

Feedback on recent activities

Problem Solving – 10 and 19 May 2011

Supervisors and team leaders attended a highly interactive and practical training sessions focusing on shopfloor problem solving tools and techniques. A big thank you to Allwear and Celrose who hosted the session in Northern KZN and eThekweni respectively.

Lean Simulation Games Workshop- 22 and 23 June 2011

During two half-day workshops held at Zorbatex (Northern KZN) and Ninian and Lester (eThekweni), Kelley Rowe introduced participants to the concepts of lean manufacturing through a hands-on production simulation. Participants experienced the power of lean production first hand and were introduced to the tools required for change.

Turkey Fast Fashion/Quick Response Seminar – March and April 2011

In collaboration with the CCTC, the KZNCTC led two study tours with Foshini and Woolworths to investigate the inner workings of Turkish manufacturers and design houses. These firms had retained their competitiveness in the face of low cost imports, because of their ability to quickly and flexibly respond to trends within Europe and beyond.

Presenting findings on 21 June 2011 at Makaranga Garden Lodge, Prof Justin Barnes described how the Turkish experience could be used as a model for the development of the South African manufacturing sector, which has similar input costs and access to a large, local retail base.

Sourcing Simulator Training Session - 21 June 2011

The KZNCTC has been using a sourcing simulator developed in the USA to understand the potential commercial advantage to South African retailers of using FF/QR purchasing models.

Following the presentation of the Turkey study tour findings, Prof. Justin Barnes conducted a Sourcing Simulator training session with the objective of exposing KZNCTC members to the sourcing simulator and demonstrating its application in respect of making FF/QR sourcing decisions.

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Upcoming Cluster Events in November

- TPM training
- CTCIP Peer Reviews
- CTCIP Management reviews

WCM POSTERS FOR SALE

To order, visit
www.kznctc.org.za



Energy Efficiency - March 2011

In recognition of the need to review the Cluster's approach to the energy efficiency programme, the Cluster consulted with Eskom.

Eskom's key initiative in support of energy efficiency is its Standard Offer Pilot Programme through which R30 million is available over the next three years to provide information on the implementation of energy efficient, cost reducing technologies (visit www.kznctc.org.za | www.eskom.co.za for more information).

Resource Energy Workshop - 15 June 2011

Members and non-member firms were invited to attend a high-level resource efficiency seminar at B&M Analysts.

Presentations were given on: (1) Eskom's Standard Product Package Offering and Implementation, presented by Clive Nicosia (Eskom). (2) NCPIC Industrial Energy Efficiency Project and Technical Training presented by Kevin Cilliers (Senior Project Manager from the National Cleaner Production Centre on the IEE Project).

For further information on the NCPIC offerings, please contact Cobus at Cobus@bmanalysts.com

Waste Water Forum - 20 July 2011

Presentations on this day included: (1) an update on industrial planning and growth in the eThekweni region, presented by Takalani Rathiyaya (Deputy Head: Economic development unit). (2) Waste water treatment facilities within the city presented by Sunil Farkisson (eThekweni water and sanitation unit). (3) Trade effluent and waste water minimisation - how to save money presented by Chris Fennmore (Manager-Pollution and Environment branch). (4) Rain water harvesting presented by Geoff Tooley (Coastal, storm water and catchment management).

International Study Tour to Turkey – August 2011

Rob Stewart (KZN CTC – Director) and Shaun Gannon (KZN CTC – Project Manager) accompanied Edcon to Turkey. They met with design houses, agencies and their suppliers to enhance Edcon's understanding of Fast Fashion and Quick Response models.

Factory Tour to Ramsay Engineering - August 2011

This factory tour provided participants the opportunity to visit Ramsay Engineering and discuss change management and team based manufacturing. A big thanks to Ramsay and their team for hosting this event.

