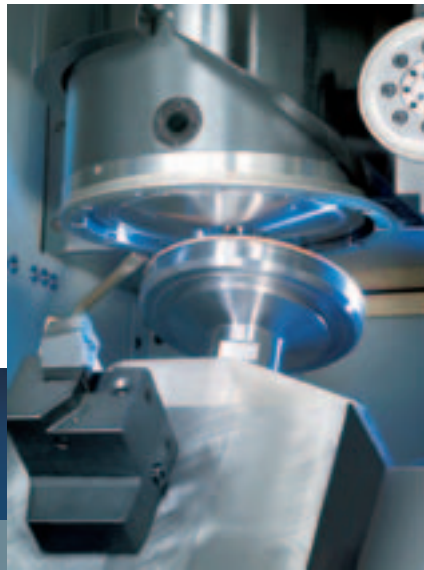




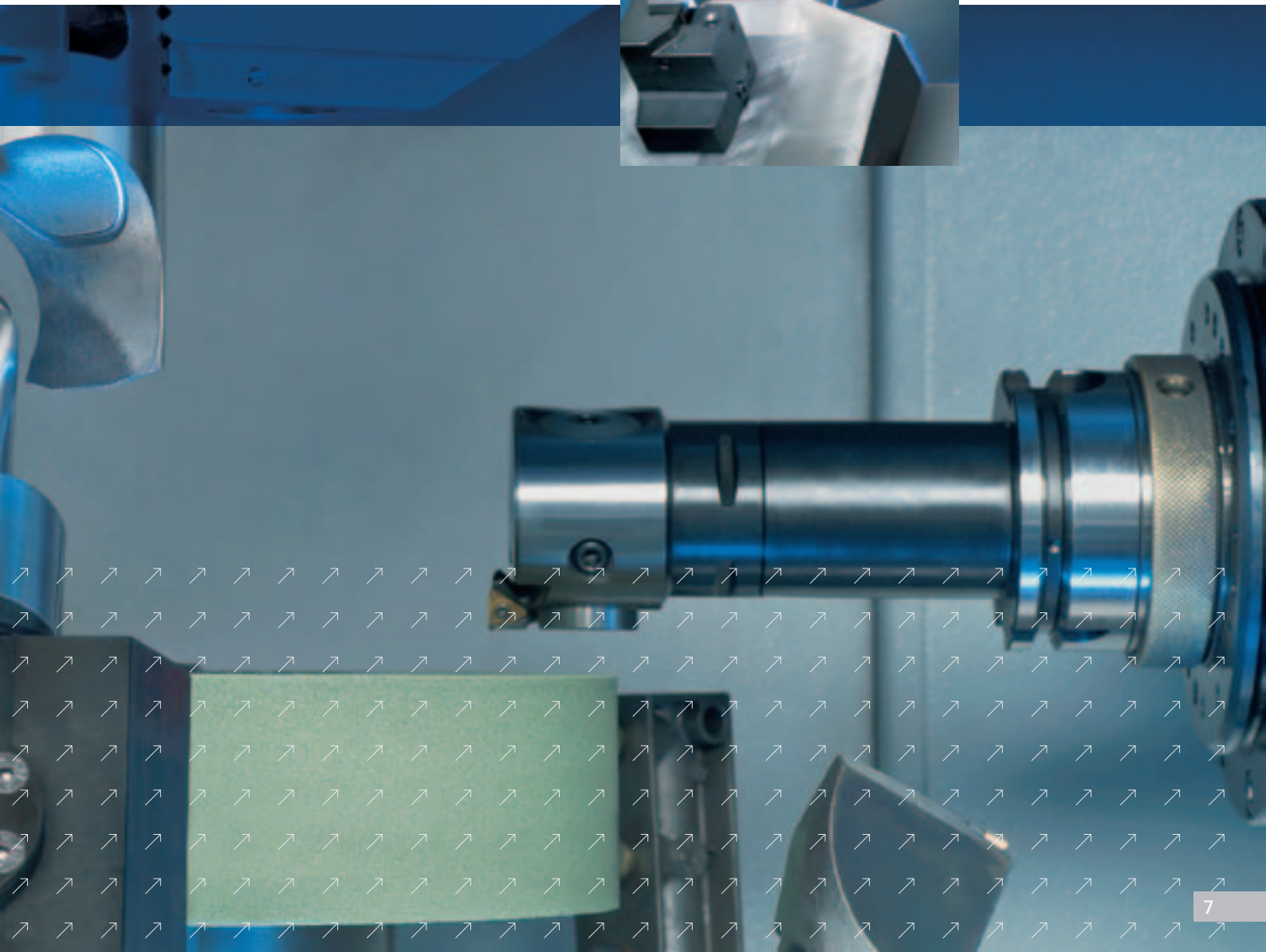
Hard turning



Internal polygon grinding



Peel-grinding with CBN wheel



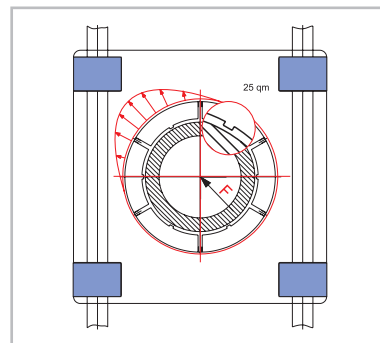
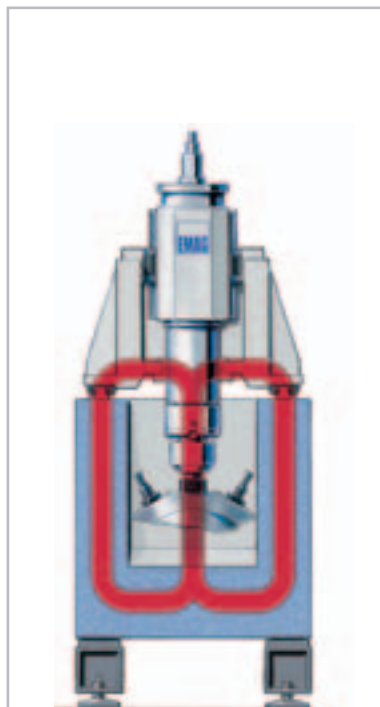
Complete manufacturing processes – VSC DS.

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.

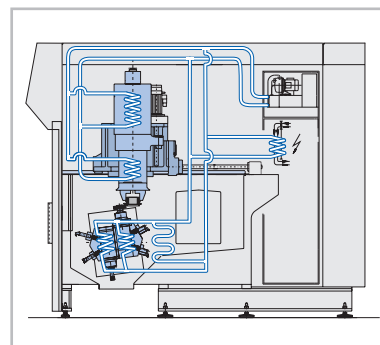
Measuring is also included in the machine, making quality control an integral part of the process. The measuring probe is located between the machining area and the pick-up station and is well protected. The workpiece is measured in its original set-up, outside the machining area. It can also be checked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

