



OIL & GAS
TOOLS & SOLUTIONS FOR THE OIL & GAS INDUSTRY

SECO 

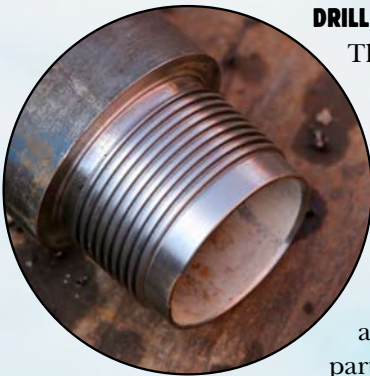
TOOLING SOLUTIONS FOR OIL & GAS COMPONENTS

Supplying the energy and essential chemicals that drive the world economy is a continuing battle between nature and man made materials.

The processes and systems needed to deliver results are highly complex and capital intensive.

Materials equally as exotic as those found in the aerospace and power generation industries play a central role in delivering the product from the well to the consumer; materials that have to withstand extremes of temperature, corrosion, pressure and abrasion. At some point these materials have to be machined, and it is here that Seco offers the tooling and expertise to supply the technically advanced products and support essential to this industry.

The oil and gas industries need tools that they can trust, designed to meet their demands, delivered on time and on budget.....all this and more is available from Seco.



DRILL PIPES, BITS, CASINGS AND COUPLINGS

The hostile conditions found in much of the oil and gas industries places severe demands on the materials used in drill pipes, casings and couplings. This in turn demands exceptional performance from the cutting tools chosen to handle the machining of these materials.

The breadth and depth of the Seco product range from the class leading range of Duratomic coated turning inserts, to proven products and expertise in oil and gas industry standard and custom designed threading products, makes Seco the ideal partner.

Close cooperation between Seco, cutter placement software developers and machine tool builders has also enabled Seco to make numerous technical contributions to the machining of tri-cone and PDC drill bits.



WELLHEAD AND SUBSEA EQUIPMENT

Complex and highly engineered materials have become the standard demands for wellhead and subsea components. With an expected useful life sometimes exceeding twenty years the machining characteristics of these materials have demanded heavy investments in cutting tool development.

In the Seco R&D facilities we have formed joint task forces with our oil and gas customers to both transfer technology from our aerospace and power generation divisions and produce completely new technologies specifically for the oil and gas industry.

VALVES, PUMPS AND CONNECTORS

Valves, pumps and connectors can be found in many industries and have always been an essential part of the Seco customer base.

Duplex and super duplex alloys with their high mechanical strength, titanium, super abrasion resistant alloys, powder metal components and forgings of all varieties have long been a focus of the Seco product range. It is only the process of tooling selection for use on oil and gas industry components that needs to be addressed.

It is here that one of the great strengths of the Seco group comes into its own. All our customer facing engineers and customers have the support of industry specialists dedicated to ensuring that only the correct choice of tooling, machining data and methods is applied.



BUSINESS SOLUTIONS

Manufacturing components for the oil and gas industries demands more than just tools. At Seco we have built a range of support systems that enable our customers to maximise the return on their machining investments.

We contribute the expertise necessary to achieve efficient component production and the processes and equipment needed to control tooling inventories and all other costs.

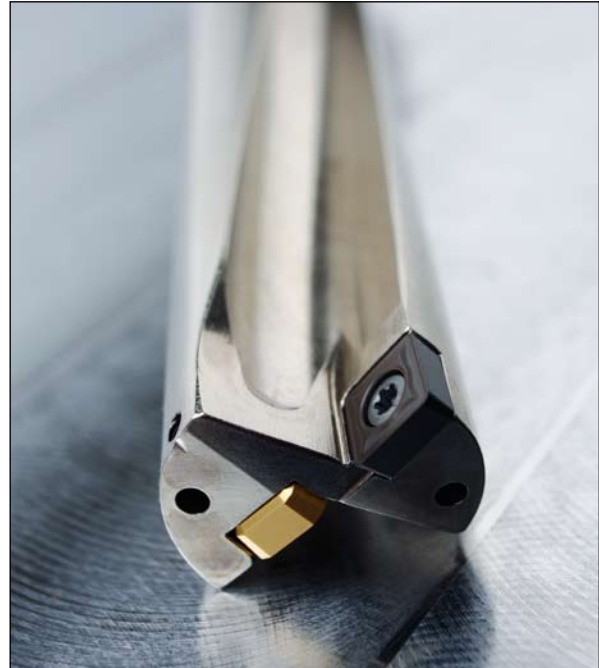
Component Engineered Tooling, Seco Point tool dispensing and Productivity Cost Analysis are all coordinated in pursuit of the perfect manufacturing process.



