



case study | Operational Excellence

A global manufacturer of electronic and communications cables uses LeanSigma® to improve output and drive sales growth.

> **client** | Draka UK is part of the Energy and Infrastructure Division of Draka Holding N.V., an Amsterdam, The Netherlands-based manufacturer of high-performance auto and elevator cables, communications cables, and optical fiber and fiber optics cables. The Derby, England, location focuses on the design and manufacture of a range of cables up to 1kV, as well as special purpose cables, for the UK, Ireland, and Middle East markets.

> **challenge** | Build a culture of continuous improvement and increase productivity and output to help drive sales in a market where growth was limited only by capacity.

> **solution** | Create a pathway for growth by increasing capacity. Introduce a lean production philosophy into a 100-year-old manufacturing facility, starting with lean training for all employees, followed by a series of kaizen events to work on set-up reductions, TPM, and productivity.

> **results** | Draka Derby was able to reduce set-up times by an average of 50 percent, creating greater output for the large cable market and effectively doubling the company's monetary output in just one year. Additionally, the facility was able to implement TPM, reduce back logs, reduce changeover times and increase productivity by 50 to 86 percent in different work areas.

Starting from Scratch

Draka is a worldwide company with manufacturing facilities in more than 30 countries and more than 9,000 employees. The Energy and Infrastructure Division in Europe employs 1,800 people at 13 locations and had 2007 sales of more than €950 million.

Draka in Derby makes power cables, communications cables, cables for wiring traffic signals, and building cables—from high voltage to house wiring—using copper wire, with galvanized wire for armoring. It was a very traditional company that has been located in Derby for nearly 100 years, in various forms and owned by various companies throughout its history. Draka Derby has a large number of long-term employees and is a union facility. It hadn't even heard of the word "lean" in 2006.

In late 2006, the company hired Ian Wright as operations managing director. Wright had practiced lean in his previous company and was anxious to implement lean at Draka. The first step, in June 2007, was to introduce the organization to lean by holding awareness classes to familiarize everyone with lean terminology and concepts and to help them understand what role lean played in supporting their strategy for growth.

TBM conducted an initial assessment at the company, and the first kaizen event was held one month later. Draka Derby has three product streams: large, medium, and small cables. Using value-stream mapping, the company determined that the large cable area could gain the most from the application of lean methodologies. Large cables represented the greatest source of revenue and the greatest potential for growth within the company. The

end goal was to increase output and sales, because the company knew the market demand existed and that it needed to increase productivity to capture additional market share.

Set-Up Reductions

For the first six months of Draka's lean journey, kaizen events were focused on set-up reductions. Set-ups were the first and most prevalent barrier to increasing productivity and so had to be addressed before anything else. The team focused on the stranding process which was riddled with time-consuming machine set-ups and had the greatest impact on productivity.

The first set-up reduction event was held in July 2007 on the Number 1 PS1 stranding machine. The kaizen team introduced new tools, fitted safety guards to the machine, created standard operations, provided visibility of workload for the operation, repaired the loader mechanism, and replaced the bobbin locking pins. The team reduced set-up time on this machine by 30 percent and improved the Progressive 5S score from 0.3 to 0.7.

The Culture Challenge

Draka faced the dual challenges of a workforce that had never heard of lean and that was also well-established and long-serving, with employees who were used to doing things the way they'd always done them. Getting people involved in the first few kaizen events required some encouragement.

> In just two years, Draka has made dramatic changes as a result of its lean initiative:

- Doubled output in monetary terms within the first year
- Average set-up times reduced by 50 percent
- Outputs on kaizened machines improved by 18 - 67 percent
- Machine productivity increases of 50 - 86 percent
- Machine changeover times reduced by approximately 38 percent
- Reduced the cutting backlog on the PW22 from 125 to 0

Hands-on Kaizen Training at an Advanced Lean Facility

TBM and Draka will host a public kaizen breakthrough workshop June 15-19, 2009 in Derby, England. Participate in a kaizen team and gain hands-on experience learning how you can drive improvement with a kaizen culture at your own company. Individuals or groups are welcome. Please contact Donna Hopkins at dhopkins@tbmcg.com or call +44-1332-367379 for more information.