Capacity Building Programme

The Clusters CTCIP programme, officially launched in February 2011, has been well received by the 8 participating firms: Allwear, Celrose, Durban Overall, Dyefin Textiles, Eddels Shoes, Lilanie Clothing, Prilla 2000 and Zorbatex. These firms receive expert support weekly and positive progress is being made.

In September, the programmes first peer review and factory tour sessions took place at Allwear (NKZN) and Dyefin (Durban). These sessions provided the opportunity for project champions at each factory to discuss the changes implemented, successes and challenges faced to date. The second peer review and factory tour session is due to take place towards the end of October 2011.

Please call Shaun Gannon if you are interested in joining the Capability Building Programme.

Welcome to our New Member

Crouch Footwear, located in Pietermaritzburg, KwaZulu Natal, is the South African based manufacturer and distributor of Jim Green footwear.

Recommended reading

Lean Thinking: Banish Waste and Create Wealth in Your Corporation by James P. Womack and Daniel T. Jones was published in 1996. The book addresses the revolution in manufacturing represented by the Toyota Production System of the Toyota Corporation of Japan. This type of manufacturing system is called a "lean system" and is contrasted throughout the book with the traditional "mass production" system of manufacturing epitomized by batch-and-queue methods. The authors argue that a lean way of thinking allows companies to "specify value, line up value creating actions in the best sequence, conduct these activities without interruption whenever someone requests them, and perform them more and more effectively." This statement leads to the five principles of lean thinking: Value, Value Stream, Flow, Pull and Perfection. Please visit the following link for more information: <http://web.mit.edu/esd.83/www/notebook/WomackJones.PDF>



Focus Article

Eddels Lean Journey

Eddels Shoes has been a longstanding member of the KZN CTC. This firm has been a pioneer in the lean thinking and application in the clothing, textile and footwear sector in South Africa. They have kindly agreed to share their learnings of their journey which were provided to participants in the KZN CTC best practice Study Tour earlier in April this year

“Moving from a traditional batch orientated method and mindset is no small task. We have learnt that our focus needs to be constantly on reducing waste and to eliminate the sources of waste that are baked into the process.

‘LEAN’ (by LEI’s definition) - Is the complete and thorough elimination of waste, to reduce the timeline from receipt of order to delivery. If you compress time, you are really improving performance. You are reducing cost. You are reducing investment. Therefore, if there is any activity that consumes resources, adds cost or time without creating value, it should become the target for elimination. Just the idea of reducing Inventory and WIP with all its direct costs of storage, insurance, taxes and the cost of money tied up should be incentive enough to draw attention.

All one needs to start thinking about is how to create continuous flow where ever possible, shortening distances travelled, reducing ‘fetching and carrying’, making what is needed and taking what is wanted. This encourages areas and departments, machines and people to come closer together which ignites a whole new dimension of social and technical dynamics. Traditionally our industry viewed labour as an ‘input cost’ - because that is all they were, and this was perpetuated by management’s attitude towards them.

- People were only practically skilled and even then not fully because of the functional, clustered layouts that determined specialised, segmented work stations
- All control was in management’s court, enforced by job descriptions and disciplinary codes and management’s autocratic approach

- People were treated like robots, in the sense that they waited for the next order or command and then disciplined if these orders weren’t effectively executed. This proved to be difficult to manage
- As time went on management invested in technology at the expense of empowerment and education, dehumanising labour further by introducing computer controlled, motorised tracks and conveyor systems into the industry
- This created a very strained and volatile environment. People became rebellious, absenteeism went up dramatically, quality was compromised and people worked at a level they could get away with and no more
- As a result, management needed to find ways to police and control an uncommitted workforce. eg:- video cameras in factories and in passages leading to toilets, more supervision to monitor workers individual performances and management tactics to achieve fear driven results.

