

Linde Stacks Up Success

Collaboration with Porsche Consulting ensures long-term success for a company – and for investors too. One example of this is the Kion Group, which was formed in 2006 from the fork lift manufacturers Linde Material Handling GmbH, Still and OM. It was at this time that the consultants from Bietigheim started working for the management of Linde. Today lean management is firmly established at all Kion factories.

[📄] Horst Walter [📷] Christoph Bauer





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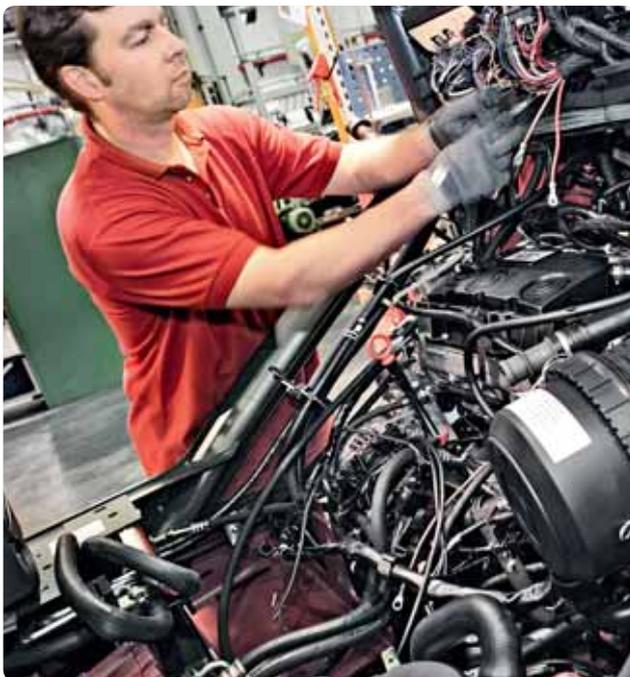
Linde Material Handling

Aschaffenburg, Germany, Linde GmbH, Assembly Hall, 2004: The material is stacked up in wire-mesh crates and boxes, and in some cases it is almost impossible to make out the assembly lines. The required accessories, piled up at the assembly line, determine the length of the individual production sections. This means that one fitter often has to wait for another. Synchronized production is impossible.

Aschaffenburg, Germany, Linde GmbH, Assembly Hall, 2008 – four years later: One glimpse is all that Stefan Draude, head of industrial truck production, needs to know what is being worked on, when and where. From the stacking line and special equipment, interior fittings and the central electrics right through to final assembly, everything runs synchronized on the belts, as regularly as clockwork. The workers on the assembly line have only the material that they actually need

at any given moment beside them. And the hall, which was previously filled to overflowing, is now clearly laid out – and there is room for additional belts, meaning that production could easily be increased very quickly.

Lean management is the buzzword at Linde Material Handling GmbH, and it has long since been established throughout the Kion Group. What started at the end of 2005 with a project order in the assembly hall at Linde has also won over the investors KKR (Kohlberg Kravis Roberts) and Goldman Sachs Capital Partners. In 2007, for example, the production costs at Linde in Aschaffenburg were reduced by 2 million euro, and yet at the same time, the level of production rose by 33 percent. And even now, in the current economic climate, the new, flexibly designed operating systems allow the company to respond very well to the demands of the market, says Klaus Hofmann, who is



The precise number of parts is supplied from the superstores (right) to the assembly line

the managing director of Linde Hydraulics, and since 2005 has been one of the key advocates of lean production at Linde. “An investor is naturally interested in what is going to happen over the next two or three years. But he also knows that we can only be successful if we make improvements to our processes on a sustained basis and over the long term,” he says.

With each job they are given, the consultants from Porsche Consulting focus on long-term success as the ultimate goal. As the Linde example demonstrates, KAIZEN, the route to something better, only works through a continuous improvement process (CIP), with a great deal of persuasion, and many workshops which involve the employees in the process. Particularly with a product range as diverse as Linde’s, it is almost impossible to use one simple lean management template. In the vehicle assembly hall

alone, fork lifts powered by gasoline, natural gas or electricity, and with a lifting capacity of from one to eight tons, are produced on several assembly lines. Customer-specific lift masts are offered, and anything from an air-conditioning system and heated seats right through to a navigation system can be fitted into the fork lift. “We work with a highly complex product with a huge range of different specifications. This requires supreme flexibility to create stable processes in assembly,” says Andreas Baier, senior project manager at Porsche Consulting, and Stefan Draude adds: “You can read as many books on lean management as you like. But you’ll only understand what it really means when you start to apply it yourself.”