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

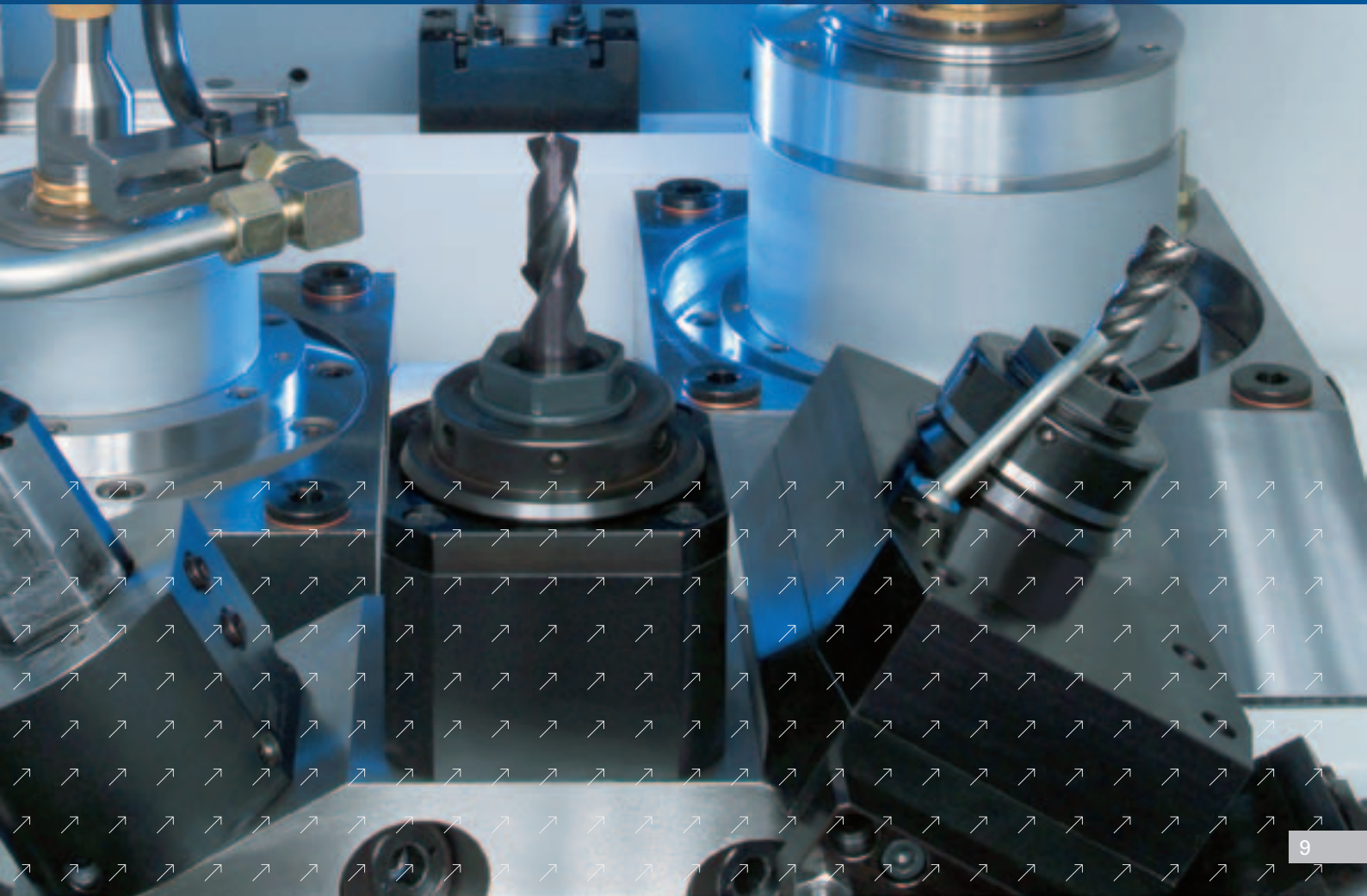
The symmetrical force distribution of the closed-loop construction is a necessary prerequisite for high static and dynamic rigidity



The hydrostatic guideway principle.