To develop the ability of continuous improvement, a company’s real battle lies not in only restructuring the organisation or remodeling the system, but in changing individual employee’s behaviours and actions. Relying on authoritative relationships or management policies of plans and controls as a means to influence individual behaviour is neither a sustainable nor advantageous. Rather, it would be to develop the kind of management understanding, belief in their people and commitment that will encourage people to lift their expectations of themselves and others. This stimulates ‘valuable human asset’ to be more motivated, creative and willing to use their unique knowledge and individual capabilities to change something current into something that will give their company the competitive



edge and winning formula.

Traditionally the following areas have been inherently full of wasteful and time consuming practices. Here are some that we have worked on:

Materials

Over the years we have forged alliances with suppliers with whom we have a mutual understanding and trust. We have moved from a once a month delivery schedule to weekly deliveries and with some a twice daily service. They have learnt to adapt to our needs and in some cases they have moved their operations onto our premises under conditions that benefit both parties, e.g. free rent and electricity in exchange for good pricing and quick response in both product development and order quantity. There are other hidden benefits to this type of model and it has proven to be very cost effective. These relationships have reduced our stock holding dramatically and improved our cash flow, whilst simultaneously reducing the number of shortages and rejects.

WIP

Creating buffer stocks for 'just in case' is the result of a silo type, departmentally structured layout which is built around batch logic, where all machines or operations of a similar type are kept in one area. Multi skilling is discouraged and process functionality becomes the order of the day. As a result, inventory, lead time, waste and costs increase. Moving work in batches from operation to operation, section to section and department to department encourages the storing up of many batches for economical movement. Cycle times become filled with non value activities, broken processes promote unnecessary hand – offs and the need for indirect labour results in long through put times, high WIP and expensive logistics.

This becomes difficult to control and often requires a management structure with multiple decision levels to help combat the instabilities and variances. This takes away the responsibility of decision making from the people and ultimately leaves them feeling unimportant and demotivated.

'Just in time' is supplying only what is needed, when it is needed all the time. By adopting mechanisms and techniques that help stabilise and regulate the flow of work avoids over or under production and encourages people to 'pull' work through the process rather than

push it into the next operation or section. People feel confident and the spirit of empowerment helps generate an enthusiasm for their work teams and organisation.

Labour efficiency & effectiveness

Poor utilisation of manpower can be traced back to a point efficiency, standard minute value costing system, where emphasis is on machine optimisation and 'volume per operator' to recover investment and cost. This only has a positive impact on a direct cost per item perspective, which makes up less than 1% of the total lead time. If you only optimise a step in your value creation process it can deliver a part or component faster than the rest of the organisation can deal with. Two effects seem to develop: - Firstly, that part runs dry on input which then triggers an 'over compensation reflex' causing excessive ordering, resulting in amplifications up through the provision stream. Secondly, the output of that part floods subsequent process steps which increases all the other real costs associated with overproduction and the waste it causes such as re-cuts, rework, handling, sizing, sorting, checking, moving, waiting. This sub optimisation thinking is one of the biggest reasons why companies do not see the true flow in their process. The emphasis and single minded view of fully optimising a machine or operation prevents them from fully understanding the principal of pull and flow.

In a cell the team's objective is to think in terms of flow rather than focusing on a single operation or 'job'. In other words, operators should be allowed to handle multiple processes within takt time, whether it is one, two or three and a bits worth of work. The less stages or jobs there are the less starting and finishing there is, with fewer hand over's. This approach tightens the sequence and integrates the process reducing people, WIP and lead times. It also reduces the chances of rejects and rework. In "The Goal", Goldratt talks about the danger of segmented work stations. He mentions that the longer the lead time the more inter-dependency you will have which increases the fluctuations within a sequential process. Linking and ratcheting of operations and people creates an urgency and momentum that is more effective and efficient than functional layouts that create non-value and inventory before and after and within operational cycles.

Once you begin the adventure of creating flow there will be a natural need for simplification through the development of standardised work streams that will encourage less and less non-value as people in their cells start to recognise and discover the wastes and work together to eliminate them through genuine problem solving thinking. The longer people work together in a self directed team, the more attuned they become to one another's skills and abilities and the better equipped they are to handle the constraints in the process.

