



#22013

INFOCUS:

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Prototype manufacturing

– Quality and lead times have top priority

Prototypes play a decisive role on the road from the drawing board to finished PCB. We asked Mark Tomba, in charge of PCB purchases at Stoneridge Electronics, to describe their approach with regard to PCB prototyping and what is important for them. He strongly underlines the importance of quality and short lead times.

Stoneridge Electronics are OEM manufacturers and suppliers of electronic components, modules and systems to the automotive industry, mainly for heavy goods vehicles and other commercial vehicles. Among other things, they manufacture dashboards with displays, digital tachographs, telematics systems and electronic control units. They deliver to customers worldwide, including such manufacturing giants as Scania, Volvo, MAN and Daimler.

Mark Tomba is based in Estonia and, as Commodity Manager for PCBs, he is in charge of purchasing PCBs from suppliers worldwide for all three of Stoneridge Electronics' manufacturing facilities in Estonia, Sweden and Mexico. In total, some eight million US dollars worth of PCBs are supplied to these facilities annually. "That figure is increasing, due both to bigger volumes and to the fact that the PCBs we use in our products are becoming increasingly sophisticated, which means the unit price is higher." Mark explains.



Mark Tomba is in charge of purchasing PCBs from suppliers worldwide for all three of Stoneridge Electronics' manufacturing units, in Estonia, Sweden and Mexico.

When it comes to customer relationships, the biggest challenge perhaps for Stoneridge Electronics, is to establish the right combination of quality, technical solutions and cost. When developing new products, one cannot just apply the latest technology; in a competitive situation, price is always a factor. In Mark Tomba's words, "We need to be able to provide customers with the appropriate technology at a reasonable price level".

Since the automotive industry uses extremely sophisticated products that require a high level of know-how, the tendency is to build long-term partnerships with subcontractors. Quality is always

a priority for Stoneridge's customers and as the degree of complexity is always increasing, it is vital to keep pace with developments.

– Our end products are complex electronic units and their complexity increases with every generation. This affects all our subcontractors and not least PCBs manufacturers. Says Mark Tomba, adding that while six-layer ENIG boards may be the norm today, he foresees that the next few years will bring a demand for PCBs with HDI solutions.

PROTOTYPES - CRITICAL FACTORS

PCB prototypes play a crucial role in the development of the products Stoneridge Electronics manufacture. Initial prototypes are produced in order to check the PCB Stoneridge have designed. This is often done in close cooperation with the supplier. At this first stage, the prototypes are evaluated and design changes

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MARK TOMBA, COMMODITY MANAGER, STONERIDGE ELECTRONICS

can be incorporated to improve and refine the final solution. " We would then need a second batch of prototypes at very short notice. The time factor is critical here. The new prototypes are evaluated and we fine-tune the design further before ordering a third batch. We would expect that batch to be more or less the finished item, essentially ready to be put into production. Our schedule is particularly tight at that stage, so it is vital that our PCB suppliers are professional, flexible and able to handle that final hectic phase of the process". Says Mark Tomba.

Lead times are crucial, since the entire validation process has to be handled as efficiently as possible and, more often than not, the further you have come in the process, the less time you have left. Quality of the prototypes is another crucial factor. The whole point of creating prototypes is to enable you to test and evaluate your design, so it's a matter of being confident in the knowledge that any possible defects in the prototype originate from the design rather than the quality of the PCB itself. "What we demand first and foremost from our prototype suppliers is quality". Mark Tomba underlines. "It doesn't matter if they supply on time, if their quality isn't up to Stoneridge standard".

Yet another important factor is the ability of the supplier to provide technical support and be accessible locally, while also being able to supply products to a global market

– We also expect our PCB suppliers to possess some basic knowledge of the automotive industry, maintain reasonable price levels and be financially stable; essential in that once we have selected a supplier, we want both parties to view this as a long-term relationship. Says Mark Tomba and adds "Accessibility is also very important, as we need quick responses to our queries. And last but not least, we value good personal relationships. Ultimately, it's people who do business, not companies".

CAN CHOOSE BOTH EUROPE AND ASIA

During the past few years, the NCAB group has started delivering prototypes to Stoneridge Electronics. A major plus factor here is that NCAB can offer production of prototypes both in Europe and Asia. "We can opt for the solution that works best from case to case. Local manufacturing is the most flexible alternative if time is an issue, while Asian manufacturers are better from a commercial perspective. We use the latter option if we can wait a week or two. However, we place most of our orders in Europe, since time is often such a decisive factor". Says Mark Tomba and adds, "If I could ask one thing from NCAB, that would perhaps above all be for more competitively priced European manufactured PCBs".

– We bring our PCB suppliers into the design phase at an early stage. As they are the experts, this saves time both with regard to the design itself as well as later, when the PCBs go into serial production.

