QUALITY AND PRECISION I The Heart of Innovation?

Plastics in Switzerland’s Medtech Industry: Thoughts of Eight Industry Leaders

by Sam Anson

Introduction

I arrived at Swiss medical injection moulding specialist RIWISA on the morning of August 28, 2013. Prior to visiting RIWISA I had heard rumours that the family-owned company was for sale. The rumours were confirmed that afternoon. The company was to be sold to USA-based Flextronics, a leading end-to-end supply chain solutions company that delivers design, engineering, manufacturing and logistics services to a range of industries and end markets with a specialism in electronics, metals and plastics.

My visit to RIWISA was the first stop on a tour of six leading advanced technology companies, who provide manufacturing services and products for international producers of healthcare goods, including medical devices, diagnostic equipment and drug delivery products.

The other manufacturers are Weidmann Plastics Technology (injection moulding and automated assembly), Phillips-Medisize (injection moulding, injection blow moulding and assembly), Cicor (electronics and injection moulding), Gsell (machined and injection moulded medical plastics) and Netstal, a Swiss manufacturer of high precision, high speed injection moulding machines with a strong position in medical and packaging markets, especially bottle preforms and caps and closures.

The idea for the tour came after Christian Classen, director of sales and marketing at RIWISA, invited me to see his company’s manufacturing operations, saying: “I really want you to see our operations here, Sam. I know you’ll be impressed.”

RIWISA

And impressed I was. I can see why Flextronics want ownership of the company. RIWISA is located just 40 km (25 miles) from Zürich Airport. As much as half its sales are to the healthcare sector. Its main products in this realm, all injection moulded, are: disposable plastic products for in vitro diagnostic (IVD) test equipment and drug delivery devices like dry powder inhalers and...
double-syringe bone cement mixing injectors. The parts are manufactured and assembled in highly controlled and professionally organised class cGMP cleanrooms, including a temperature- and humidity-controlled, fully automated warehouse that is able to store moulded parts in cleanroom conditions while they are waiting to be assembled.

The company has been owned by the same family since 1946 and, according to Classen, has always focused on “advanced” manufacturing of “high demanding” products. Classen says: “Our competent team, a high degree of flexibility, and our state-of-the-art infrastructure assure tailor-made solutions, which consider all quality, regulatory, and economic aspects”.

In the 1990s, RIWISA entered the healthcare market initially through a dry powder inhaler project and later followed by IVD disposables.

Today, the company boasts advanced expertise in high cavity injection moulding and fully automated assembly operations, as well as design and regulatory support with a speciality on part producibility. Christian explains: “Our expertise is on producibility—we are able to turn challenging ideas from our customers into a product design which is manufacturable in terms of high volume production and consistent in terms of high quality of each single part”.

Industry

“Big pharma” and medical technology drive medical plastics processing in the Zurich-Basel region in the north of the country. According to official industry statistics, the five biggest medical device manufacturers by number of employees in the country are Johnson & Johnson—which is the country’s world-renowned capabilities for highly precise, high quality products, particularly in medical devices. The watchmaking industry requires highly precise small parts made by engineers who know about new and innovative materials,” he says.

“Other selected relevant multinational healthcare manufacturers with operations in the country include Abbott Vascular, which produce the Fox angio-plast catheter, Actelion (Basel), B Braun (near Lucerne), Doetsch Grether (Basel), Ferring (west Switzerland), Galdema (Lausanne), Gerresheimer (Lucerne), Hamilton (Chur), Novartis (Basel), Nycosmed (Zürich), Roche Diabetes (Basel), Stratec (Schaaffhausen), Straumann (Basel), Synthes (half way between Basel and Berne), Tecan (Zürich) and Ypsomed (near Berne).

Switzerland is among the world’s top ten medical technology manufacturing industries in absolute terms. Patrick Dümmler, managing director of industry association Medtech Switzerland, explains: “We have the highest relative share of medical device sector in the world with as many as 1,600 companies in the medtech field alone. We define medical technology as follows: Medical technology includes non-metabolic products, instruments and equipment that serve diagnostic purposes or improve general well-being, life expectancy or the quality of life of patients. Products range from wheelchairs to high-tech band aids, inhalers, injector pens, implants, and even diagnostic devices and disposables”.

The company has been owned by the same family since 1946 and, according to Classen, has always focused on “advanced” manufacturing of “high demanding” products. Classen says: “Our competent team, a high degree of flexibility, and our state-of-the-art infrastructure assure tailor-made solutions, which consider all quality, regulatory, and economic aspects”.

