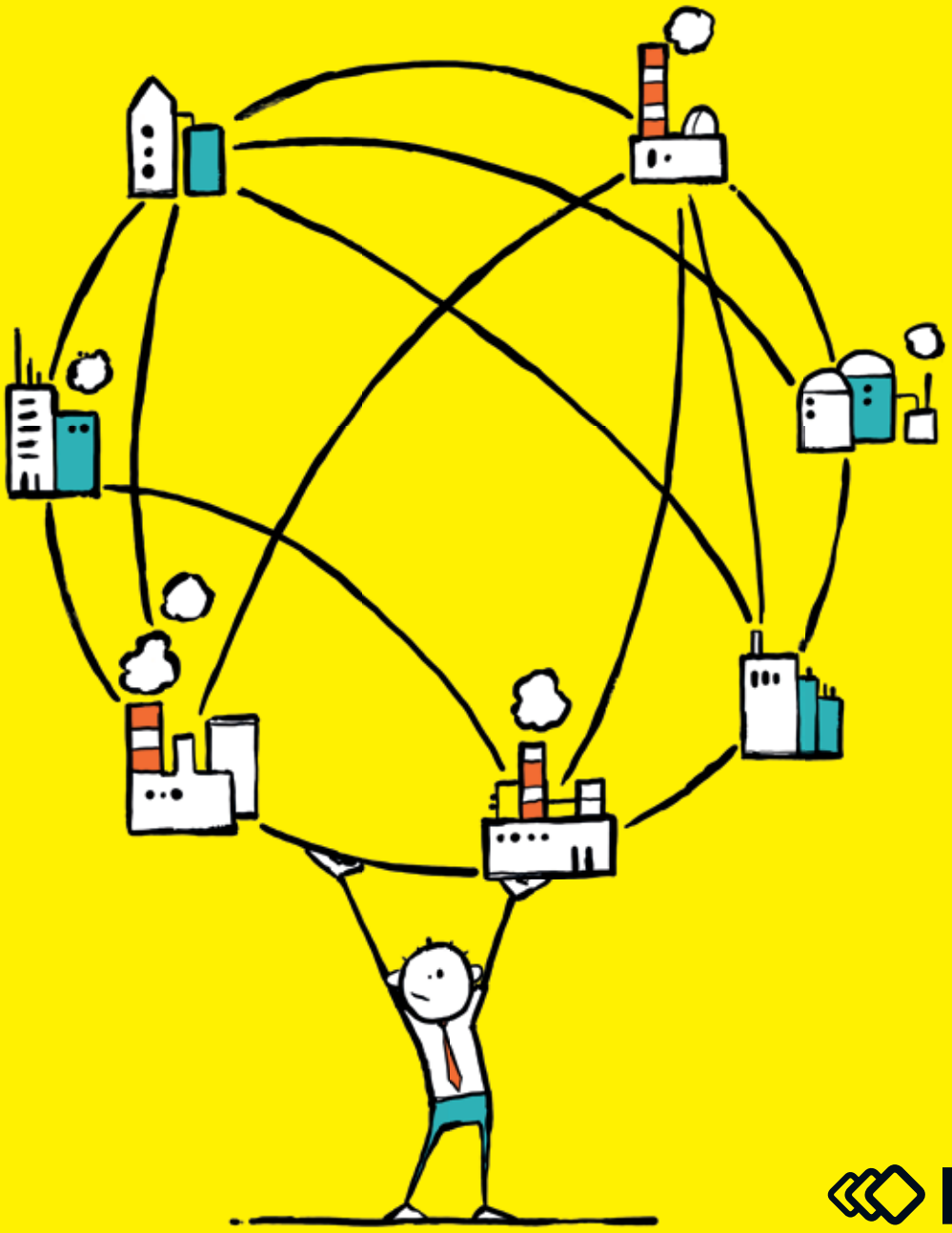
Issue 44

ROI DIALOG

LEADING NETWORKS

Management of Global Production Networks



ROI
MANAGEMENT CONSULTANTS

ROI DIALOG OVERVIEW – ISSUE 44

SPLIT THE CONTROL BUT CONTROL THE PARTS

How manufacturing companies with a new understanding of networking are opening up global markets

Dr. Thomas Troll, ROI Management Consulting AG

An example from the Greek construction materials industry shows how many international markets can be developed and dominated successfully over a significant period with just one product. Marble from the island of Paros was a major luxury export hit that for a long time was considered to be a mandatory feature of European government buildings and villas of the wealthier classes. Greece continuously improved extraction techniques, maintained intercultural exchanges along the supply chain and thus succeeded in opening up more and more new markets. However, this success story unfortunately came to an end just over 200 years ago when a competitor from Carrara in Italy proved to be able to produce the precious blocks of stone faster and more demand-oriented thanks to technical innovations in processing.

