Switzerland – powerhouse of cutting tools

In part four of his coverage of the European Hardmetals Group meeting, Metal Powder Report consulting editor Kenneth J A Brookes provides his perspective and analysis of select suppliers and their contributions to the hardmetals sector.

With comparatively little in the way of natural resources but a long history of watchmaking and high-tech engineering, there’s no surprise in finding in Switzerland similar expertise in precision cutting tools and the hard materials from which they are manufactured. For the EPMAs EHMG meeting in Basel late in 2012, Heinz Westermann of Extramat and Leo Prakash of Kyocera provided an overview of the Swiss hardmetals manufacturing industry.

ATI Stellram

Wolfram & Molybden AG, the company that eventually became ATI Stellram, was started by Frederik Eisner in 1929 in Bischofszell, producing tungsten and molybdenum filaments and bars by powder metallurgical techniques. In 1932 production of hardmetal began, with the brand name Stellram. Headquarters and plant were established in 1940 in Nyon, on picturesque Lac Leman (Lake Geneva). Over the next 70 years, Stellram expanded throughout the world, establishing distribution and manufacturing operations in France, Germany, Italy, Spain and the United Kingdom.

Stellram joined the Cutting Tool business unit of ATI in 1995 as an operating unit within the Allegheny Technologies group of companies. It currently has manufacturing facilities in the United States, United Kingdom and Switzerland, with nine major sales offices around the world and a product distribution network covering more than 50 countries.

There’s no surprise in finding Swiss expertise in precision cutting tools

ATI Stellram’s leading-edge grades and geometries, combined with patented coating technologies, are available for materials from steels and cast irons to high temperature alloys and aluminium. Products include turning, milling (see Figure 2), drilling, grooving and threading tools, solid carbide endmills being a company speciality.

Ceratizit AG, Biel

Ceratizit Schweiz AG, formerly known under the name “Bidurit”, had a total of 130 employees and developed carbide blanks and ready-for-use parts working closely together with the industry. The company was an independent production plant, including a sales and business unit, and was integrated into the Ceratizit group in 2002. The roots of the Biel plant go back to the Vereinigte Drahtwerke company, which began hardmetal manufacture in 1936.

In 2009, due to the world economic crisis, carbide blank production was
relocated to other Cerametal sites in Horb and Mamer. The other departments of Ceratizit Schweiz, including Swiss sales, production of WO₃, and the finishing and grinding department, were not affected. Current employment is in excess of 60.

Deltacarb SA

This relatively young and dynamic hardmetals company has been sintering hardmetals since 1991, for such applications as machining, wear resistance and mining. The plant is located in Pambio-Noranco, near Lugano, with a staff count of 45.

The product range includes inserts, blanks for drills, burs and other cutting tools, discs for circular slitting saws, flat and square bars, guide bushes, moulds and dies, matrix blocks, cylindrical and shaped rods, rolls and press tools, stone-working tools, wear parts and special tools to customers’ drawings.

Eskenazi

Founded in 1916 by Marcel Eskenazi, Eskenazi SA is a family-owned business with an almost 100-year tradition. It commenced hardmetal manufacture in 1954 with the trade name Diaroc and currently has about 40 employees.

Since 1940, Eskenazi has been headquartered in Carouge, Geneva. Products range from carbide blanks to finished tooling, but the company specialises in solid hardmetal rotating tools, such as burs, drills and endmills (see Figure 3).

Extramet

Extramet Hartmetallfabrik AG of Plaffeien has expanded massively, both in sales and in facilities, since I visited the company in the 1990s. It still specialises in extruded carbide, but also offers shaped parts and preforms to customer drawings. Standard products include as-sintered or ground rods, hollow cylinders, rods with two straight or spiral coolant holes, and both square and rectangular rods.

Hartmetall AG

The roots of Hartmetall AG stretch back to the 1940s. Tungsten carbide production started in two separate commercial
operations under different owners: Carduro AG in Aarau and Sintermetall AG in Adliswil, the latter’s sintered carbide being trademarked as Radiamant.

In 1973 the new factory and administration building was completed in Hitzkirch and the merger of Carduro AG and Sintermetall AG finalised. Increased production was matched by expansion in the range of manufactured products, intensification of sales activities and targeted development of new export markets. Extrusions are a special product, solid or with straight or spiral coolant holes (see Figure 4). Employees number about 140.