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

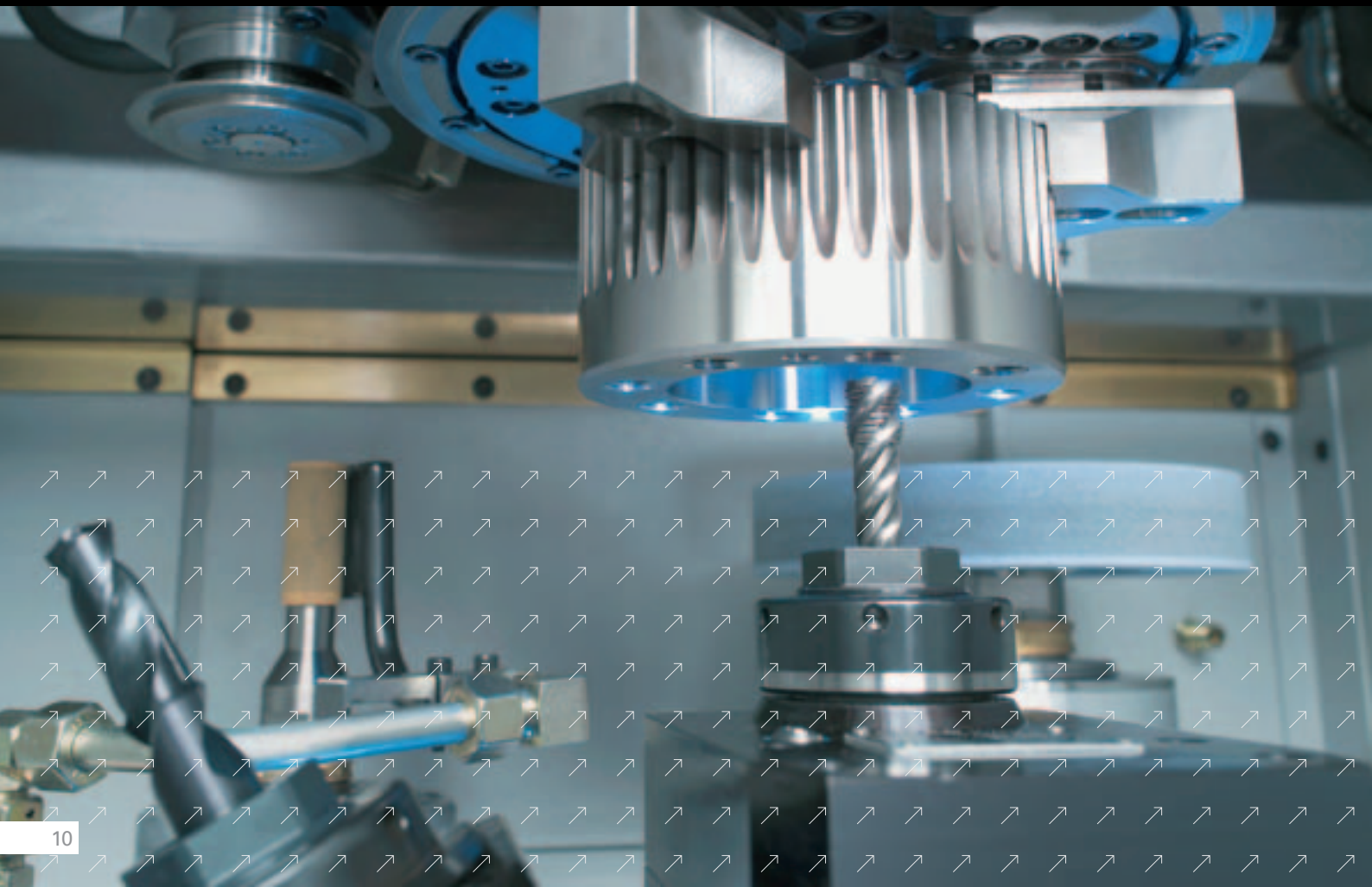


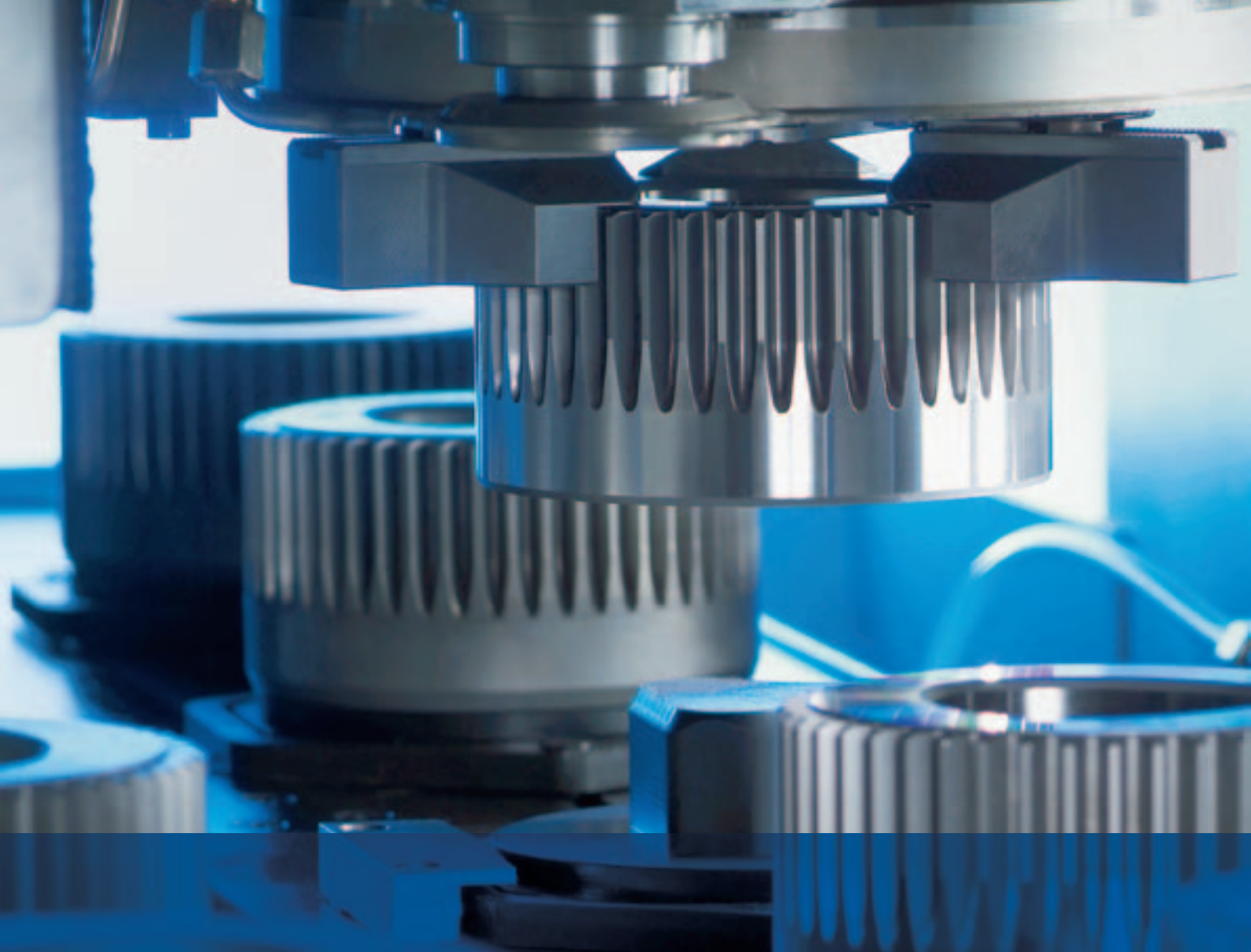
The vertical arrangement of the work spindle and the fact that the tools are located below the workpiece ensure optimal chip flow conditions during both hard turning and grinding. All machine modules are mechanically stable and particularly vibration resistant. This is helped by the MINERALIT® polymer 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.

