COMPANY OVERVIEW

COMPANY WEBSITE
www.suireng.ie

Established in Ireland in 1984, Suir Engineering is a Mechanical & Electrical services provider and part of EDF Energy Services group of companies. Suir Engineering has offices in Dublin, Waterford, Denmark, London and across the UK. Suir Engineering has 1000 directly employed staff.

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

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Since 2015, Suir Engineering has continuously increased its investment in its strategic and company-wide improvement initiative entitled "Suir Way" (see Figure 1). In 2015, Suir partnered with Lean Construction Ireland (LCi) to sponsor and organise an LCi Community Event entitled "Lean as Ideology & The Ability to Change". In 2016, a number of employees were supported on higher education programmes to Black Belt level competency in Lean management. Between 2017 and early 2018, Suir secured approval to undertake a "Lean Transform" project supported by Enterprise Ireland. Since April 2018, Suir has been rolling out a new process for managing the entire organisation. This has necessitated a significant amount of both off-site and on-site training, and the company is now seeing some large step-change improvements on how we manage our projects. This case study presents an overview of this new management system and some of the benefits realised as a result.

Figure 1. Suir Engineering's Lean Journey to date

The construction sector has significant productivity issues, with several reports identifying substantial non-value-add (NVA) or "waste" in its processes. Suir Engineering, along with the wider construction sector, is currently facing the challenge of delivering projects on ever-tighter schedules and budgets. Clients, who themselves are increasingly familiar with Lean thinking and practices, are demanding that their contractors follow suit in the pursuit of waste reduction. Whilst concerns about the levels of waste in construction are nothing new, the destructive impact of the recent prolonged recession has made it clear that, even as the economy recovers and construction activity increases, business as usual can no longer be accepted in construction. Lean Construction offers opportunities that allow companies to thrive in any economic conditions, and Suir Engineering has made a strategic commitment to the adoption and implementation of Lean thinking and practices internally and on its capital projects.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Build-up to Rollout of the Suir Way

In 2017, Suir Engineering Senior Management recognised that our way of working needed to be improved in order for the company to grow. We realised the need for change and to enhance the company performance. Direct Labour accounts for 42% of our cost base and we needed to improve on and become more efficient with this cost. Quality resources across the sector were difficult to find and thus we needed to change our methods, optimise our internal expertise, and grow from within through learning across the business. Where Lean tools were adopted on other projects, outcomes were quantifiably improved. The Suir Way would ensure the company had more robust systems, aligned processes, and personnel equipped with the right tools and skills to deliver future growth. If we didn't change, we would fall behind our competitors. This case study broadly details the main elements of our initiative to create and roll out the Suir Way.

Lean Management System

- Visual controls – daily measurement boards, at all levels of the organisation.
- Standard accountability – built into our visual boards.
- Leader Standard Work – including senior management conducting Gemba Walks to monitor the health of the management system.

Lean Tools

- 5S.
- KPIs.
- Mapping – processes and value streams.
- Standard Work.
- PDCA.
- A3 Reports.
- Pull Planning using Last Planner® System.

Lean Behaviours

We identified the following as our ideal behaviours: Authenticity; Curiosity; Respect; Patience; Perfectionism; and Humility.

Our case entry in the 2018 LCi Book of Cases detailed the substantial quantitative improvements made on one of our construction projects using Lean tools. However, a Lean ecosystem needs more than just the use of tools. As was evidenced in our main learning takeaways of this case study, it is very difficult to sustain focus on improvement activity without changing our management system. At the time, we knew that we needed to invest a lot more resources into education, Lean training, and the development of a Lean culture and systems to ensure that our level of improvements wouldn't plateau or regress. We knew that our strategy was lacking and that if we didn't change something we would never achieve a sustainable and "True-Lean" trajectory (see Figure 2).