In the 1990s, RIWISA entered the healthcare market initially through a dry powder inhaler project and later followed by IVD disposables.

Today, the company boasts advanced expertise in high cavity injection moulding and fully automated assembly operations, as well as design and regulatory support with a speciality on part producibility. Christian explains: “Our expertise is on producibility—we are able to turn challenging ideas from our customers into a product design which is manufacturable in terms of high volume production and consistent in terms of high quality of each single part”.

Roots

The industry’s roots lie in watchmaking and machining and engineering. This, according to Mr Dümmler, is what gives the country its world-renowned capabilities for highly precise, high quality products, particularly in medical devices. “The watchmaking industry requires highly precise small parts made by engineers who know about new and innovative materials,” he says.

“Other selected relevant multinational healthcare manufacturers with operations in the country include Abbott Vascular, which produce the Fox angio-plast catheter, Actelion (Basel), B Braun (near Lucerne), Doetsch Grether (Basel), Ferring (west Switzerland), Galdema (Lausanne), Gerresheimer (Lucerne), Hamilton (Chur), Novartis (Basel), Nycosmed (Zürich), Roche Diabetes (Basel), Stratec (Schaaffhausen), Straumann (Basel), Synthes (half way between Basel and Berne), Tecan (Zürich) and Ypsomed (near Berne).

Switzerland is among the world’s top ten medical technology manufacturing industries in

continued
lines are fully automated in a highly innovative and, frankly, mesmerising way.

Patrick Blessing has a good deal of expertise in automation. As a mechanical engineer he supplies machines which are to be used with multi-cavity moulds in highly automated lines in medical cleanrooms. His company specifically focuses on turnkey solutions for medical plastic manufacturers. Patrick points out that by automating, you can improve productivity and reduce scrap rates. “Automation allows you to be efficient, you can strip out human error in manufacturing. The result is quality and reliability, so you can be much more comfortable in guaranteeing the required quality of parts so that customers who use these parts in their own manufacturing will return to you to maintain their own productivity rates.”

The Netstal brand is known for offering machines which are fast, precise, reliable, user-friendly and cost-effective in terms of operation. The range includes services like FMEAs (failure mode effect analyses) and GAMP (good automated manufacturing practice) 5 qualifications are key for our customers,” Wolfgang explains. With many patented technologies, the company says it is the global leader in automation for products like lab consumables (pipette tips and reaction vessels), contact lenses and drug delivery devices.

In countries where there are high labour costs (Switzerland being one of them), an important benefit of investing in automated technology is that it allows you to strip out labour costs. The cost of the investment can be spread out over the expected lifetime of the machinery in the profit and loss account as a depreciating asset. Wolfgang Czizegg reaffirms that these high labour costs are a major driver for Switzerland’s fast process development activities and high innovation levels. “Working in automated processes with low manual work involved enables Swiss medical injection moulders to successfully compete with low labour cost countries,” he states. “In fact, continuous and significant process innovations make them global leaders.”

He adds: “Working closely with our Swiss customers we can achieve cleanroom productivity improvements by factors of 4-8 in pipette manufacturing within two years. While in other countries, where manufacturers may be working with 8-16 cavities and cycle times above ten seconds, using our systems the Swiss are already using 64 cavities and more, in cycle times below five seconds.”

Waldorf Technik’s automation systems have enabled new plastic technologies in low cost manufacturing. Wolfgang explains: “Besides innovation for productivity benefits, Waldorf Technik has also reached a breakthrough on low cost technologies to provide migration barriers to medical plastic parts (as a substitute to glass), which again opens unique market segments for customers.”

Exchange rates

The cost of labour is not the only thing which is expensive in Switzerland. The Swiss Franc is currently regarded as being extremely strong, trading at a much higher rate than in recent years compared with the Euro and the US dollar, both of which have fallen in value since the euro crisis of 2007-08. Every single person I spoke to raised this as the number one challenge the Swiss medtech industry must overcome. One explanation for the high rate is that since the financial crash investors have deposited funds in Swiss bank accounts, seeing it at tax efficient safe harbor for capital until international markets recover. Added to this, the Swiss economy has not suffered the same extremes as the likes of the UK, the USA and the Eurozone, which are only just beginning to recover.

The exchange rate issue affects all export industries. Swiss exports have been relatively more expensive than products sourced from comparable Western countries for nearly five years now.