DESIGNED FOR THE OIL AND GAS INDUSTRY



THREADING All the main configurations of thread types to ensure superior hydraulic sealing in modern oil and gas components.



HOLEMAKING Technical advances in insert design and drill body construction, now provide the technology required to machine materials destined for use in extreme environments.



MILLING Innovative design of strip edge milling cutters is just one of many examples of Seco's commitment to developing class leading cutting tools for the oil and gas industry.



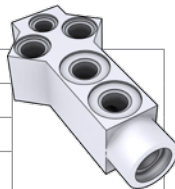
TURNING Our scarfing tool programme consists of both external and internal tools. In addition, we provide a comprehensive range of indexable scarfing inserts to finish the welded joint.

TOOLING SOLUTIONS



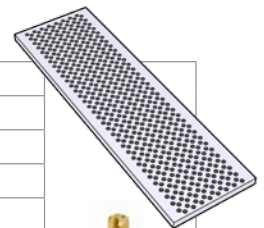
Y-BLOCK

Material	4130	
Operation	Rough milling, high feed milling	
Criterion	Metal removal, tool life	
Tool	R220.21-0080-R160.6, insert T350M	
Cutting data	v_c	200m/min
	f_z	1.1 mm/t
	a_p	1.2mm
	a_e	75%
RESULT	Productivity + 90%	



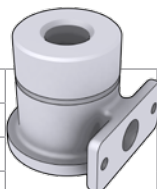
FILTER PLATE

Material	410S	
Operation	Drilling	
Criterion	Metal removal, tool life	
Tool	SD203A-12.0-36-12RS	
Cutting data	v_c	80 m/min
	v_f	424 mm/min
	a_p	16 mm
RESULT	Tool life: 4000 holes/drill Tool life increased by 100% Cutting time improved by 142%	



VALVE

Material	Nitronic 60	
Operation	Drilling	
Criterion	Tool life, surface finish	
Tool	SD107-12.00-12.49-90-16R7	
Cutting data	v_c	13 m/min
	f	0.1 mm/rev
	a_p	88 mm
RESULT	Cycle time 3 min (previously 7 min) Tool life 1000%	



CONNECTOR

Material	8630 SMG4	
Operation	OD turning	
Criterion	Tool life 40 minutes	
Tool	CNMG160612-MR7, TP3500	
Cutting data	v_c	165 m/min
	f	0.6 mm/rev
	a_p	6.5 mm
RESULT	50% higher feedrate and 110% higher metal removal rates	

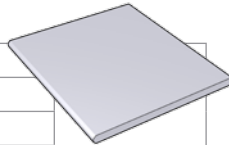


TOOLING SOLUTIONS



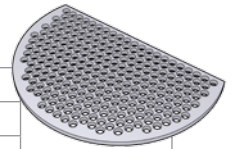
PLATE

Material	Steel X70
Operation	Strip edge machining
Criterion	Process improvement
Tool	Custom strip edge cutter
Cutting data	v_c 300 m/min
	v_f 10.000 mm/min,
RESULT	60% increase in productivity



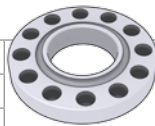
BAFFLE PLATE (HEAT EXCHANGER)

Material	SUS304
Operation	Drilling
Criterion	Metal removal, tool life
Tool	SD502-43-86-40R7 SP/CX12 T400D/T300D
Cutting data	v_c 160 m/min
	f 0.13 mm/rev
	v_f 154 mm/min
RESULT	Tool life Increased by 50% Cutting time improved by 200%



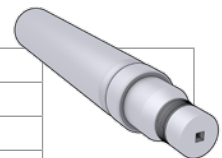
TUBING FLANGE

Material	4140
Operation	Drilling
Criterion	Metal removal, tool life
Tool	SD505-33.5-168-40R7
Cutting data	v_c 130 m/min
	v_f 140mm/min
RESULT	Tool life increased by 25%