For Stefan Draude, this first became clear in Asia. At the invitation of Porsche Consulting, he attended a seminar in Japan along with Peter Kolb, who at the time was in ▶



Persistent optimism: The Linde team works resolutely on the Continuous Improvement Process



Everything in harmony: In the new assembly hall, everything now works like clockwork

charge of Linde's foundries. "Logistics processes were given even greater priority after that trip," says Draude, who subsequently viewed his company in a different light: the whole process from receiving an order from a customer to delivering the final product took too long, resources were not employed efficiently enough, levels of stock were too high, and there was too much idle time in production. "We don't have a planning funnel," Klaus Hofmann, then the managing director for production and development, realized.

Porsche Consulting was initially recruited for a single contract, but today Draude is convinced "that we would not have progressed as far as we have if Kion had not been formed a year later." This accelerated the introduction of

lean management, which meant that the issues of cost, cash and growth were consistently addressed, working with the consultants. "The reduction in stock levels had an impact on cash, the reduction in manufacturing costs had an impact on cost, and we achieved growth through higher output using existing resources," says Andreas Baier. And Draude is delighted that as a result, this company is now more stable than ever before – it manages to meet over 90 percent of deadlines, fewer than three percent of parts are defective, and it turns stock around in two days. "The output of a stable number of units in production has improved dramatically," says Bernd Opitz, senior expert at Porsche Consulting.

Lean management now extends far beyond assembly at Kion. Porsche Consulting has trained employees who

now train their colleagues from all divisions and countries at what are known as Lean Academies. “It’s more than a production system. It’s well on course to becoming a business system,” says Draude, who is now also in charge of the implementation of “Lean” for the “One Kion” project. He inadvertently hands a Czech-language flyer to his German colleague. “This flyer is now available in four languages and at all Linde factories.” In Chatellerault in France too, people have adapted to the new lean philosophy. There, the consultants led by project manager Dr. Wolfgang Freibichler, have also adjusted to the pull principle, under which each assembly line only pulls out the material that is required, on a just-in-time basis, in the paint shop, the welding facility and the preproduction division; they have implemented one driven, synchronized assembly line. The result is that output has been increased by 25 percent, 1000 square meters of production space have been saved, and the lead time has been reduced from five days to two.

And yet nobody has even thought about stopping and being content with what has been achieved so far. The programs and training courses continue at all levels. Suppliers are being incorporated into the process too. “When a pallet of wheel rims is driven into our assembly hall, the supplier receives a signal and delivers another pallet to us,” says head of logistics Klaus Müller, who runs several “supermarkets.” From here, the precise number of components required to meet a particular customer order is delivered to the assembly line. In a newly designed assembly facility for the Linde Hydraulics division, for example, three areas can be distinguished in a confined space with the fishbone diagram principle being employed: supermarket, preassembly and assembly. “We have optimized almost all interface points,” says Stefan Draude, who is just as convinced as Klaus Müller that Porsche Consulting has played a major part in this success. Draude says: “The management consultants from Porsche Consulting are accepted ▶



In production there are now no longer any waiting times; over 90 percent of deadlines are met



Stefan Draude loves the lean management method: Costs have been reduced and the staff are happy

because they really can demonstrate a success story within their own company. Because they know what they're talking about and are also prepared to get stuck in. And they work with employees on the shop floor to help to improve the processes in production." Müller says: "They've managed to strike the balance between reducing costs and yet still making the work easier for employees by instituting structural changes. This was why the level of motivation was very high."

Aschaffenburg, Germany, Linde GmbH, Assembly Hall, year-end, 2008: The assembly foremen are preparing a project plan outlining what they want to improve in 2009 to make the production processes even more efficient. "This is an important step in embedding the improve-

ment process to an even greater depth in the conscience of all employees," says Draude and he is particularly proud of this. For this shows that lean management has become established in almost everybody's mind.

And what will the future bring?

Aschaffenburg, Germany, Linde GmbH, Assembly Hall, 2015: Starting from the assembly area, two assembly lines run throughout the production facility. "Our vision is to continue to remain the absolute premium brand, to considerably increase our productivity and output, and to become the number 1 globally in the materials handling business," says Stefan Draude. And he is convinced: "With 'One Kion,' we'll achieve it." ◀



The Linde fleet: Whether they are powered by gas, electricity, or diesel, there are fork-lift trucks in all sizes to cater for any individual requests