"It is not the interests of individual regional locations that count but the benefits for the overall corporate network."

Raw materials, products, customers and the value chains connecting everybody with everything may have changed in the meantime, but the challenge remains the same. How can markets be developed and how can concrete and financial value chains be managed that span the entire globe? And above all, how can continuous improvements be made to consolidate a position already reached and to develop it into a 'leading network'? There are two essential conditions for this process:

1. The question 'What does the customer expect of me?' is answered from a consistently global perspective. It is not the interests of individual regional locations that count but the benefits for the overall corporate network.

2. The design of the value chain does not end at the warehouse exit but covers all interconnections within the network – in other words: 'How do I need to deliver my products?'. Here it is vital to find the right balance between speed and the costs of production and transportation.

Six Starting Points for a Modern Network Strategy

A purely regionally motivated expansion- or wage-oriented location strategy is no longer in keeping with modern times, since such a strategy and doggedly holding on to traditional location structures exacerbate two risks. First, wasted time, budget and resources drive up actual costs and prevent sales potential from being exploited. Second, this strategy endangers a company's agility when it comes to changes – but it is exactly this agility that has made a decisive contribution to the strength of global players.

Forward-looking manufacturing companies shape their global footprint using a clear, active process cycle. This includes six steps that, taken together, form a leading network: motivation, combination, allocation, creation, organization and participation.

Motivation: knowing requirements

The reasons for or against a production location usually result from the necessity of resisting competitive pressure in the supply chain through shorter paths. It is not just in the car industry that delivery times are growing continuously shorter but also in machine engineering and in other manufacturing industries. At the same time, cost pressures are growing, meaning that lower costs at a new location appear as an ideal safety valve. It is therefore important, first and foremost, to know accurate customer and market requirements. Does the customer wish to see us as a producer present in the local market? Is speed or price the main factor in growth?

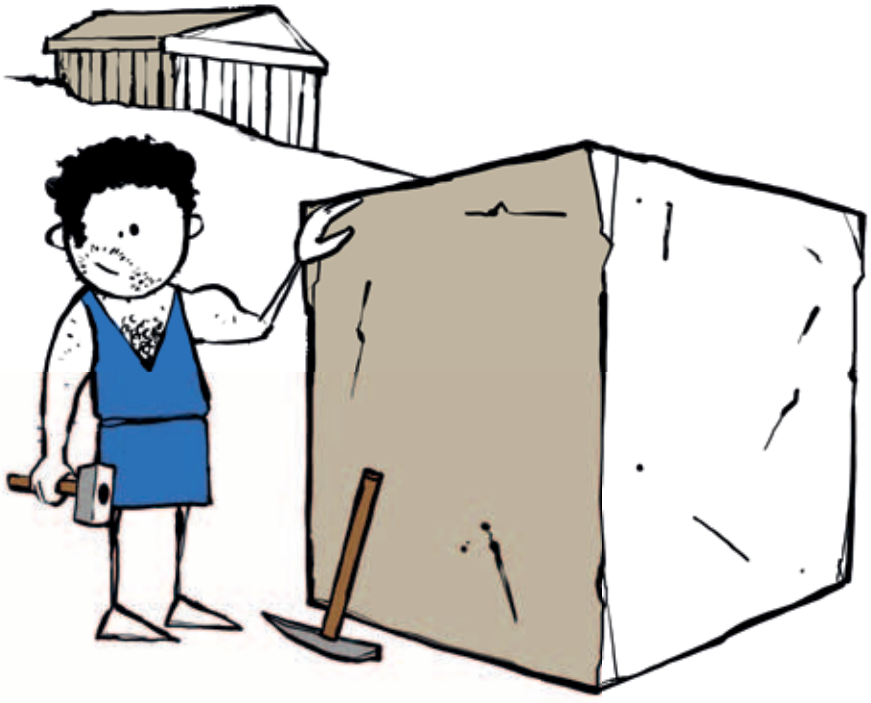
Combination: balancing production and acquisition

Added-value alternatives should be played through at each location – what can be produced in house and what can be bought in e.g. from suppliers and their networks? The primary aim is to clarify whether the interplay of the company's own market, production and organizational strategies can merely be adapted to existing market requirements or whether overall economic conditions should be shaped. Clearly identifying the company's own core competences helps in this case. Are there requirements that may perhaps be better met by the local supplier and partner network?

"The principle of 'faster and cheaper' is not sufficient for shaping a global network."

Allocation: assigning products

Finally it is important to ascertain who should do what in the network. This can also result in displacement and closures. Many locations are characterized by the conception of themselves as unique units or country representations. In these cases the core challenge is to change this conception from seeing themselves as the 'regional hub of the world' to an acceptance of being part of an agile, versatile network. Here the supplier and logistic structures must be taken into account that with their individual networks can ultimately either run the added value network of the entire cycle smoothly or impede it. The global view is again all-important.