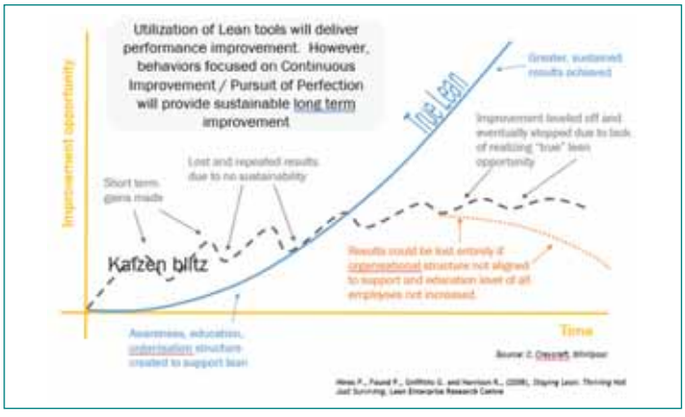

Figure 2. "Kaizen Blitz" Approach Versus "True Lean" Approach

In the subsequent months, we engaged with external consultants who completed an extensive "Lean Maturity Assessment". As part of that assessment, external experts interviewed in excess of 40 Suir employees, one-to-one, getting a cross-section from across the entire organisation. The positions of those interviewed included departmental managers, support staff, project management teams, tradesmen, general operatives, and all the company's directors. This "deep dive" into Suir's internal business processes informed the consultants and company as to where investment of resources would be most fruitful – namely on the three core elements of a Lean Management System (LMS) (see Figure 3):

i. Visual controls – daily measurement boards, at all levels of the organisation.
ii. Standard accountability – built into our visual boards.
iii. Leader Standard Work – including senior management conducting Gemba Walks to monitor the health of the management system.

A team was created to design visual control boards which would subsequently be trialled on a number of our project sites (see Figure 3). The theory behind using measurements and visual control boards is that we keep our finger on the pulse with regards to our performance. This enables us to quickly identify a drop in performance and other problems. It can be equated to the scoreboard and statistics in a match. Are we winning or losing? Did our actual results equal what was expected? Are our processes healthy or breaking down and laden with waste? And if our processes are compromised, what do we need to do about it?

Once we decide that we are doing something, the next element of the LMS ensures that we act in a timely manner. We want to eliminate conditions that enable the paying of lip-service over a drawn-out period of time, eventually fading away without

Figure 3. The Suir Way Lean Management System in Operation

meaningful improvement. Every relevant problem, opportunity, or action needs to be logged (with specifics) and assigned to an individual with a corresponding date of completion. This ensures that it will be followed up on. It is essential that these boards are appropriate for their particular area and meaningful for the people using them. Figure 4 shows the structure of the Tiered system, some of whose principles include:

- The Tier system is designed to involve everyone and get them engaged in the success of the business.
- Clear and aligned goals at every level of the business, tying into the overall organisational strategy.
- Everyone understands their personal contribution to site goals and expected behaviours.
- Any problems or issues can be managed locally or escalated to the next tier for support.
- There is a standard work approach to all tier meetings across the site.
- There is clear escalation and feedback pathways between tiers.

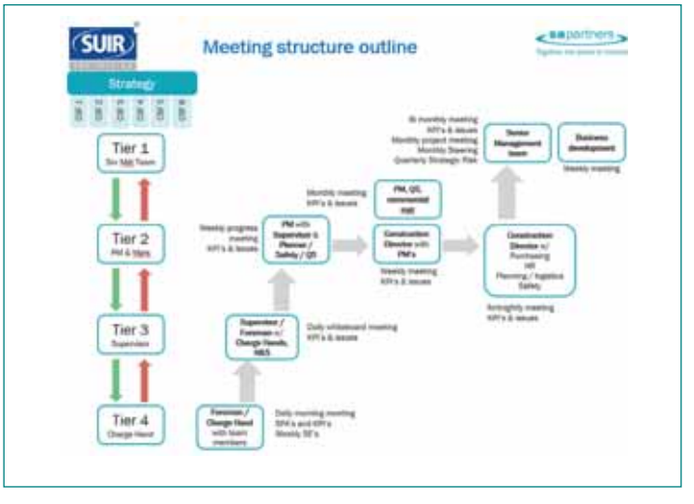

Figure 4. The Suir Way's Lean Management System Structure

As stated previously, for a large-scale improvement initiative to be sustained, education of the workforce is critically important. Therefore, in addition to creating and trialling the visual control boards, we also conducted extensive amounts of training of our staff. We recognised that, apart from a few isolated instances, there were very low levels of Lean competencies in the business. We therefore needed to deliver a number of training courses that would improve the knowledge, skills, and attitudes of our workforce. Some of our training courses included Lean awareness, Problem solving, Workplace organisation (5S), LMS Tiered Management System, A3 problem solving report writing, and Behavioural and Gemba training for senior management.