There are some methods and techniques we used to help identify and eliminate waste –

1. Cellular manufacturing
2. Pull – scheduling (kanban & FIFO lanes)
3. T.Q.M – pattern tests, test drives, internal and external problem solving, internal audits and QA
4. Continuous Improvement – Overall factory A3 report; A3 process improvement project reports; A4 action plan reports; efficiency reports and graphs (weekly); absenteeism graphs (weekly and monthly); rands/pair graphs (monthly); WIP graphs (monthly)
5. Group development - Morning communications (up to half an hour if needed); Team sessions on life skills, team dynamics, work ethic, self discipline
6. Speed and flexibility - very quick style changes; multiple streams for balancing work mix according to actual customer needs.

At the outset, cellular manufacturing seems simple, but one soon discovers how in depth and sophisticated the interactions are between the people, machines and operations. We trained people in groups of four to five, four hours a day, getting their minds around the new system, as well as training them on the practical aspects. In these sessions, the groups chose team captains. Daily interface meetings were held to try and regulate the change process. It was vital for us, as management, to ensure that the skills needed to resolve conflict, communicate effectively and make team decisions, were learnt quickly, so that the team could build trust and bond. This was essential for them to work through the various stages of group

development. This took a great deal of time, effort and training, but in the long run was very rewarding.

When forming the cells, we set them up around the slowest operation. This created a natural pace for that operation, which improved its output. Once the cell members completed their orientation stage, it became necessary to analyse the constraints in the cell to see how the team could further improve their output. This was done by finding ways to speed up machine cycle times, monitoring how operators received work and how they positioned themselves to perform the task as ergonomically as possible. The operations were balanced by timing each work element, joining the quicker ones together and giving members other tasks. As operators in the cells became multi-skilled and more output-oriented, they began to understand the benefits of continuous flow. A limit was initially set on how many pairs of shoes were allowed between workstations but the teams did away with these buffers, and instead pulled pieces through the cell to achieve optimum output, creating extra capacity. This available capacity allowed for more generic tasks to become integrated into other operations and liberated semi-skilled labour to become more skilled and to open their own cells. These changes, although isolated, had made considerable improvements in throughput times and labour efficiencies, encouraging an attitude of maturity and willingness. They were able to use their own judgment, which created a sense of responsibility and achievement, making them realise the integral role they played in the organisation. As time passed, the teams grew in strength and maturity, reaching levels of performance that would otherwise seem impossible to achieve. These team building aspects negated the need for supervisors of sections and only required team leaders to audit cells in order to improve standards, coaching members to reach these new standards.

We implemented cells throughout all four departments, from clicking through to finishing. This supported the smooth flow of materials in the departments, ensuring few delays and limited movement, therefore speeding up production and reducing the amount of WIP on the floor. By integrating operations, and multi-tasking the workforce, we were able to achieve flow within departments, which eliminated the wasted time queuing in batches.



In our industry the sewing department has always been considered the most expensive area and is often outsourced to CMT operations, but it became our most profitable department. Traditionally these departments fluctuated between 50 – 90% efficiency and were sectionalised into clicking, splitting and stripping, marrying upper components and linings – pre-closing, decorative stitching and punching, blocking and sticking, assembly stitching, topline stitching and final closing and trim attaching - with each of these sections having to be supervised. Once we integrated all these sections and departments into one, formed work cells and multi skilled the people, we achieved 120% in the cells initially, and have subsequently improved the efficiencies to an average of 140%, sometimes reaching figures of 180% on products that are standardised and have good volumes - this is unsupervised and un-incentivised. Previously the lead time was around 15 days but we managed to reduce this to around an hour on our more popular styles. This has had a huge impact on our cost per pair recovery rate on core products, with monetary gains of up to 40% in these areas.