Dr. Thomas Troll,
Partner, ROI Management Consulting AG

Creation: defining production processes

A location can often provide a blueprint for a successful manufacturing concept, for example lean production. But changes in technical equipment also play a central role. In this case, the question is if similar outcomes can be achieved through standardized machinery or production concepts at different locations, thereby avoiding fluctuations in demand simply through relocating machines? Or is automation not worth it since wage costs are to remain low over the medium to long term?

Organization: creating balance between central requirements and local responsibility

Adjustments in the network organization are generally made in two steps. First, the decision for or against a location has to be made before controlling is designed. According to the principle of central governance but local profit responsability the balance between prescription and leeway for desicion making is crucial. The principle of hierarchical management continues to exist, but this management should be aware of the capabilities and the local agility of the individual locations in detail and allow or restrict freedom of action accordingly.

Participation: weakening competitive attitudes and strengthening best-practice experience

Local control will only work well if there is a strong awareness of responsibility for the systematic development of the nodes. How can the individual location be improved in terms of the core dimensions of quality, costs and timing? How can common learning be achieved from best practice experience and common goals agreed instead of potential and strength being wasted in internal rivalry?

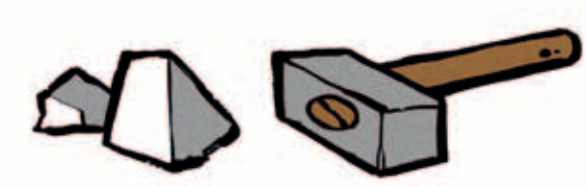
Ultimately, checking the entire cycle on a regular basis is necessary, since a leading network bases its claim to lead on being able to respond and adapt quickly to market changes, crises and new development opportunities.

Countering complexity with foresight

Depending on the size of the network, the process sketched out requires three to six months to be implemented systematically. During this phase there will inevitably be conflicts and barriers to understanding that should not be regarded as obstacles but instead used for improvement through concrete questioning. However, the biggest challenge is in dealing with the complexity of a global network correctly. Managing and developing it requires an enormous effort in order to overcome economic, linguistic and cultural differences. Different taxation and customs systems, public holiday arrangements and time zones that need to be included in workflows are only the tip of the iceberg.

> "The ability to disengage from one's current perspective is essential for the existence of the network."

In general, the network will only work as good as its management. In this respect, it is advisable to systematically equip prospective managers with a global career plan at an early stage. This will not only create just a regional but also an international management network. Another essential factor for the continued long-term existence of the network is the ability to always disengage from the current perspective. In other words, to develop scenarios on a regular basis that sketch out the future changes in the market. The sooner these points become a matter of course, the better will be the chances of survival for a leading network – perhaps even for the next 200 years.



CREATIVE FREEDOM AND STANDARDS LEAD TO EFFICIENCY

Interview with Dietmar Oesterle, General Management Mexico, Carcoustics International

D

DIALOG: *Carcoustics has operated a location in Mexico since 2008. What were the success factors in setting up the location?*
DO: Carcoustics actually had a presence in Mexico before 2008 with its then largest plant in Tizayuca/Hidalgo. Owing to constant changes in markets and customer requirements Carcoustics developed a strategy back then that aimed to focus on core technologies and competencies and on independence from materials. Our plant in Tizayuca did not fit in with this new direction and for that reason the decision was made to realize this strategy in a new site.

Carcoustics Industrial de Mexico in Queretaro was founded in 2007 and has been supplying customers all over the world since April 2008. Resources and strengths were bundled in Queretaro in the two core technologies of aluminum forming and thermo forming. A further success factor was the attempt to set up a manageable unit with the flattest possible structure. This structure was supported from the very beginning by central functional units such as IT, finance, HR, etc. meaning that existing standards and processes could be applied and new staff trained up fast early on in the initial phase.

"Carcoustics has global standards for the minimum use of lean tools."