The issues the company faced were typical of those encountered whenever a lean transformation is implemented:

- Union fears
- Job-loss fears
- “Flavor of the month”
- “Us vs. Them”
- All show (just painting the machines)
- More work for the operators

Paul Glenn, head of Draka's Kaizen Promotion Office was effective at “press gang-ing” people into teams. Momentum started to build and change began to occur more quickly once the company got over the hurdle of two or three events and got good results. Team spirit became evident once everyone understood that this was obviously very different from anything the company had done before. On top of those issues was the fact that the plant was unionized, so management also had to gain the trust and cooperation of the union. Union stewards were included on the first several kaizen events to give them the real flavor of what it was all about, and they saw for themselves that the kaizen process would actually improve work conditions for their members. Those stewards were then able to communicate to the rest of the organization

the positive changes that could be effected through kaizen.

The changes that helped to jump start cultural change were varied:

- Machines were improved
- Methods were changed
- Jobs were made easier
- Tools were given to help operators get the job done
- Operators saw their working environment improve
- Managers worked alongside operators (destroying the “us vs. them” mentality)

Management also played a significant role in driving early cultural change by participating in the early events. Through their enthusiasm and support for the process they helped others to get on board. They got the message out that Draka was committed to lean and demonstrated enthusiasm for their experiences on those first kaizen events.

One incentive the company used to encourage people to volunteer for teams was to take one person from each of the first six teams and send them as a group to Draka's flagship factory in Prague, Czech Republic. The company also started a newsletter, Lean Manufacturing News, to spread the word of events and the benefits that were gained from them.

Draka

LEAN MANUFACTURING NEWS

Our Operations Director says: "Our lean manufacturing program at Draka has really taken off. It all started back in June 2007 with initial training and now it seems to be really getting momentum. Supported by the local management team, we have seen a real boost in our factory colleague who have just unbelievable support behind the initiative." Ian adds: "we really are starting to see the benefits of everyone's efforts, but there is still a lot more we need to achieve. Thank you for everyone's contribution so far!"

The impact of all this has been noted, and through a number of Kaizen events we have seen considerable improvements in operational efficiency in some key areas. Additional benefits arising from the events are the further integration and cooperation between departments which assists the cultural changes that are being driven by the value programme. The Kaizen events have allowed those involved to develop a greater understanding of the roles and responsibilities of their team members.

Machines/ Area	Objective	Achieved	Impact after kaizen
FE1	Setup Reduction	75%	67
FE10	Setup Reduction	75%	67
FE11	Setup Reduction	65%	67
FE6	Setup Reduction (2.00 to 2.50)	52%	67
FE12	Setup Reduction	45%	65
FE4	Setup Reduction	50%	64
	Change improvement on Large Capstan	67%	67
FE2	Setup Reduction	52%	65

On the previous page are all of the events that have taken place so far along with some of the statistical gains that have been realised.

A recent Kaizen event was attended by 2 colleagues from HDS (Henderson Power Cable Factory), at the request of Hans Vahring, our distributor Vice President, who witnessed first hand what this type of initiative could do for other Draka sites.

David Cooper, Stuart Lambert, Peter Wabara, Mark Connor, Iqbal Jibral and Carl Harsdorn, who were taken by Paul Glenn (Lean Practitioner) and Ian Ross (Operations Director).

Paul said, "It's seemed like a good way to reward the guys for the hard work involved. The programme has reaped benefits for us and by taking HDS to HDS we can see ways that we can strive to improve even further."

Instead of just the success of the Lean programme, Ian Ross wanted to reward a member from each team, by taking factory staff to visit an other plant. So names drawn were:

8

9

Sharing lean results through an employee newsletter is an excellent way to build awareness, understanding and support for lean initiatives.



Suddenly people weren't waiting for kaizen events to make changes and improvements in areas that were not actually slated for events, and that's when the culture really started to pick up and change. The cultural atmosphere at the Derby facility is completely different now than it was just 18 months ago.

Once set-ups had been addressed, the company moved on to other issues, including the introduction of total productive maintenance (TPM), as well as creation of hour-by-hour charts for key machines and safety, quality, delivery, and cost (SQDC) boards throughout the plant. Every morning at 9 a.m. the management team walks through the plant and visits each station to review performance. This practice gives the managers an honest hands-on feel for what is happening on the shop floor and keeps their involvement in the lean transformation process in front of everyone.