Lamina Technologies SA

Founded in 2001, Lamina Technologies of Yverdon specialises in PVD-coated milling and turning inserts (see Figure 5) made from submicron sintered carbide grades. Equipped with high accuracy, automated production machinery, the factory has an employee count of about 40. Lamina is already represented in 32 countries.

The company offers what it calls a new idea, “the Multi-Mat Concept conceived and developed by Lamina through understanding the complexities faced by customers in the machining industries.” The Lamina Multi-Mat insert is said to “machine low carbon steel, alloy steel, stainless steel, cast iron and even exotic materials like Inconel or titanium-based alloys.” Advantages are said to include increased efficiency, smaller inventory and cost savings. But there’s nothing new about this concept or such apparent versatility. More than 50 years ago, many of our customers successfully standardised a single one of our alloy carbide grades to machine almost any metallic workpiece with good results. However, then as now, for maximum productive efficiency under narrowly specified conditions, it was and is always possible to develop and supply a grade optimised (and thus more economical) for that particular application. Multi-Mat inserts may be fine for small machine shops, but I’d be very surprised to find them widely employed by the likes of BMW or Volkswagen.

Rotodur

High-quality special tools, micro-components and precision mechanical elements for extreme loads and high wear are the production focus of the specialists of Rotodur SA.

The company has its headquarters in Gränichen, with 25 highly qualified staff, a subsidiary in Biel with 10 specialised technicians manufacturing micro hardmetal parts, and the independently operating Intergrind SA in Capolago.

In the production area of 800m² hardmetal blanks are sintered from mixed powders, for tools and machine elements. Tolerances in the micron range are attained by such technologies as grinding, honing, lapping, polishing and high-tech EDM.

Sigmacarb

Located in the northern part of the city of Lugano, Sigmacarb began producing hardmetal products in 1998 for the Swiss and international markets. Company founder Luigi Radicchi has more than 30 years of experience in this sector, assisting the further development of the company. Supplying standard products as well as specials.

In addition to standards, special products include lock components and tools for watchmaking, the medical sector and for cutting fabrics, fibres, paper, leather and plastic (see Figure 6). Sigmacarb claims to be a reliable partner in all areas where quality hardmetals are needed.

Valsider SA

A family firm, Valsider was established in Yverdon-les-Bains in 1975. As one of the major international companies in its field, Valsider relies on and praises the loyalty of its customers. Here are some of its hardmetal products:

- carbide cut-off knives for corrugated board
- diamond grinding stones for sharpening razor blades
- tungsten carbide cutter and chopper blades for staple and glass fibres
- blades and anvils for cutting nappies
• circular knives for cutting cigarette filters
• thin slitting blades for all purposes
• tungsten carbide drawing dies with regular and special profiles
• sintered carbide cylindrical and shaped mandrels
• heading dies according to drawings and specifications.

WMC Sinterstar
Headquartered at Lotzwil, WMC Sinterstar was until 2008 known as W Metzger & Co AG, the initials of which are embodied in the revised company name.

Sinterstar specialises in the manufacture of shaped hardmetal products according to customer drawings, as-sinterHIPed or finish-ground. Materials range from standard WC/Co hardmetals to special alloys like ultrafine-grained WC/Co or corrosion-resistant WC/Ni grades.

Products comprise pressing and stamping punches, dies, seal rings, guide pads, wear parts, milling cutters, drills and special tools for customers that include automotive, aerospace, packaging, automation, electronic, plastics, chemicals, pharmaceutical, food and general consumer industries, as well as machine building and metrology.

Ten more manufacturers of carbide tools
To complete the survey, the following additional manufacturers of hardmetal-based precision tooling were listed:
• Alesa AG, Seengen
• Applitec Moutier SA/Carbitec Moutier SA, Moutier
• Bitiess Microtechnica, Barbengo
• Diametal AG/SA, Biel/Bienne
• Fraisa SA, Bellach
• Friedrich Gloor AG, Lengnau
• Mikron Tool SA, Agno
• Oertli Werkzeuge AG, Höri
• Usimedur AG/SA, Orvin
• WAWO Werkzeuge GmbH, Oberriet.

References
For further information on any of the manufacturers mentioned in this report, the reader is referred to the relevant company websites:
www.atistellram.com
www.ceratizit.com
www.deltacarb.ch
www.eskenazi.ch
www.extramet.com
www.hartmetallag.ch
www.lamina-tech.ch
www.ortodur.ch
www.sigmacarb.com
www.valsider.com
www.wmc-sinterstar.ch