MARK TOMBA, COMMODITY MANAGER, STONERIDGE ELECTRONICS

Another advantage that Mark Tomba points to is the ability of NCABs prototype producers to take on serial production of the PCBs. This is an advantage at the transition stage from prototype to sampling, ie, the final phase of developing a PCB, when the serial volume manufacturer produces samples of the finished PCB. "Of course," says Mark, "players in our industry sector can separate the process of prototype production from that of volume manufacturing, since we have a reasonable time span between

the two. However, the transfer of know-how between the two phases is still important and NCAB has an advantage on that point".

Mark Tomba has worked at Stoneridge Electronics for 12 years and has seen how manufacturing trends have changed during that time. One particular difference is that customers are today expecting global solutions that work in all geographical markets. The solutions themselves are also highly sophisticated and incorporate such features as advanced displays, GSM and GPS. "Lean production is another trend on the manufacturing side, where the focus is on minimising waste with regard to time and designs within production. We strive for maximum production efficiency, and that's why" Mark says "we bring our PCB suppliers into the design phase at an early stage. As they are the experts, this saves time both with regard to the design itself as well as later, when the PCBs go into serial production". Concludes Mark Tomba.

CRUCIAL FACTORS IN PROTOTYPE MANUFACTURING

Mark Tomba lists the five most important factors when choosing prototype producers (in order of priority):

1. Quality
2. Lead times
3. Technical support
4. Global solutions, local presence
5. Long-term partnerships

STONERIDGE ELECTRONICS IN BRIEF

- Form part of these Stoneridge Group which supplies electrical and electronic components, modules and systems to the automotive industry.
- Have an annual turnover of US\$210 million.
- Deliver exclusively to the automotive industry, mainly solutions for heavy goods vehicles.
- 100% OEM manufacturer.
- Produce, among other things, dashboards with displays, digital tachometers, telematics systems and electronic control units.
- Have customers worldwide, among them, Scania, Volvo, MAN and Daimler.
- Have factories in Estonia, Sweden and Mexico.
- Purchase PCBs to a total value of \$8 million yearly.
- Purchase PCB prototypes to a value of \$150,000 - \$200,000 yearly.

Questions around the world: How would you compare regional prototype manufacturers with their Asian counterparts?



GERMANY
CHRISTIAN LEVEN

KAM at NCAB Group Germany

– Since many projects within serial production are already being manufactured in Asia, there is a significant need for rapid prototype deliveries from there. Our ability to help customers with that, saves them costs and valuable development time throughout the entire project. Thanks to our logistics partners, we are able to meet deliveries as tight as 2-5 days.



UNITED KINGDOM
RYAN PELLOW

KAM at NCAB Group UK

– Eastern Europe can still be trusted, especially during holiday periods such as the Chinese New Year. Since customers focus on total lowest cost, Asia is still the primary destination for their prototype production. However, NCAB can offer a seamless transfer between Europe and China, which for example, would assure the customer of an uninterrupted process, even during holiday periods. It is this type of teamwork that enables us to reduce our customers' time to market.