Commenting, Patrick Dümmler said: “The exchange rate pressure is the same for everyone, no matter what industry you’re in. But the medtech sector is highly innovative, and the strong Franc forced exporters to focus on even more efficient and lean operations, and it is something we have done well.”

Fritz Stein adds: “We compete with cheaper suppliers in the Euro zone. Our strong currency has forced us to invest in operational excellence. Added to this, upcoming regulatory changes bringing additional hurdles makes us an industry which is able to withstand forceful market pressure. Our core competences are to manage regulatory affairs and optimise our resources.”

Despite this overarching cost pressure, the industry is poised for growth. Patrick Dümmler states: “Our outlook is promising, at 6% a year the projected growth is substantially higher than expected GDP increases, albeit lower than the double digit rises we were enjoying ten years ago.” Employment in the sector is also growing at a steady 3%.

Continued on page 18
Continued from page 16

Industry consolidation

International investors have an optimistic outlook for the Swiss industry. One of the sector’s strengths is its high concentration of small to medium sized companies operating in highly specialised niches. Patrick Dümmler highlights that this allows an entire medical device to be designed and manufactured in the country: “Every aspect of the supply chain is well represented by a large concentration of highly specialised small to medium sized companies.”

Fritz Stein reinforces this: “It is easy to find a specific manufacturing technology in Switzerland. We can match needs to an individual solution.”

The strong Franc has not put off global investors. On the contrary, many international players see smaller Swiss firms as prime takeover targets to help them acquire highly efficient and technologically advanced manufacturing techniques which have the potential for being “exported” overseas. There is a clear trend towards consolidation in the Swiss sector. As previously mentioned, the acquisition of RWISA was announced the day I arrived in the country. Just two weeks earlier, St Jude announced it had bought defibrillator and pacemaker manufacturer Enersense for US$171mn.

The theme of consolidation is clear on a global basis. Small to medium sized medical device companies are being bought and sold everyday. Commenting on the situation in Switzerland, Phillips-Medisize’s director of sales and marketing for Europe, Christof Plätzter, said: “There is definitely a trend of consolidation in the medical device and pharmaceutical packaging sectors in Switzerland, and more broadly all over the world. Customers are looking for contract manufacturers who have a global footprint—especially in international manufacturing locations—so they can call on local companies who have European quality standards. Prior to our merger with Phillips, Medisize was a European manufacturer with high levels of expertise mainly in Europe. When we became Phillips-Medisize this was married with Phillips’s US focus and we now offer a global contract manufacturing option—which is very popular with our customers all over the world.”

Reflecting the advantages of Switzerland’s automated approach to manufacturing in the context of industry consolidation, Christof said: “Switzerland’s capabilities in advanced engineering and manufacturing, through highly automated equipment and vision inspection systems, attract large international companies.”

But there is a double-edged sword to the trend of consolidation. Patrick Dümmler explains: “Acquisitions of Swiss companies create jobs for the sector as the buyers invest in the technological expertise found here. The production sites set up by international companies have healthy output and are creating jobs.”

In 2012 more than half of the ten biggest Swiss medical technology companies were foreign owned.

The downside is a leakage of decision making to the buying companies’ overseas headquarters. Patrick goes on to say: “Decisions are sometimes made without the innovation systems available in Switzerland being fully taken into account.”

Consolidation is apparent at a higher level in the Swiss industry, and in Europe as a whole. Patrick Dümmler explains: “There are plans for the three major medtech associations in Switzerland—Fasmed, Medical Cluster and Medtech Switzerland—to merge together. We are already highly complementary and not in competition. We have a responsibility to react to market dynamics and provide networks abroad. This helps to secure jobs in export-led industries like medical technology. One industry association is much easier for people to work with. Swiss manufacturers only need to be a member of one association and there are clear synergies across the associations. Furthermore, a single organisation gives us the opportunity for a single voice, making us better heard and giving us more influence in national Parliament.”

In Europe, there has been consolidation recently too. Eucomed and the European Diagnostic Manufacturers Association have merged and a new umbrella association, MedTech Europe, has been formed.

Education

Switzerland’s education levels are a key strength. This is clear as a visitor to the country. The Swiss system has a strong emphasis on vocation and practical experience, even more so than in Germany. State schools are the norm and are of a very high standard.

Everyone I spoke to on the streets are clearly highly intelligent and most spoke at least three or four languages. Unlike parts of Germany I have visited, where some workers in cafes and restaurants, and sometimes in hotels, speak very little English, everyone I conversed with had excellent English—most with a fluent accent that sounded like it was their mother tongue.