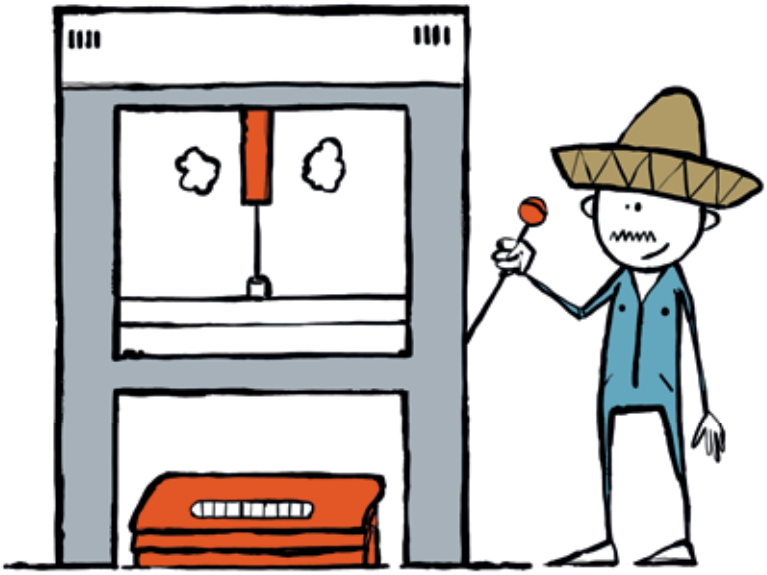
Special importance was attached to optimizing manufacturing processes from the beginning of my work in Mexico. Besides the introduction of new ideas, a further mainstay of the success are lean management tools adapted to Carcoustics.

I also succeeded in combining thinking from Central Europe with Mexican culture. A purely 'German system' would have had as little success as one based on purely Mexican values. A significant and difficult process was transforming the predominant 'white/blue-collar thinking' into behavior and thinking that values every employee.

Dietmar Oesterle,
General Management Mexico,
Carcoustics International

A further success criterion was the introduction of a common ERP system that allows the plant to be integrated into the global reporting structure. And – in addition to all the standards – I was also given the possibility and scope to develop something new locally. This has been and is a significant factor for our success.

DIALOG: *An important subject is the availability and training of skilled workers and managers. How did you tackle this challenge and how do you proceed with the qualification of staff?*
DO: There really is a shortage of well-trained skilled workers and managers and



this is an inhibiting factor for the Mexican economy as a whole. There are many young people who are eager and able to learn and who also aspire to positions of management. However, Mexicans often do not develop great loyalty to a company when they are young. We therefore do not just have to train employees ourselves in many areas but also try to bind them to the company in the longer term.

The systematic promotion of English among the management team and in the organizational layers not only simplifies internal training but also opens up the possibility of using training support from other Carcoustics plants.

Besides training within Carcoustics we also promote external advanced training for key employees, for example through university studies. We have also succeeded in agreeing a function- and task-related pay system for production employees that supports the development of workers. Every employee also has the opportunity to rise within the hierarchy.

DIALOG: *Is lean comparable with lean? How far does understanding go for lean management approaches and how does the application of the lean principle work in Mexico in practice?*
DO: Carcoustics has global standards for the minimum use of lean tools to be applied in its plants. These lean principles are also trained and deployed locally across all layers of the organization. In Mexico we sometimes adapted a number of cultural details of these tools in order to increase their effectiveness.

Whether lean in Europe is the same as lean in Mexico? I consider the lean approaches to be similar, but the handling, the interpretation and the focus are not always the same. A core difference is, for example, the far stronger focus on visualization here in the NAFTA area.

DIALOG: *There are already many automotive companies in Mexico and others are currently following them. What makes Mexico so attractive and what importance does the country have for the growth and internationalization strategy of Carcoustics?*
DO: Mexico has created a large number of tax incentives over the last 12 years that make it interesting for foreign companies to set up manufacturing capacities here and to import raw materials and semi-finished products cheaply. However, the government that was elected into office two years ago is currently changing the favorable general conditions. In addition, special regulations governing the online certification of invoices and payrolls have come into force.

Mexico is an important location for Carcoustics, both to meet local requirements and as an export location for various countries around the American continent.

Carcoustics is an important supplier for premium manufacturers in Europe and NAFTA. As part of our growth strategy we are planning to expand the current locations and to open a further plant with complementary core technologies. We will begin with the implementation of 'PU foams' in Mexico in the summer of 2014. This will be accompanied by the expansion of our development and industrialization competence in our NAFTA technology center near Detroit, USA.

> "Carcoustics is changing constantly and continuously adapting to current environmental circumstances."

DIALOG: *How do you see the location developing in the next 10-20 years? How will Mexico's role change in the global network?*
DO: Overall I see a positive development for the economic location Mexico for the next 10-15 years. Provided there are no radical changes in the general economic conditions and the Mexican authorities tackle increasing criminality.

The importance of the location will also increase for Carcoustics itself, but we have no fixed role model. Carcoustics is changing constantly and continuously adapting to current environmental circumstances. Our sites in Mexico will therefore always assume the role that best suits us.

GLOBAL FOOTPRINT SUPPORTS GROWTH PATH

Reorganization of BALLUFF GmbH's production and logistics network

There is fierce competition in the market for sensor technology. And there is a wide variety of standard products that compete with each other – the ability to supply, quality and price is what decides success. A pronounced ability to provide solutions in the form of application-specific products is also required. As a specialist in industrial automation, BALLUFF provides a comprehensive portfolio of sensors and systems.