DRILL COLLAR

Material	36CrNiMo4, hardband area
Operation	Turning OD
Criterion	Surface finish, tool life
Tool	SNMG150612-MR7, TP3000
Cutting data	v_c 160 m/min
	f 0.13 mm/rev
	v_f 154 mm/min
RESULT	Tool life Increased by 50% Cutting time improved by 200%

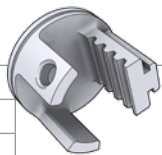


TOOLING SOLUTIONS



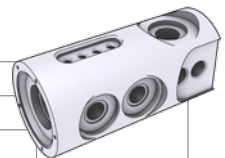
PISTON

Material	Inconel 718	
Operation	Face turning	
Criterion	Tool life, surface finish	
Tool	CNMG120408-MF1, CP500	
Cutting data	v_c	40 m/min
	f	0.05 mm/rev
	a_p	0.2 mm
RESULT	Tool life, 16 components	



BLOCK

Material	4130	
Operation	Rough milling	
Criterion	Metal removal, tool life	
Tool	R220.99-0100-12-8, insert F40M	
Cutting data	v_c	180m/min
	f_z	0.28 mm/t
	a_p	6 mm
	a_e	80%
RESULT	Tool life + 25%	



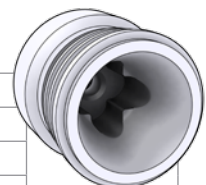
RING

Material	4130 (30Hrc)	
Operation	Threading	
Criterion	Tool life	
Tool	26ER2STACME, CP300	
Cutting data	v_c	45m/min
		60 mm long
		2TPI
RESULT	50% cycle time reduction. 200% better tool life and thread profile	



CONNECTOR

Material	Material: 15-5PH	
Operation	Plunge milling	
Criterion	Tool life	
Tool	XOMX060208R-M05, F40M	
Cutting data	v_c	150m/min
	f	0.05 mm/t
	a_e	6 mm
RESULT	Tool life + 100%	



TOOLS DEDICATED TO PRODUCTIVITY



MILLING

Innovation has always been an integral part of Seco's milling range and all areas of oil and gas component machining can benefit from our expertise in carbide grade development, coating technologies, edge geometries, cutter body design and application knowledge.

Cutters for helical interpolation, steep ramping, face milling, square shoulder, plunge milling, high speed machining and many more are available along with the advice needed for their successful application.

TURNING & THREADING

Always viewed as an area of machining with a long and traditional history turning has, in recent years, undergone some radical changes. Our Duratomic coating technology offers a new level of toughness and wear resistance in the same grade, with a wider range of applications and a greater flexibility in cutting data.

We work with our customers on a daily routine of ensuring that only the very latest in turning technology is committed to the oil and gas industry.



HOLEMAKING

The Seco holemaking range has expanded rapidly over the last few years and provides all the tools and technology needed in oil and gas component manufacturing. The key to this area of machining is in achieving the correct balance between the cutting edge, grade and geometry and the material being machined.

On the smaller diameters this is provided in the Feedmax range, and in the larger diameters Seco Crownloc® and Perfomax® drills meet all the demands for accuracy and performance. Bifix®, Precifix and EPB complete the picture for reaming and boring operations.

40,000 STANDARD PRODUCTS

TOOLING SYSTEMS

Tooling systems must always reach the highest levels of accuracy and quality to be really effective. The EPB range from Seco draws on years of experience in producing some of the world's most advanced spindle tooling.

A full range of solid and modular systems are available in all the common taper types and they are complemented by EPB boring heads that meet the stringent demands required by oil and gas component manufacturing. The increasingly popular concept of shrink grip and shrink release tool holding is now provided by Seco's Easy Shrink system.



CUSTOM TOOLING

Our oil and gas customers often test our capabilities by exhausting all the numerous possibilities available in our standard range and then continuing to press for novel solutions. We welcome these challenges and turn them into an opportunity to try out new ideas or modify existing solutions which can often result in completely new product ranges.

We can offer you access to the whole of the Seco knowledge base and manufacturing capability to discuss, design, develop and produce your own unique solution to a manufacturing problem.