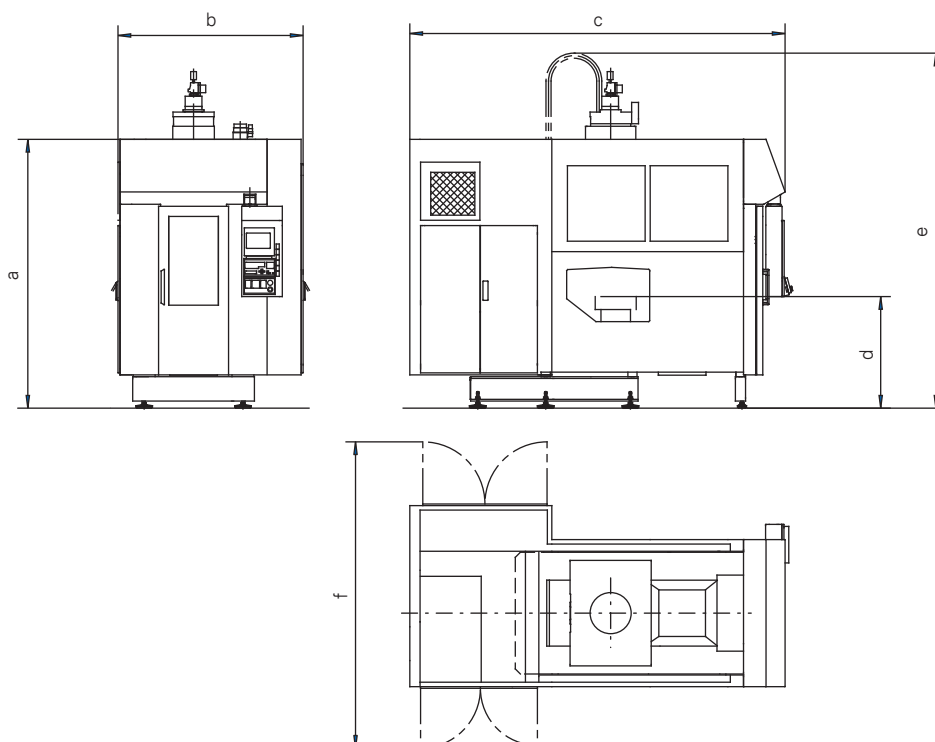
Technical data.

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

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



At home in the world.

EMAG

Gruppen-Vertriebs- und Service GmbH

Salach

Austrasse 24
73084 Salach
Germany
Phone: +49 7162 17-0
Fax: +49 7162 17-820
E-mail: info@salach.emag.com

Frankfurt

Martin-Behaim-Strasse 12
63263 Neu-Isenburg
Germany
Phone: +49 6102 88245-0
Fax: +49 6102 88245-412
E-mail: info@frankfurt.emag.com

Cologne

Robert-Perthel-Strasse 79
50739 Köln
Germany
Phone: +49 7162 17-0
Fax: +49 7162 17-820
E-mail: info@koeln.emag.com

Leipzig

Pittlerstrasse 26
04159 Leipzig
Germany
Phone: +49 341 4666-0
Fax: +49 341 4666-014
E-mail: info@leipzig.emag.com

Munich

Zamdorferstrasse 100
81677 München
Germany
Phone: +49 89 99886-250
Fax: +49 89 99886-160
E-mail: info@muenchen.emag.com

Austria

Glaneckerweg 1
5400 Hallein
Austria
Phone: +43 6245 76023-0
Fax: +43 6245 76023-20
E-mail: info@austria.emag.com

WORLDWIDE

NODIER EMAG INDUSTRIE

2, Parc des Fontenelles
78870 Bailly
France
Phone: +33 130 8047-70
Fax: +33 130 8047-69
E-mail: info@nodier.emag.com

EMAG MAQUINAS HERRAMIENTA S.L.