BALLUFF has set itself a demanding strategic growth target with a double-digit growth rate, with a significant expansion in the proportion of system business. The global supply chain must also make its contribution if this ambitious target is to be achieved.

"Irrespective of our growth targets, we need a modern, customized strategic approach for our entire production and logistics network. Continuing with the structures we have inherited no longer holds the prospect of success," says Vice President Michael Schneider, Divisional Director Supply Chain Management, who is also the internal head of the project 'Global Production and Logistics Footprint'.

Adjusting the existing global network for growth

BALLUFF's production and logistics network has grown steadily over recent decades to include nine production sites and over 50 sales locations. However, roles, responsibilities and processes only partially match the global requirements of today's market. For example, around 75 percent of global finished products are stocked in the central warehouse in Neuhausen. The majority of sales companies also have additional regional warehouses, which means a high level of capital lockup. This historically developed structure requires a high degree of management effort.

> "Continuing with the inherited structures of the production and logistics network held no prospect of success."

That is why the global manufacturing and distribution logistics are being restructured. The aim of the 'Global Production and Logistics Footprint' project is to develop a long-term and flexible concept for the future that enables growth and that can also manufacture and distribute additional products. The global corporate and growth strategy and the product portfolio with its large number of variants map out the core general requirements.

Michael Schneider, Vice President and Divisional Director Supply Chain Management, BALLUFF GmbH

Product segmentation was part of the solution

The difficulty with the production network so far was that – 'in a nutshell' – everybody produced everything, tourism of parts was the order of the day, plant capacity was underutilized, redundant technology existed at various locations and it was not clearly identifiable which product was in stock and which product was made to order.

The aims of the project launched in April 2013 are to use synergies better in order to achieve better plant capacity utilization, to reduce duplicate work and to lower overall costs. As a result, adherence to delivery dates should improve, delivery periods should fall below those of the competition and new products should reach the market faster.

Management consultants ROI were brought into play and they contributed their expertise in the areas of global manufacturing footprint and supply chain management as well as their profound knowledge in the analysis and design of production and logistics processes. Global production and logistics footprint scenarios were developed and various roles for plants and logistics locations weighed up against each other. Evaluation was performed in particular taking into account the significance of local sales markets, the level of production costs and a comparison of delivery periods and logistics costs.

"We had to specify qualitative and quantitative criteria for the individual scenarios. Also with regard to the required investment, existing potential, overall profitability and risks," Michael Schneider recalls. The economic middle path between all factors today determines the appearance of the new production and logistics network.

An important breakthrough was differentiating between make-to stock (MtS) and make-to-order (MtO) products in in-house production. There is good demand for MtS products, which are therefore easy to forecast and should be available from stock. On the other hand, there is less demand for MtO products in terms of quantity, they must be configured to match customer requirements and are only produced to order.

The future production and logistics footprint therefore requires MtS plants that can manufacture MtS products efficiently and economically. These products should then be available in local distribution centers. Continuous global replenishment is then performed via global distribution centers. In contrast, MtO will in future manufacture MtO products in four regions in a flexible manner and to order by the required delivery deadline. These plants will be equipped with a highly qualified start-up production facility near to the development centers for new products in order to ensure fast rollout.

> "A major challenge is to comprehensively involve all employees in the change process."

Successes and lessons learned

The new footprint and clear allocation of roles will lower complexity and guarantee the optimum use of synergies as well as the efficient utilization of plant capacities. A consequence of this will be the improved adherence to delivery deadlines, allowing 'best-in-class' delivery times to be achieved. "Meeting market and customer requirements are the key to success – since it is only in this way that we can achieve our ambitious growth targets," Michael Schneider explains.

Overall, the project has turned out to be very complicated since BALLUFF's product portfolio is highly complex and the various locations around the world are very different. "In an organization like ours that has grown organically over the years a major challenge is to involve all employees comprehensively in the change process," explains Michael Schneider. We must perform a balancing act between the high speed of change of the project and the necessity to communicate adequately and to involve our employees and their expertise in the change process."

BALLUFF GmbH

BALLUFF GmbH supplies a comprehensive portfolio of sensors as well as system- and customer-specific solutions for industrial automation. With 56 branch offices and agencies as well as nine production sites around the world, BALLUFF guarantees its customers the fast availability of its products and a high level of consulting and service quality in its local markets. Around 2,600 employees generated sales of about EUR 335 million in 2013.
www.balluff.com

"ALL HUMAN ACTIVITY IS PLAY"

Johan Huizinga

Playing is a serious business. And serious things should be approached playfully. This is the principle that governs ROI's training center in Prague. This is why essential lean concepts are made accessible playfully and intuitively in a learning environment that closely matches everyday production practice in our learning factory 'Lean Fabrika'. The expertise gained from a large number of lean projects is combined with regional structures, special HR-related features and concrete company requirements in the course of a modular training program. The Lean Fabrika turns learning into an inspiring experience – and ensures lasting training success.