ENGINEERED SOLUTIONS

We have a global network of engineers specifically assigned to supporting your local projects. We can offer advice concerning tooling set-up, project documentation and definition of machining strategies.

We are also able to offer Seco Technical Education Programmes which are designed to encourage your engineers to actively participate in the rapid advances that are being made in this dynamic and fast growing industry.



OPTIMIZING PRODUCTION

Premium tooling solutions are just one part of the equation – Seco Tools also offers training, technical support and innovations designed to streamline your production costs and maximize your productivity. By working in partnership with our customers we are often able to achieve significant improvements in productivity, efficiency and quality.

COMPONENT ENGINEERED TOOLING – OPTIMIZED PRODUCTION

Our Component Engineered Tooling engineers can provide turnkey solutions for any type of component manufacturing scenario. After analysing all the pieces of the puzzle, they will put together the best elements to make sure you are working in the most cost effective way.



SECO POINT – THE INDUSTRY’S MOST INNOVATIVE DISPENSING TECHNOLOGY

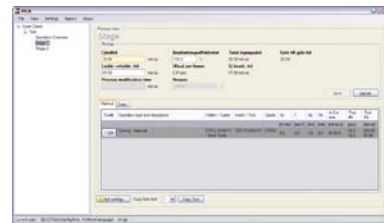
Seco Point is an advanced web-enabled point-of-use tool management and dispensing system. It helps you to control, track and manage tooling inventories and usage.

PCA – THE ‘GPS’ SYSTEM OF THE PRODUCTION PLANT

Seco Tools computer based PCA (Productivity and Cost Analysis) system enables measurement, control and management of manufacturing processes.

Using the system, we take a wider view of your manufacturing methods, focusing not only on the tooling costs, but the total cost of production.

Evaluations conducted in a wide range of industries using PCA have shown that reductions in total cost of 15-30% and improvements in productivity of up to 40% are achievable.