Figure 5. Lean Training for Suir Engineering's MD, Michael Kennedy, and Senior Managers

At the time of writing, we are rolling out the training and management system to 18 of our project teams at different locations throughout Ireland with another 9 already picked out for later in 2019. The rollout typically starts with several off-site classroom-style training days, followed by a Suir Lean Champion visiting and supporting the site team to help embed the new processes, systems, attitudes, behaviours and audits. Integral to this is training not only on the Lean tools, but the concepts behind the tools – the "How-To" knowledge of tool deployment. Additionally, there is particular focus placed on the criticality of teamwork:

- teams with divergent knowledge and expertise can outperform homogeneous teams – when they share and integrate their knowledge.
- divergent goals can broaden the scope of a team's accomplishments – if value-claiming behaviour doesn't crowd out value-creating behaviour.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The benefits of the LMS are that it enables us to:

- Align everyone in the organisation through our tiered management process.
- Identify issues, roadblocks, and impact for our business and people.
- Give everyone a voice.
- Improve communication at all levels of the business.
- Deliver on our critical success factors (CSF).
- Enhance company performance, efficiency, and profitability.
- Have a safer and more engaged workforce.
- Build brand profile.
- Continuously improve and learn.
- Improve on client engagement.

Our 5S system helps us create standard working methods whereby we set up the workplace in a more organised manner. Bringing material and equipment closer to the workface, using higher quality and standardised tools, and putting controls in place to ensure they are maintained result in the elimination of many of the 8 Wastes. This practice allows workers to be more efficient with less trips to stores for materials, and makes up-to-date information and drawings available locally.

One of the major changes is in our data collection methods. We would have always collected data from our sites in term of productivity, but now we also track and record waste and DOWNTIME. Tracking of the productivity and wastes allows us to have a clearer picture of where we need to focus our improvement efforts. We mapped and improved many of our processes as a direct result of investing in improvement activity, with many of our improvement projects delivering monetary savings ranging from ?5k to ?20k. A 20-year Construction Manager put the improvement as simply as this: "The way I've seen it help me the most… I used to get about 40 phone calls during the day from our guys, now it is only 20. The guys all know what's going on".

Broad Accomplishments

- Improved planning of works by supervision.
- Over 400 trained in Lean Awareness to date – remainder being trained in 2019.
- Reduced reworks on site which improves customer satisfaction and productivity.
- Minimised site material shortages and improved workplace organisation.
- Improved workforce engagement.
- DOWNTIME quantified and addressed at source.
- 5 Lean Champions actively trying to make change happen.
- Reduced requisitions to procurement resulting in increased buying power and maximising supply chain performance.
- We completed the first paperless handover of a capital project in Ireland through our EIDA System which ensures we are at the forefront of new ways of working through technology.
- Lean Office roll-out training commenced March 2019.
- 23 sites rolled-out up to April 2019.

Lessons Learned

- Change is hard – the education route is slower and expensive, but it is critical.
- Group Think – a diversity of perspectives and resources is needed for a finely-tuned Lean system to run smoothly and recover from interruptions.
- Psychological Safety:
  - Fear in the industry – What vs Who – Troublemaker (subtle fear of ridicule).
  - Empower your team – Lead by example – Leadership theory.
- People being defensive when hearing about a problem in their area – feeling that they need to have the answer.
- PDCA – universal to everything we do – use your 5-step check.
- Measure what you want to improve:
  - Removes a lot of waste and problems from our processes.
  - Helps us plan better.
  - Enables better communications.
- More knowledge sharing.
- Important to leverage from experts – can save you time and from going down the wrong rabbit holes.