IN ONE SENTENCE
Open and company-specific training is performed in ROI's Lean Fabrika training center that allows participants to experience and practice core lean concepts.

WHAT IS COVERED BY TRAINING?
Training covers introducing the flow principle, assembly optimization, single minute exchange of die (SMED), shorter set-up times, total productive maintenance (TPM), 5S, Kanban, lean logistics, and much more.

WHO IS TRAINING FOR?
The employees of manufacturing companies from all areas and levels.

WHAT FORM DOES TRAINING TAKE?
Training is performed on the basis of a technically sound concept that has been educationally tested in a practice-related environment.

WHO ARE THE TRAINERS?
ROI training experts with practical experience in the relevant subject fields.

IN WHAT LANGUAGES ARE THE TRAININGS CONDUCTED?
Training courses are held in Czech/Slovak, Polish, English and German.

HOW LONG DO THE TRAINING COURSES LAST?
It depends on customer requirements – between two and six days are usual. The focus is on simulating real working procedures and gaining a sense of achievement.

WHAT BENEFITS DOES THE LEAN FABRIKA OFFER PRODUCTION LOCATIONS IN EASTERN EUROPE?
The training concept allows specialist knowledge to be communicated quickly and in a custom-fit manner across production networks spanning different countries. Moreover it ensures standards and gives employees state-of-the-art knowledge about lean production and logistics taking into account regional features.

WHAT TRAINING CERTIFICATES ARE AWARDED?
The Lean Fabrika offers a three-stage certification. In addition, companies can also send their own instructors to be qualified in 'train-the-trainer' program.

WHO SHOULD I CONTACT?
For further information please contact Robert Benacka, ROI Czech Republic – and all other ROI offices.
E-mail: contact@roi-international.com

Get your live experience of our Lean Fabrika right here!

CUSTOMER OPINIONS ON THE LEAN FABRIKA – MD ELEKTRONIK GMBH

D: *Mr Hentschel, Mr Borkowski, a number of employees from MD ELEKTRONIK GmbH have completed lean training at ROI's learning factory in Prague. From your experience, what training content is especially important for companies and employees in your plants?*
The main reason for taking part in the training was to explore fundamental practices in greater detail such as push-pull, 5S and TPM. What is special about the Lean Fabrika is that theoretical knowledge can already be applied in practical exercises during the training course, which immediately ensures the long-term success of the learning experience.

Oliver Hentschel,
MD ELEKTRONIK GmbH

D: *A problem that frequently emerges from training is implementation – once employees return to their companies they find it difficult to transfer what they have learned to concrete challenges and tasks. Were you able to avoid this 'application trap'?*
The compelling content of the training courses persuaded us to implement the lean approach with ROI's support. For this purpose, expert groups were formed within a project organization under the guidance of ROI in order to implement lean practices in production.

D: *"Never send a changed person back to an unchanged environment" – is what is often heard in the context of training programs. Does successful advanced training require organizational adjustments in advance or should both topics be included on the change agenda simultaneously?*
In order to continue to develop our philosophy and company, they are the ideal prerequisites for implementing new ideas and principles in practice. Implementation is also achieved thanks to the comprehensive follow-on project with ROI.

D: *The question always remains at the end, from both the company and employee perspective, "Was the training course worth it?" In the light of this, how do you judge the training program conducted in the Lean Fabrika and what indicators point to its success?*
Comprehensive training in theory and practice created the basis for taking the upcoming project successfully through to implementation. It is important to mention the bottom-up approach in this context which allows us to call on the same understanding of the subject across the company when performing implementation.

Matthias Borkowski,
MD ELEKTRONIK GmbH

MD ELEKTRONIK GmbH
Kabelkonfektion - Kunststofftechnik

THE MANAGEMENT PHILOSOPHY AFFECTS LEAN PRINCIPLES IN CHINA

By Stefan Weiler, Managing Director of ROI Management Consulting Co. Ltd., China

ROI has been executing projects in China for several years and has finally opened its own China office in Beijing in 2012. The office is led by Stefan Weiler who has lived in Asia for eleven years. ROI's team there is made up of currently 12 consultants, mainly Chinese, coming from renowned international companies like Toyota, ABB, etc. The consulting services focus mainly on quality management, lean manufacturing and supplier development. The broad project experiences allow to share insights on cultural differences and diverse management approaches between European and Chinese companies.

General challenges on the Chinese market accelerate a growing need to implement the Toyota principle

The Chinese economy has shown clear signs of slowing down in the past years. For quite some time many companies haven chosen China because of its low level of wages. However, this advantage due to its low level of wages in China have risen in recent years. From 2000 to 2013, Chinese average real wages grew at an average annual rate of 11.4%.