ARGENTINA Seco Tools Argentina S.A. Tel: +54 11 48 92 00 60 Fax: +54 11 47 23 86 00.
AUSTRALIA Seco Tools Australia Pty. Ltd. Tel: +61 2 96 76 22 79 (local tel: 1300 55 7326) Fax: +61 2 96 76 61 58 (local fax: 1300 65 7326). **AUSTRIA** Seco Tools Ges.m.b.H Tel: +43 2253 210 40 Fax: +43 2253 210 4011. **BELGIUM** Seco Tools Benelux N.V./S.A. Tel: +32 2 389 09 60 Fax: +32 2 389 09 89. **BOSNIA** See Slovenia. **BRAZIL** Seco Tools Ind. e Com. Ltda. Tel: +55 15 2101 86 00 Fax: +55 15 2101 8606. **BULGARIA** See Sweden. **CANADA** Seco Tools Canada Inc. Tel: +1 905 693 1780 Fax: +1 905 693 1788. **CHINA** Seco Tools (Shanghai) Co., Ltd. Tel: +86 21 54 26 55 00 Fax: +86 21 64 85 56 85. **COLOMBIA** Rexco Tools Tel: +57 1 660 6030 Fax: +57 1 311 0026. **CROATIA** See Slovenia. **CZECH REPUBLIC** Seco Tools CZ s.r.o. Tel: +420 530 500 811 Fax: +420 530 500 810. **DENMARK** Seco Tools A/S Tel: +45 43 44 7600 Fax: +45 43 44 5030. **FINLAND** Seco Tools OY Tel: +358 09 2511 7200 Fax: +358 09 2511 7201. **FRANCE** Seco Tools France S.A. Tel: +33 2 48 67 27 27 Fax: +33 2 48 67 27 05, Seco EPB Tel: +33 3 88 71 38 89 Fax: +33 3 88 70 98 98, Seco Ets. Planche S.A. Tel: +33 4 74 83 26 54 Fax: +33 4 74 83 26 59. **GERMANY** Seco Tools GmbH Tel: +49 211 240 10 Fax: +49 211 240 12 75. **GREECE** Athens Mechanica Tel: +30 210 523 1284/5 Fax: +30 210 523 1286. **HUNGARY** Seco Tools KFT. Tel: +36 1 267 6720 Fax: +36 1 267 6721. **INDIA** Seco Tools India (P) Ltd. Tel: +91 21 3766 7300 Fax: +91 21 3766 7410. **INDONESIA** Seco Tools (SEA) Pte Ltd. Tel: +62 21 7918 6441/6442 Fax: +62 21 7918 6440. **ITALY** Seco Tools Italia S.p.A. Tel: +39 031 97 81 11 Fax: +39 031 97 85 91 (local fax: 840 000938). **JAPAN** Seco Tools Japan K.K. Tel: +81 3 37 33 81 11 Fax: +81 3 37 33 81 25. **MACEDONIA** See Slovenia. **MALAYSIA** Seco Tools Malaysia SDN. BHD Tel: +60 3 9059 1833 Fax: +60 3 9059 4833. **MEXICO** Seco Tools de Mexico Tel/Fax: +52 818 350 6311. **MONTENEGRO** See Slovenia. **NETHERLANDS** Seco Tools Benlux N.V. Tel: +31 183 63 66 00 Fax: +31 183 66 06 01, Seco Jabro Tools b.v. Tel: +31 77 463 24 44 Fax: +31 77 463 14 54. **NEW ZEALAND** Seco Tools New Zealand Ltd. Tel: +64 9 415 8441 Fax: +64 9 415 8442. **NORWAY** Seco Tools A/S Tel: +47 67 92 73 00 Fax: +47 67 92 73 02. **PHILIPPINES** See Singapore. **POLAND** Seco Tools (Poland) Sp. z.o.o. Tel: +48 22 637 5383 Fax: +48 22 637 5384. **PORTUGAL** Seco Tools Portugal, Lda. Tel: +351 256 371 650 Fax: +351 256 371 659. **ROMANIA** Seco Tools Romania S.R.L. Tel: +40 268 414 723 Fax: +40 268 476 772. **RUSSIA** Seco Tools Russia Tel: +7 495 680 1322 Fax: +7 495 680 6241. **SERBIA** Seco Tools SRB d.o.o Tel: +381 21 527 087 Fax: +381 21 527 093. **SINGAPORE** Seco Tools (SEA) Pte. Ltd. Tel: +65 68 41 28 02 Fax: +65 68 41 28 01. **SLOVAKIA** Seco Tools SK s.r.o. Tel: +421 33 551 3537 Fax: +421 33 551 3538. **SLOVENIA** Seco Tools SI d.o.o. Tel: +386 2 450 2340 Fax: +386 2 450 2341. **SOUTH AFRICA** Seco Tools South Africa (Pty.) Ltd. Tel: +27 11 362 2660 Fax: +27 11 362 1893. **SOUTH KOREA** Seco Tools Korea Ltd. Tel: +82 41 622 9785 Fax: +82 41 622 0985. **SPAIN** Seco Tools España S.A. Tel: +34 93 474 5533 Fax: +34 93 474 5550. **SWEDEN** Seco Tools AB Tel: +46 223 400 00 Fax: +46 223 718 60. **SWITZERLAND** Seco Tools AG Tel: +41 32 332 78 78 Fax: +41 32 332 78 79. **TAIWAN** Seco Tools (SEA) Taiwan Tel: +886 2 26 57 79 18 Fax: +886 2 26 57 94 61. **THAILAND** Seco Tools (Thailand) Co. Ltd. Tel: +66 2 74 67 801 Fax: +66 2 74 67 802. **TURKEY** Seco Tools A.S. Tel: +90 216 569 74 00 Fax: +90 216 575 73 83. **UKRAINE** Seco Tools Ukraine Tel: +38 056 790 05 44 Fax: +38 056 790 05 43. **UNITED KINGDOM** Seco Tools (U.K.) Ltd. Tel: +44 1789 76 43 41 Fax: +44 1789 76 11 70. **USA** Seco Tools Inc. Tel: +1 248 528 5200 Fax: +1 248 528 5600/5603. **VIETNAM** Seco Tools (SEA) Pte. Ltd. Tel: +84 8 91 44 393/91 43 164 Fax: +84 8 91 43 164.



Seco Tools AB, 737 82 Fagersta, Sweden. Tel +46 223 400 00.
www.secotools.com