Pasaje Arrahona, nº 18
Polígono Industrial Santiga
08210 Barberà del Vallès (Barcelona)
Spain
Phone: +34 93 7195080
Fax: +34 93 7297107
E-mail: info@emh.emag.com

ZETA EMAG Srl

Viale Longarone 41/A
20080 Zibido S. Giacomo (MI)
Italy
Phone: +39 02 905942-1
Fax: +39 02 905942-22
E-mail: info@zeta.emag.com

EMAG (UK) Ltd.

Chestnut House,
Kingswood Business Park
Holyhead Road
Albrighton
Wolverhampton WV7 3AU
Great Britain
Phone: +44 1902 37609-0
Fax: +44 1902 37609-1
E-mail: info@uk.emag.com

EMAG L.L.C. USA

38800 Grand River Avenue
Farmington Hills, MI 48335
USA
Phone: +1 248 477-7440
Fax: +1 248 477-7784
E-mail: info@usa.emag.com

EMAG MEXICO

Colina de la Umbria 10
53140 Boulevares
Naucalpan Edo. de México
Mexico
Phone: +52 55 5374266-5
Fax: +52 55 5374266-4
E-mail: info@mexico.emag.com

EMAG DO BRASIL Ltda.

Rua Schilling, 413
Vila Leopoldina
05302-001 São Paulo
SP, Brazil
Phone: +55 11 38370145
Fax: +55 11 38370145
E-mail: info@brasil.emag.com

Denmark

Horsvangen 31
7120 Vejle Ø
Denmark
Phone: +45 75 854854
Fax: +45 75 816276
E-mail: info@daenemark.emag.com

Sweden

Glasgatan 19B
73130 Köping
Sweden
Phone: +46 221 40305
E-mail: info@sweden.emag.com

Czech Republic

Lolkova 766
103 00 Praha 10 – Kolovraty
Czech Republic
Phone: +420 731 476070
E-mail: mdelis@emag.com

Russia

ul. Akademika Chelomeya 3/2
117630 Moscow
Russia
Phone: +7 495 287 0960
Fax: +7 495 287 0961
E-mail: info@russia.emag.com

Belarus

ul. Timirjazeva, 65 B, Office 1101
220035 Minsk
Belarus
Phone: +375 17 2547730
Fax: +375 17 2547730
E-mail: info@emag.by

Poland

Spółka Z Ograniczoną
Odpowiedzialnością
Oddział w Polsce
Miodowa 14
00-246 Warsaw
Poland
Phone: +43 6245 76023-15
Fax: +43 6245 76023-20

EMAG Machine Tools (Taicang) Co., Ltd.

Building 3, Cang Neng
Europe & American Technology Park
No. 8 Lou Jiang Rd. (N.)
215400 Taicang
P.R. China
Phone: +86 512 5357-4098
Fax: +86 512 5357-5399
E-mail: info@china.emag.com

EMAG INDIA Pvt. Ltd.

Technology Centre,
No17/G/46-3 & 17/G/46-3-1,
Industrial Suburb, II Stage,
Yeshwanthpur,
Bangalore 560022.
India
Phone: +91 80 42544422
Fax: +91 80 42544440
E-mail: info@india.emag.com

EMAG KOREA Ltd.

Rm204, Biz center,
SKn Technopark, 124 Sagimakgol-ro,
Sangdaewon-dong, Joongwon-gu,
Seongnam City,
Gyeonggi-do, 462-721,
South Korea
Phone: +82 31 776-4415
Fax: +82 31 776-4419
E-mail: info@korea.emag.com

TAKAMAZ EMAG Ltd.

1-8 Asahigaoka Hakusan-City
Ishikawa Japan, 924-0004
Japan
Phone: +81 76 274-1409
Fax: +81 76 274-8530
E-mail: info@takamaz.emag.com

EMAG SOUTH AFRICA

P.O. Box 2900
Kempton Park 1620
Rep. South Africa
Phone: +27 11 39350-70
Fax: +27 11 39350-64
E-mail: info@southafrica.emag.com

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