Cost competitiveness is starting to become a real issue for most of the industries in China as the markets will be more competitive and the pressure on cost reduction is growing fast. Some industries, like textile and toys, are already leaving China to relocate in countries like Vietnam and Myanmar.

> "The Chinese market is becoming more competitive and the pressure on cost reduction is growing fast."

Additionally, it has been getting more difficult to do business in China. Legislation, obtaining business licenses and residence permits, etc. can be difficult compared to some emerging countries that want to attract new business and are more 'accommodating' in this respect.

As the market growth is slowing down and companies will have more pressure on reducing costs, manufacturing companies, like automotive OEMs, need to implement more lean concepts across their entire value chain. Companies may also have need to implement lean principles for internal processes, for example reducing purchasing- and customer service lead time.

The cost of quality has a big impact too. In fact, many companies initially thought they could simply move their production or source from China. Now they realized the necessity of having someone constantly monitoring their production, which causes add-on-costs. And when quality problems occur, the cost of air freight, etc. to Europe or North America quickly negate the cost advantages.

Therefore: only if a Chinese company can demonstrate a robust management system and quality based customer focus while having competitive prices they can compete effectively with other potential suppliers. This is what the implementation of lean concepts in China aims to achieve.

The Chinese perspective on company culture is different

You can find several differences referring to company culture between Chinese and Western European cultures. In Chinese companies there seems to be less focus on goals and objectives in line with the company strategy, and considerably more focus on worrying about keeping the managers happy. Statements about quality or efficiency often just become wall-papers that the employees walk past every day.

Chinese people are used to following their leaders, so management in different levels should provide complete, real and visible support for lean production concepts. Primarily, top management commitment is necessary for sustaining the program.

As the implementation of the Toyota Production System (TPS) is rather based on decentralized and autonomous decision making with a focus on achieving highest quality standards, it needs a lot of time and convincing efforts to make it work in Chinese companies. In Joint Ventures between Chinese and Western / Japanese companies the implementation of lean standards is easier to achieve, as they generally hold a different mindset.

Many enterprises which started to deploy lean at the 'tool level' with no relation to business strategy failed. And, even worse, some employees including some leaders are not aware of their business strategy at all, which prevents them from combining lean production thinking with the daily work.

Success factors for lean principles in China

To successfully implement TPS, an official team must be set-up and the team leader must be supported by senior management as the managerial aspect of lean is just as important as or even more important than the production tools or methodologies in China.

There has to be a 100% conviction and belief from the managers, the clear idea of 'walking the walk' and leading by example are paramount. Only if the employees at any level can clearly see and understand what is important to their managers, it will become significant to them. In China you cannot have a 'do as I say – not as I do attitude' and expect people to take you or your demands seriously. A successful implementation of any lean tool is closely related to the management philosophy. Nobody can succeed by imitating and copying practices of others indiscriminately, they must be combined with the local culture.

> "Chinese people are used to following their leaders, so management in different levels should provide complete support for lean production concepts."

Many Chinese enterprises hope to achieve quick results and act rashly, which only allows them to stay on the surface. They won't succeed at all, e.g. if a quality problem occurs, because there is often not enough time spent on a proper root cause analysis. People jump directly to any solution which promises to solve the problem quickly, but there is no sense in trying to find a sustainable solution.

In Japan the success of TPS is closely related to the long term employment system. In China the situation is on the contrary because of a very high fluctuation of people.

Central role of Toyota principles in global production networks

Clearly centrally defined and described methodologies, standards and definitions of KPIs have to be in place to align the whole global production network according to the same guidelines and principles.

A lean system makes it considerably easier to manage production expansion with higher flexibility over the short and medium term and to be able to respond to market shifts and the rise of complexity.

Nevertheless, the real implementation of lean concepts has to be done country specific. Wherever you are, in China, India or Europe you have general lean production concepts – but the way in order to apply them to the current situation will be different.

The strength of TPS lies in the focus on 'inputs'. Everything entering the production network must occur in the right quality and quantity. This makes the overall system quite easy to handle, if every contributor is aware of quality and quantity requirements and has actions in place to support them. As a result the whole system is more simple to manage and achieving the right outputs is easier as well. And this counts worldwide.

Stefan Weiler, Managing Director of ROI Management Consulting Co. Ltd., China

INDUSTRY 4.0 IN THE HYPE CYCLE

A talk with Prof. Dr. Werner Bick, Chief Executive Officer of ROI Management Consulting AG

'Industry 4.0 meets Lean' – this was the motto of the TOP Transfer Forum organized by the F.A.Z. Institute together with Maschinenfabrik Reinhausen GmbH with many prominent guests on June 25, 2014. ROI supported the conference as partner. Prof. Dr. Werner Bick, Chief Executive Officer at ROI and Professor at the University of Applied Science in Regensburg, and Dr. Johannes Pohl, Senior Consultant at ROI, ran a workshop during the event devoted to the joint perspectives of the industry 4.0 approach and lean philosophy.

