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Chain of knowledge

Sel-Tek Ltd on a path to supply chain success

45nm ready for production

Are the issues really solved?

An avalanche of MOSFET

How to pick the right one



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The supply chain

The supply chain required to manufacture microelectronics devices is vast and varied from design to final test and packaging. There is a myriad of tools, materials, consumables and equipment required along the chain. The industry itself has developed reactively as the need for all things electronic created a larger industry than anticipated. Survival as a supply chain provider was only possible if a company could adapt to the changes. Here the directors from **Sel-Tek Ltd** discuss how the company responded to industry needs by developing strategies based on historical industry knowledge.

Back in the 1980's when the semiconductor industry was in its infancy many people became involved by accident via other industries, not realising just how large the market would become. For those companies who worked within the supply chain things were incredibly positive in as much as the problem was not finding companies to sell product but actually to source producers of goods that the device manufacturers required. This lack of supply chain infrastructure provided excellent opportunities for the companies who became involved at an early stage. Although it is easy to look back on this time as primitive technology in all aspect of design through to the end product, the fact was that during this period very little infrastructure existed in respect to both support services and supply. This void was being filled by 'other industries' supplying their expertise and evolving their products to fit new requirements. Thus a new manufacturing sector was born. Many of these manufacturers were not

experts in selling their new devices. Marketing and support of the new products, especially abroad, a key factor for early success. Representatives and distributors became the missing link in the supply chain.

Even today's multinational companies initially had sales distributors for Europe in its infancy. As the market blossomed, these companies started selling their tools direct to the manufacturers. This was simple business sense as most companies had little competition. With capital sales being strong, reliable and frequent, companies became adept at supporting their own needs. Add to this the massive technical support required at the location where tools were sold, and local satellite premises developed with most companies setting up shop quite literally next door to the Fabrication plants. Supply companies might well then have lost out on the business they had developed but smaller items, particularly consumables were still required. Early supply chain providers had to respond to the changing industry or lose out in that sector all together. With a balanced product range these companies could thrive and expand.



The WL-250LE from Sel-Tek

Transformation

Having previously worked in the industry before moving into technical sales and support Sel-Tek were well aware of the vast changes sweeping the industry as it moved forward into the 21st century. Sales philosophy had changed: gone were the days of suits and ties, in was smart but casual dress. It meant that an experienced sales person with hands on technical expertise could offer service support for those ongoing niggles that plant managers were experiencing.

Sel-Tek Limited was formed in early 1999 as a supplier to the European Semiconductor industry serving entire sectors of the Semiconductor, Microwave, Opto-electronic and other related industries. The company offers a wide range of products with two distinct lines of expertise covering a number of consumable and ancillary areas. The first field of speciality is that of wet chemistry. This includes *Trebor International* chemical pumps and DI water heaters working in conjunction with *JST Manufacturing* wet process range offering every product required in the fields of wet processing, from baths to benches, and Quartz tube cleaners to storage cabinets. The company's electrical test division offers a high degree of proficiency in failure analysis including *Signatone Probing Division* offering equipment and accessories specifically designed to support leading-edge failure analysis, characterisation.

The CheckMate series of FA probe stations also provides a high-stability microscopy platform for laser and EMMI work, and are available in 200 and 300mm configurations. The modular design

supports system upgrades, including thermal chuck options, local enclosures, and motion control upgrades. Complimenting the range is a cost effective bench top Hall Effect measurement system from *Ecopia* and a range of four point probe systems from *Lucas Labs Inc.* offering resistivity test systems, from manual test stands to fully automated 121 point test systems with 2D and 3D contour mapping capability. Lucas Labs also offer diagnostic tools for maintaining, calibrating, fingerprinting, and troubleshooting the gas handling subsystem of vacuum based tools.