Future Focus

While Draka is counting on standard work, hour-by-hour charts, 5S (Learn more about Progressive 5S by reading the expanded 5S discussion on page 4.), “pit stop” changeovers, reduced batch sizes, and set-up reductions to help reduce lead times, it's also looking at other areas where a lean approach can be applied.

With the pressing need of set-up reductions having been addressed, in 2009, Draka is focusing on inventory reduction. With the current global recession, the company expects that sales volume will not grow as it did in 2007–2008. Given the cost of raw materials, it makes sense to make sure that Draka keep on hand only what they actually need or can sell in a timely manner.

Additionally, the company is working on improving relationships with suppliers and making physical reductions in the amount of materials—the copper that goes into the cable

is obviously very expensive, as is the galvanized armor materials. The company is also striving to reduce work in process. So far, more recent events have focused on improving the planning activity for better clarity and understanding by introducing a sales and operations planning process to better align production to demand.

In February the plant introduced a pull system across the copper producing machines—a very successful event aimed at inventory reduction. The most recent kaizen event focused on line-side material supply. Because the plant site is so large, accuracy of inventory and moving that inventory around the site in a timely manner has been problematic in the past.

As Draka moves forward, it will continue to use lean to help increase productivity, reduce lead times, and cut costs while also focusing on sustainment. When the world economy turns around, the company plans to be in a good lean position to make the most of it.

Progressive 5S		
Step	Activity	Behavior
Sort	Red tag	Remove unnecessary items
Set	Assign and label	Designate a home for every item in the work area
Sustain	Return	Put it back where it belongs after use
Simplify	Productivity	Eliminate non-value-added effort
Standardize	Plant wide	Expand ownership to everyone to leverage the gains

Progressive 5S

What if, instead, we reviewed those five steps and refocused them into language that divides them into levels that indicate key activities and behaviors that needed to be performed? It would be significantly easier both to implement and to monitor results. In short, we could not only reduce the amount of time to progress up the ladder to full “compliance,” but also be able quantify results to aid in sustainment.

Progressive 5S can be broken down into its essence so that each step can be paired with the specific task or activity along with a key discipline or behavior that would need to be performed for that step, as the chart above illustrates.

This “plain language” approach offers one big advantage: it allows practitioners to concentrate on their 5S implementation one level at a time until the step is fully implemented and sustained. At each level, there is a clearly defined activity and a learning or behavior that corresponds to that activity. This makes the whole process more acceptable from the perspective of the workforce as well as more manageable from a plant-wide perspective. If people understand the required behaviors needed to perform at a particular level, it’s much easier for them to incorporate those behaviors a regular part of their routines,

which of course then drives 5S at that level. The underlying logic to progressive 5S is that successes and opportunities can be quantified at each step thus providing a clear roadmap as to what will be required to progress up to the next level. (To read the full white paper on Progressive 5S, go to www.tbmcg.com/Progressive5S.)

TBM Consulting Group, Inc. is the leading provider of LeanSigma® consulting and training services in North and South America, Europe and Asia. The company’s mission is helping manufacturers and service industry businesses create a competitive advantage to generate significant growth in sales and earnings. The company provides the strategic direction and hands-on implementation to guide cultural and organizational transformation.

> Productivity and 5S

The largest, single contribution to increased productivity is eliminating non-value-added time. A clean, well-organized workplace is therefore the foundation upon which all other lean activities and productivity achievements are based.

Implementing 5S has multiple benefits: it creates the proper environment for standard work, is a prerequisite to perfect quality, encourages visual control, helps identify waste, places a high value on safety, and promotes employee satisfaction. Historically, 5S, was derived from the Japanese words that describe the five steps to creating an organized workplace:

- Seiri: Segregate and discard
- Seiton: Arrange and identify
- Seiso: Clean and inspect daily
- Seiketsu: Revisit frequently
- Shitsuke: Motivate to sustain

This “classic” approach to 5S is often quite difficult to implement, audit, and sustain. When an organization takes the traditional approach to 5S, it tends to “mix and match” all five levels at once, which often leads to confusion and incomplete implementation of the program. Additionally, the subjectivity of audits still presents a significant roadblock.



TBM Consulting Group, Inc
 4400 Ben Franklin Blvd.
 Durham, NC 27704
 1.800.438.5535
www.tbmcg.com