Enrich Trinkler, executive vice president at Cicor Electronic Solutions, summarises: “For us, an excellent level of education in Switzerland—especially in engineering, but also in terms of good workmanship—provides us with wide-ranging know-how, which in turn leads to a high degree of innovation.”

Enrich believes that within the medical technology sector, the country is home to many highly innovative companies that play an important part in advancing the sector as a whole. He adds: “The focus is always on trends and innovations that serve to further develop all branches of the healthcare sector (medication, therapies, new surgical techniques, and so on).”

With a core specialism on electronics—in terms of printed circuit boards and customised electronic solutions—Cicor is a contract manufacturer with a global presence. The company also has knowhow in injection moulding, including 3D moulded interconnect devices (MIDs)—which are advanced injection laser activated moulded electronic circuits.

The company has 11 production sites across the globe, in Western Europe, Eastern Europe and Asia. “A global base positions us perfectly to meet the needs and requirements of our customers, with some sites being certified according to ISO13485.”

Global outsourcing

Global outsourcing is a hugely important aspect of modern day manufacturing for healthcare markets. A key strategy of global OEMs is to have facilities fed by reliable supply chains which are close to their main markets (for example, USA, Europe, China and Brazil) and which are capable of delivering locally while finely tuning quality to the demands of buyers in these markets.

Phillips-Medisize positions itself as a company which is at the forefront of this phenomenon. The company operates injection moulding, injection blow moulding and automated assembly operations in Switzerland and has seven plants in the USA and five in Europe—including a highly advanced production plant in an assembly plant near Helsinki in Finland. It has recently acquired plants in Mexico and China.

Christof Plätzter explains: “We are a global provider with our own design and development capabilities in the USA and Europe. We are extremely flexible—we can produce from a small scale up to more than 100 million units per year of a finished device. Our design capabilities combined with manufacturing close to our customers allows us to offer some of the fastest time to market for new devices.”

EU independence

The most important markets for Switzerland’s medical technology are those in the EU, especially Germany, followed by the USA and China. But non-membership of the EU doesn’t appear to be a hinderance to success—ignoring the challenges presented by the high value of the Franc compared with the Euro and the US Dollar.

Enrich Trinkler adds: “Advantages are that we benefit through lower bureaucracy and lower taxes—both favourable characteristics for entrepreneurs. We also have a free trade agreement with China, which is helping our exports to that country.”

Patrick Blessing adds the thought that even without EU membership Switzerland has never been isolated. “We have always been very good negotiators thanks to our historical roots as a trading location, so working across borders comes naturally to us.”

On the other hand, there is the issue of the soaring Swiss Franc, and some customs-related problems can cause delays in the flow of goods between Switzerland and the EU,” he adds.

Switzerland’s geographical location—next door to German speaking Austria, Germany and Liechtenstein, as well as Italy and France—gives it enviable access to other advanced suppliers and technology partners in these

Continued on page 21
countries. Tilo Callenbach underlines this: “We foster cooperation throughout Europe but especially in our neighbouring countries. The infrastructure connecting these markets is excellent, and cooperation and sophisticated services are essential, especially in complex device supply chains.”

Christof Plätzer underlines the importance of partnerships in the industry for medical devices: “In order to allow the medtech companies to focus on their core competences they need a CMO [contract manufacturing outsourcing] partner to develop and manufacture the medical device or disposable. A characteristic of the medical device market is the particularly long engineering, development, and clinical testing—which for a new generation product can take up to seven years, or even longer. As such, partnering with another company who can provide expertise often leads to reduced costs and better efficiency.”

There is strong alignment with regulatory aspects in the rest of Europe. Patrick Dümmler explains reassuringly: “Bilaterals treaties with the EU in healthcare markets allow Swiss companies to register products in Switzerland and these registrations are good for the European Union. Similarly, German companies can register in Germany and that product is good for the Swiss market.”

When looking at pricing structures, Patrick helpfully points out that companies must still assess each market on its individual merits, but this would be the same for all member states.

Industry associations and trade shows

There are three major industry associations in Switzerland—Fasmed, Medtech Switzerland and Medical Cluster. And as Patrick Dümmler pointed out before, all three are complementary.

Fasmed is the main lobbying group for industry issues at government level. It participates in EU decision making with respect to the EU healthcare industry regulations, and is a member of the European association Eucomed.

Medical Cluster is a network of Swiss manufacturers, suppliers, service providers, and research and development institutions working in the value-added chain of medical technology.