The founders of the company are John Lowe and Bobby Gray. John initially spent a number of years in the field of specialty coatings as a development chemist researching intermediate coatings between substrates and receivers, having attained a degree in Analytical Chemistry. He then became involved in the semiconductor field working for a small specialist sales company in a 'hands on' environment both servicing a varied selection of equipment and helping in a sales support role. Beyond this he has through the years, established a strong grasp on the physical characteristics of semiconductors and delivers lectures in the area of electrical test. John has furthered his studies by attaining a postgraduate degree in Environmental Science and is currently a member of IEMA and NEBOSH certification in Health and Safety.

Bobby began his career in the electronic industry with National Semiconductor in 1987 working at the Greenock plant for over nine years as a senior production technician. This invaluable time has given Bobby a unique understanding not only of the general semiconductor processes but a genuine grasp of what engineers face in terms of production problems. Having moved into a sales & service role with a source and supply company in 1998, Bobby was able to relate with customers and provide not only solutions but a very real customer care attitude, which both he and John felt was paramount when selling a product to a company. Bobby is currently completing a degree in Business Management to add to his engineering qualifications.

Sel-Tek Ltd also retain principal trained service engineers to cover the range of products to ensure customer care and service. The purpose of the company is to provide a world-class service that is based on a solid and historical knowledge of the industry. As a high-tech company at the beginning of the 21st century they



are investing into promising future fields to maintain a high standard. Despite being independent, Sel-Tek endeavours to retain a systematic co-operation between themselves and company associates.

From the outset, Sel-Tek Ltd approached the marketing and sales aspects of the company from an "outside the box approach". Too many companies had developed myopia with their product range and strategy, and it was Bobby and John's philosophy to listen to what the engineers required for their application, and work backwards from there to provide the most suitable tools for the engineer. This put them in a strong position, the customers quickly realised that rather than simply trying to sell a product that may not meet the application requirements, Sel-Tek were actually listening to the customer's feedback and reporting this to their principal company.

Sel-Tek has altered its approach from its beginnings based on changes within the industry. The company has morphed from its previous experience of offering too many products to concentrating on a focused number of products. A difficulty that any supply specialist will have is that selling capital equipment doesn't happen every week therefore supply companies require a base income that provides a consistent revenue. Sel-Tek have taken the approach of having a consumable range of products to ensure such consistency. Chemical pumps that require to be either replaced

or rebuilt provides such opportunities. By offering capital equipment such as IPA vapour dryers or wet benches the company has a strong capital market. Further strong areas of income are provided by the various levels of support in all ranges including, offering service contracts, direct immediate on site support as appropriate and personal repair or rebuild of equipment whether under warranty or not.

When the company was formed a key philosophical decision was to have a synergy in the product lines. For instance *Trebor International* high purity pumps and high purity DI water heaters compliment *JST Manufacturing* wet processing equipment. *Alpha Probes* are an important consumable product to compliment the full range of Signatone probe stations and accessories. By creating synergies between the product ranges the company can focus on a particular customer stream and provide guidance and assistance based on the knowledge from connecting sectors.

Current

The downturn of the UK semiconductor market in recent years caused Sel-Tek to change tactics from their initial strategy. Although they have a very strong foothold in all the UK manufacturing companies they have changed direction in two main ways. Firstly they decided at an early stage to target universities for what was perceived to be university type equipment. Namely relatively affordable equipment which could be used in a variety of ways e.g. a manual probe station as opposed to a semi automatic station. This created two main opportunities. Established a 'database' of young graduates who would move on but be familiar with Sel-Tek's products and product names.

Secondly Europe was targeted as a growth area as the European community expanded, the distances involved became increasingly affordable due to the low cost airlines and increased number of flights available. It meant that engineers could be on site for example in Norway or Germany sometimes faster than an engineer could get to Plymouth in the UK!! This enabled the company to offer services in growth areas which were previously affected by the cost of writing services into a quotation. These early decisions have ensured that the company has created positive growth opportunities in the focused niche segments of the manufacturing industry. Keeping up to date with industry trends, changes and needs ensures that Sel-Tek can develop strategies to react to any such changes. This will enable the company to continue to develop its solid and profitable base as a smaller company while developing new ideas to develop and stimulate growth for the future.

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