

# Lean style

Swedish tool manufacturer Bahco has been gearing up to deal with competition from low-cost countries even before it arrives

Bahco has been making wrenches, pliers, wood and metal saws, files and socket sets for over a century. Its products are aimed at professionals and serious hobbyists – the premium end of the market – and are made of appropriately high quality materials and to tight tolerances. Bahco's global headquarters and main production facility are located near Stockholm; there are another five plants in Sweden and other manufacturing sites are located in Portugal, UK, Germany, France, Belarus and in Argentina. It employs around 2000 people and, while it's a wholly owned subsidiary of Snap-On Tools, Bahco is aimed at a different market and there is little direct crossover between the two – with one huge exception.

"The initiative to move to lean manufacturing came from Snap-On in the US. They'd been practising lean for a year before we introduced it in March last year," said Rune Thenander, lean co-ordinator for the Bahco Group. "The reason we decided to change was that we saw a risk coming from the low-cost countries. There were no financial or other immediate problems but we can see China and Taiwan starting to produce hand tools with improving quality, so the future danger is quite clear." Bahco involved consulting firm Simpler from the outset: its consultants are all experienced industrialists and they focus on rapid change through kaizen breakthrough-style workshops.

"The traditional way of implementing improvement was to identify the problem, investigate and analyse it, which could take time. With the five-day workshops, there's no time for leisurely analysis – and because everyone can see change happening quickly, it makes a bigger impression," he said. Before the shop floor was changed, however, Bahco started with value-stream mapping. "We developed on paper the model of the future state of production, then took a step-by-step approach. We began with packaging and moved upstream, seeking to eliminate waste at every step. We've now covered about 80 per cent of production volume at the Stockholm plant." The first line to be considered was that which produced cutting pliers, which are used by electricians. By

September 2003, the line had been moved, relaid and there was a new job description for every worker. Productivity was increased by 25 per cent; floorspace decreased by nearly 30 per cent; work-in-progress (WIP) by 90 per cent and lead time was down from 36 days to just four.

"We were able to achieve five years' progress in just five months," Thenander said. "The value-stream map showed up all the waste in the process, by identifying all the steps in production that increased value – from the customer's point of view – and those that didn't. We found we had a lot of handling, transportation and quality checks, which are all things that the customer doesn't want to pay for." The customer may not want to pay for the quality checks but that doesn't mean that he doesn't want quality. Far from abandoning its commitment to quality, Bahco actually saw its quality rise and waste fall.

"Traditionally, we had a few processes that weren't up to standard. Every defect meant that we had to go back and rework – or scrap the items, and those things cost money. By making the process more assured, we reduced faults and were able to move to statistical sampling, rather than exhaustive checks at every stage," he said. "The goal is to make the process so secure that quality is embedded and self-indicating." Bahco's defect rate is now very low and is counted in parts per million, rather than percentages. To describe the productivity jump and overall improvements as impressive would be to risk damning with faint praise: it's a great leap forward. Thenander is at pains to emphasise the differences between the lean methodology and previous improvement techniques.

"Working with lean can achieve results without investment in automation," he said. "The mistake we have made in the western world is that we've ended up automating waste, by incorporating waste into the automated process." Without any investment in automation, the changes actually cost Bahco very little. It spent some money on painting the floor and on ventilation work, which its own people did, just as they were the ones who rearranged the



production lines. The focus is on getting more out of what was already there.

"Lean is very much about solving problems. Traditional mechanical industry is used to having processes that aren't up to lean standards: it's been the accepted norm to have a few problems." Not at Bahco, not any more. "We're changing the attitude and culture. Problem-solving is very valuable to us and we now have standard procedures, like pareto diagrams to identify the problem and fishbone diagrams to the source." Bahco's improvement process is firmly rooted in rapid improvement techniques, run by Simpler consultants.

"The big change is that our shop floor workers are involved. They make decisions about the method of working and they're making all the decisions under severe time pressure," Thenander said. Groups of workers are taken offline and given the problem to solve, with the objective of getting back into production on Friday. "On Monday, the group studies today's situation. On Tuesday, they discuss proposed changes. On Wednesday, they make the changes and move the equipment. They test and do the documentation on Thursday then complete the documentation, present the result and resume production on Friday." Bahco's Stockholm plant had four such groups working the week before we spoke and Thenander is in no doubt that Simpler's complete methodology works.

"This is the first time that I've seen consultants on their knees on the floor; rather than making nice powerpoint presentations to senior management, they're out there, making it happen," he said. This is the authentic role of the sensei: the word is often translated as 'teacher' but it's more accurate to think in terms of 'guide' or 'coach', someone who knows what to do and will work with you to help you to get there. "It's like learning to play golf: as a

beginner, your coach takes you through everything, step by step. He has the experience and can show you the way through." But nothing ever goes entirely smoothly. Bahco's changes have been successful but there was opposition, at least in the early stages.

"We rewarded the people who embraced change. They get more attention and praise: we try not to address or encourage the problem-makers at all," Thenander said. In the end, the CAVEs – Citizens Against Virtually Everything – simply gave up and either embraced the process or moved out. The shop floor workers realise that improved productivity will mean less labour content but have been realistic in accepting that the company has to change in order to survive. In the short-term, workers are being deployed as lean teams, available as an extra resource to help with implementation: in the longer term, the plan is that increased productivity will lead to more orders and more work.

"The most important people are the ones on the shop floor – they're the ones who add the value," he said. "It isn't an easy journey – it takes time to learn the new methodology – but Bahco now is very different and looks successful."



Published in association with  
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