Medical Cluster organises events, conferences, forums and services and helps companies and experts to meet and exchange information in order to foster new cooperations. The needs of its members are always at the focus of its activities. The Medical Cluster is not politically active.

Medtech Switzerland is a non-profit group focused on the promotion of exports from the medical technology industry in Switzerland to key world markets. As part of its work it looks to build good networks abroad for its members.

Within the liquid handling and lab automation sector in Switzerland, which is an important market for manufacturers of pipette tips like Weidmann and RIWISA, a useful industry association is Toolpoint for Lab Science. The group is a vertically integrated cluster, which combines the know-how and ability of the lab automation industry in Europe. The cluster was founded ten years ago by companies of the Greater Zürich area, and combines industry, universities, institutions and partners, which share the same goal of making processes in and around the laboratory more efficient and effective.

The Swiss Technology Network (SwissTnet) is an umbrella organisation of technology sub-sectors in Switzerland. I G Exact is a trade association for the Swiss electronics community. Swissmem is a members association which unites the mechanical and electrical engineering industries and associated technology-oriented sectors. The Swiss plastics association is KVS.

The World Medtech Forum was held for the first time in Lucerne in 2012. At the time of going to press the event was taking place for the second time on September 17-19, 2013.

SwissPlastics is a trade show for plastics processors. The next event will be held in Lucerne on January 21-23, 2014.

Technological research institutions

Three noteworthy research institutions are: the Swiss Centre for Electronics and Microtechnology (CSEM)—Centre Suisse d’Electronique et de Microtechnique, the Swiss Federal Laboratories for Materials Science and Technology (Empa)—Eidgenössische Materialprüfungs- und Forschungsanstalt; and ETH Zürich—(Eidgenössische Technische Hochschule Zürich).

CSEM is a Swiss research and development company with expertise in micro and nano technologies, microelectronics, systems engineering and communication technologies. Empa is an interdisciplinary research and services institution for material sciences and technology development. The institution plays a key role in the Swiss educational, research and innovation scene. Its research and development activities are oriented to meeting the requirements of industry and the needs of society. The institution offers its partners solutions tailored to meet their specific needs. This encourages companies to think and act in innovative ways.

ETH Zürich is an engineering, science, technology, mathematics and management university in the city of Zürich, Switzerland.

In plastics, points of interest are the Plastics Training and Technology Center (KATZ), the Institute of Polymer Engineering IKT, and the Institute of Polymer Nanotechnology INKA.

Industry relations

As Tilo Callenbach points out, medical technology exports accounted for 5.5% of all exports in 2011. The general consensus among my interviewees was that relationships with the government are good. But there are concerns about the exchange rate. Putting that to one side, Patrick Dümmler sums it up well: “As an industry we have a growing influence but it could be better. More work could be done to build relationships with our government. Our industry associations are always working hard to develop good connections in governmental networks and we are increasing our influence, but it is from a very small base.”

In terms of reciprocity, Fritz Stein feels the government supports the industry well: “Overall, help from the government is on a good level, we get assistance with booths at international trade shows and it presents our values accurately in the public eye.”

The interface between manufacturers, research institutions and clinicians is very close. Patrick Dümmler believes this is one of the main success factors of the industry. He says: “There are excellent relations with doctors and they provide feedback into new products.” He adds: “The CTI [Commission for Technology and Innovation] makes funding available for universities to develop new ideas. The universities are expected to work with industry to find a commercial partner who can match the public funds made available. These initiatives have led to ten or more relevant new commercial products being developed every year—and these are not just ideas on paper. Endosense, sold to St Jude in August, was a start-up once supported by this initiative.”

The government also supports medical technology industry engagement with universities and healthcare associations. Christof Plätzer explains: “The Swiss medtech industry exploits its intellectual resources to produce maximum innovation potential by building active collaborations across multiple disciplines. For example, many innovations happen at the interface between engineering, medicine and biology where natural scientists and engineers work together to create solution-driven products and techniques in the medical technologies sector.”

Healthcare provision

Despite being one of the world’s smaller countries, both in terms of population and land mass, Switzerland is known around the world to have one of the best healthcare sectors. Health insurance is a mandatory requirement for all residents. In return, they enjoy the world’s highest ratio of doctors to patients.

References

1 The Swiss Medical Technology Industry 2012 “In the Wake of the Storm”, Medical Cluster, Medtech Switzerland, IMS Consulting Group and Innovation Promotion Agency CTI.

Credits