Further downstream the process was broken up into four stages, namely: molding, assembly, lasting and finishing. On the conventional sequential track system, output reached 800 pairs per day with 50 people – effectively producing 16 pairs/head - in just one cell after the changeover; we are now producing 70 pairs per hour with 24 people, resulting in around 600 pairs per day with potential to improve. The “pairs produced per head” figure has increased to 25 pairs. Also throughput has improved dramatically in this area, from 3 – 4 days to less than an hour, guaranteeing our customers improved flexibility, reliability and shorter lead times.

Although our production lead time had reduced from around a month to a week, I still believed that we had only achieved point efficiency. We still had three completely separate departments and it was still difficult to bring together the various components required for assembling a pair. This created a large build-up of work-in-progress between stages in the plant, causing bottlenecks. I noticed how difficult it was for my management to co-ordinate the work through the plant and how much time they spent paging through WIP reports, re-scheduling orders as customer requirements changed and running between departments.

We formulated a production strategy deployment plan which helped guide us in collecting information, analysing the products, measuring the processes and determining factory lay outs and product streams.

These observations led us to the next stage - which was to move towards a fully-integrated pull system. Eddels had a massive product variation, with up to 1000 different styles and around 130 different elements of work performed on one shoe - we needed to simplify the business without too many side effects. I came across a formula recommended by the LEI, to conduct a style to volume ratio analysis and the results were quite astounding. This exercise proved that only 5% of the product range accounted for 50% of the sales volume. We needed to set up a repetitive cycle for these products, which we called “Core styles”. The remaining 50% of the volume was analysed and split into groups and methods of standardisation were used to establish product families. Some were moved into the “Core styles” without interfering with the flow. What really surprised us was that in the last stream, 30% of the product variation accounted for only 1.4% of the volume and we all agreed that this demanded a huge amount of money, time and effort. We could now reduce our number of styles without affecting our sales volume. This in turn would reduce our amortisation costs, save on overhead expenses and simplify the managing of the factory.

We realised that we had two very distinct sides to the business: one high volume with very similar products, and the other low volume with high product variation all running through the same plant undermining quick response and profitability. For our independent low volume orders, we set up small independent units on our premises. We then offered these units to individuals who had been affected by prior retrenchments, but had the ability and willingness to run their own business units. These entities have variable hours governed by weekly demand, their own wage dispensations and utilise our resources and utilities.

In more focused “Core Stream” we drew up value stream maps, continuous flow project A3's and job element and work station A3's which aided in process improvements, creating space and moving all departments together under one roof. This made it



possible for each production point to signal its needs to the previous production operation or simultaneously when running parallel, helping to create stability and consistency and to level the production in the stream. This is far more stable than trying to 'push' in and co ordinate multiple schedules sent to each department from a centralised planning point. Inevitably, material inputs go wrong, assumptions for lead times are not met, where re-cuts and quality issues hold up expected job lots and work schedules.

We now needed to achieve a fixed production schedule. This was done by collecting past call off figures, examining the trends over a given period and establishing weekly averages. (a full week planned into factory before call off – fill in of sizes planned if required, emptied out and refilled according to a mean running average by the end of following week). This made it possible to make the same styles, in a similar sequence, in the near same volume, on the same equipment, every week.

We set up a fully-integrated value stream with fixed quantity kanbans in the form of six 1 hour trolleys in order to achieve “economies of repetition” - resulting in less fire fighting, less waste, delivery of materials and components to match the cycle, lower stock levels and a 6 hour throughput from cut to box. The people also found the system less stressful, more visual and more exciting. This allowed us to simplify the running of an unfocused factory.

As a result of our relentless effort to reduce waste and create value, we have successfully achieved:

- Reduction in floor space
- Increase in productivity
- Reduction in W.I.P
- Reduction in cycle time
- Reduction in overtime worked
- Reduction in inventory
- Improvement in throughput, and
- Improvement in delivery.

And most importantly, a happier more involved and willing work force.

Written By Mark Veness, Eddels Shoes