DIALOG: *Professor Bick, how do Industry 4.0 and lean philosophy fit together? Where is the common ground and where are the differences between the two approaches?*

WB: Both approaches share the common aim of seeking a way out of the rapid growth in complexity that we have seen in recent years. Complexity here means that we are being confronted with increasingly dynamic and internetworked systems at both the macro level – for example through continuing integration of national economies and production networks – and at the level of individual factories. Complexity is enormously resource-intensive. Mastering it is the prerequisite for a business to retain is ability to act and remain competitive.

"With lean approaches we try to reduce complexity and to achieve simple solutions with simple means."

The central difference is in the underlying strategic approach. With lean approaches we try to reduce complexity and to achieve simple solutions with simple means. We decompose what are ultimately complex systems and problems. However, this method naturally has its limits – and that is where the industry 4.0 approach comes in. Here it is fundamentally about simplifying the complexity from the viewpoint of the user,

which is achieved by increasingly decentralized control and the use of assistants. One example of this are satellite navigation systems that make it fairly easy for car drivers to travel throughout Europe. Here, the enormous technological complexity is 'delegated' to the assistant – in this case the satnav – but is still an integral part of the overall system.

This clearly indicates the potential offered by the interaction of the two approaches, which is why we also advocate transferring this combination into practice through use cases.

"Industry 4.0 is fundamentally about simplifying the complexity from the viewpoint of the user, which is achieved by increasingly decentralized control and the use of assistants."

Prof. Dr. Werner Bick,
Chief Executive Officer, ROI Management Consulting AG

DIALOG: *Satellite navigation is a good cue since it generates huge amounts of data. What role does big data play in the context of industry 4.0?*

WB: A fundamental one! The networking and communications capabilities of machinery, production lines, freight cars and containers are absolutely crucial elements of industry 4.0 architecture. The data generated opens up three basic possibilities.

First, process and operations data can be analyzed with a very high degree of accuracy, yielding valuable insights for optimization, for example about the utilization levels of individual machines, idle times, environmental data such as temperature and a whole lot more. This provides a basis e.g. for applying lean methods, or enables adjustments to the amount of machinery used to be made.

Second, maintenance processes can of course be significantly optimized, leading to considerable savings and a longer service life for machinery. Maintenance becomes cheaper and simpler, too, because there is the prospect that a large share of it can be performed via remote access.

And finally, overall, it provides the chance of developing completely new business models. In this way, machinery manufacturers will build up a large portfolio of services since they will be able to establish benchmarks and best practices using the data of their equipment installed around the world and even develop cluster and significance analyses. This will enable them to support their customers in optimizing their production processes on a constant basis. These are not just pipe dreams. There are already manufacturers – pioneers – who are currently actively testing this area very successfully.

It is worth noting that the opportunities offered by these scenarios to German industry in global competition are enormous.

DIALOG: *Considering these perspectives, the question arises as to why realization is not further advanced. What are the biggest stumbling blocks?*

WB: I would not talk about stumbling blocks. Every new technology – take the Gartner model as an example – needs a start-up phase in which initial disappointed expectations are overcome and standards are established. We are in this phase of the 'hype cycle'.

The broad basis is still missing, but there are indications that development will accelerate in the coming two to three years. It is therefore all the more important for companies to look into the subject today, to ask themselves what their own 'industry 4.0 level of maturity' is and what technological, organizational and personnel-related questions need to be asked.

"Companies should ask themselves how high their own 'industry 4.0 level of maturity' is and what technological and also organizational and personnel-related questions still need to be answered.'

www.roi-international.com

About ROI

With over 1,000 successful projects, ROI Management Consulting AG is one of the most prominent specialists in the planning, development and management of global value chains. ROI supports large corporations and leading family-led companies, especially with the integration and optimization of development, production and logistics, in supply chain management and in the company-wide implementation of lean management principles.

ROI has won numerous major awards for its highly implementation-oriented projects. The company has more than 80 employees at its locations in Munich, Beijing, Prague, Vienna and Zurich and is represented by partner offices in Italy, France, United Kingdom, Thailand, India and the USA.

Subscribe now to ROI DIALOG

Use this QR code to access the order form direct.
Or simply click on ROI DIALOG in the navigation bar at www.roi-international.com

Legal notice:
Person responsible for content under German press law:
Hans-Georg Scheibe

ROI Management Consulting AG
Nymphenburger Strasse 86, D-80636 Munich
Phone: +49 (0) 89 12 15 90 0, E-mail: dialog@roi.de

Management Board: Michael Jung, Hans-Georg Scheibe