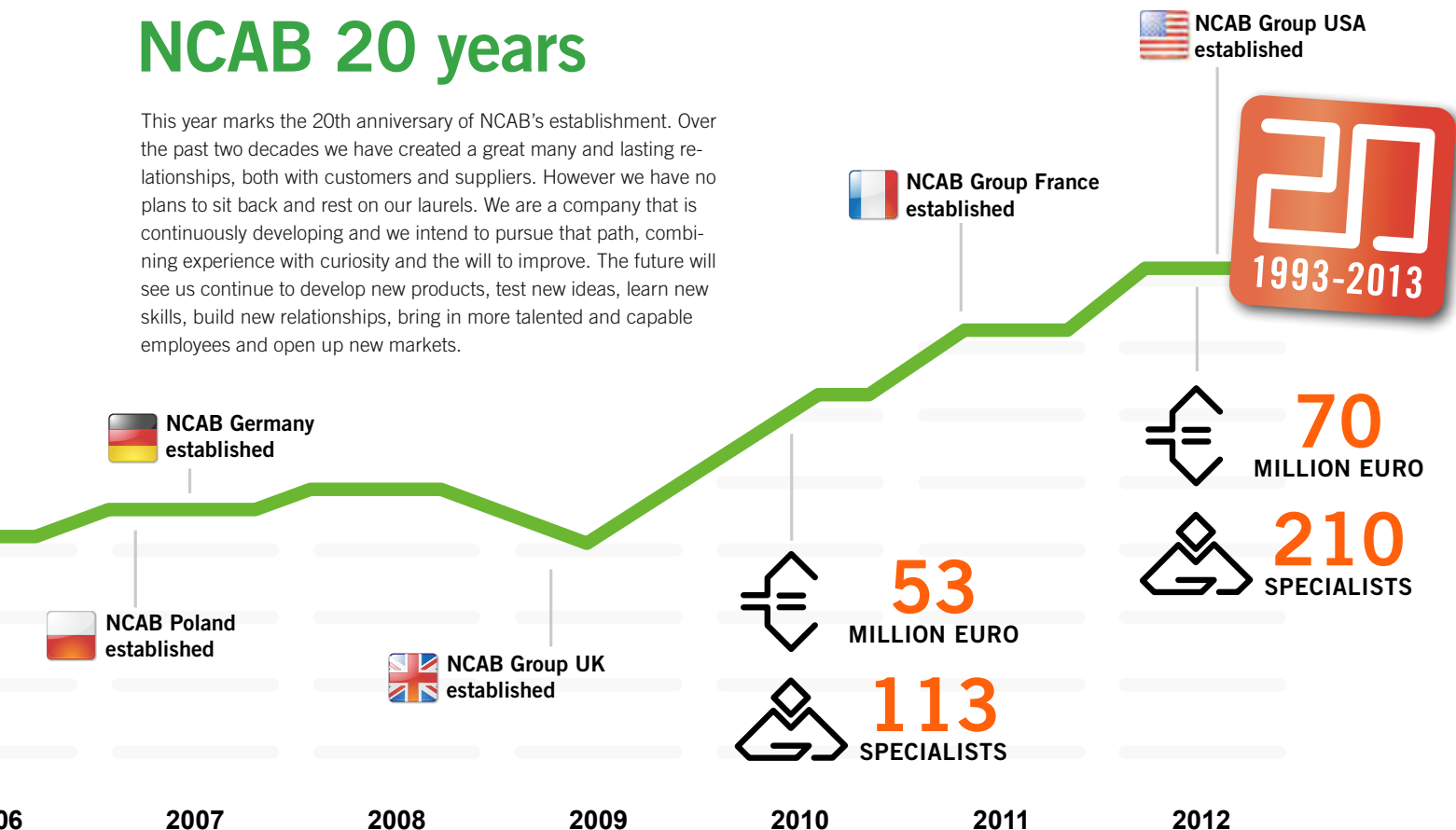
SWEDEN
LUDVIG LINDQVIST

KAM at NCAB Group Sweden

– We always try to find out as much as possible about the customer's requirements in order to work out the most appropriate lead times for their prototype project. In Europe we can deliver within 24 hours, which Asia cannot match today. However, in Asia we can quickly shift from prototype to volume production. We often need as little as three days, since both the prototypes and volume items are produced at the same factory. This also enables us to better monitor the transition to volume production.

NCAB 20 years

This year marks the 20th anniversary of NCAB's establishment. Over the past two decades we have created a great many and lasting relationships, both with customers and suppliers. However we have no plans to sit back and rest on our laurels. We are a company that is continuously developing and we intend to pursue that path, combining experience with curiosity and the will to improve. The future will see us continue to develop new products, test new ideas, learn new skills, build new relationships, bring in more talented and capable employees and open up new markets.



Right prototype reduce the time-to-market

HANS STÄHL
VD NCAB GROUP




Prototypes constitute by far one of the most important tools available that enable a producer to shorten their product's time to market and reduce total production costs. PCBs are to be found in more or less all technological products today and, as a result, prototypes are key to insuring a properly functioning end product. It is thus high time we shift our habit of focusing on lead times and instead, start focusing on quality and producibility.

Customers are becoming aware of the benefits and value of prototypes that meet a range of requirements. Where perhaps historically, a local manufacturer, due to lead-times, might have been used for basic verification and testing, today, prototypes are in effect becoming increasingly used as a means of verifying both the manufacturing process, as well as driving cost-saving designs. This

approach enables PCB volume manufacturers to participate actively in the process and lend their technical expertise to the design work, ensure specifications are achieved and that the design requirements can be duplicated in serial production. This approach enables PCB volume manufacturers to participate actively in the process and lend their technical expertise to the design work, ensure specifications are achieved and that the design requirements can be duplicated in serial production.

With this development in mind, the NCAB Group is turning much of its attention to developing our prototype offering and to providing customers with the most "effective" prototypes from an all-round perspective. More and more customers appreciate this approach and I am convinced that this is a model for the future.



Read more about Stoneridge Electronics

[» About Stoneridge](#)

Subjects we have covered earlier

Do read our earlier newsletters. You will find them all on our website, www.ncabgroup.com/newsroom/

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Are we taking up the wrong subjects?

We are always looking for interesting subjects that we could take a more in depth look at. If there is something you would like to learn more about, or perhaps you would like to comment on anything we have written, do get in touch with us and tell us more.

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