

COMPANY OVERVIEW



COMPANY WEBSITE
www.joneseng.com

Jones Engineering has been in operation for nearly 130 years. Its core services include Mechanical, HVAC, Process Piping, Electrical, Instrumentation & Controls, and Fire Protection across all sectors. Additional services include Maintenance, Bio-Energy, Technical Support Services, Geo-Surveying, Specialist Lift Division, Fabrication Facilities and Comp-Ex Training, (competency in the selection,

installation, inspection and maintenance of Ex apparatus in potentially explosive atmospheres). Working in 14 countries across Europe and the Middle East, Jones Engineering employ over 3500 people and has an annual turnover in excess of €650 Million. Jones Engineering is committed to the implementation of Lean Construction thinking and practices across all elements of its operation and supply chain.

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

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Whilst Jones Engineering began from humble beginnings, it has now grown into one of the largest M&E contractors in the country with over 3500 staff. Along with this size of company comes the huge amount of plant and equipment required to carry out the large-scale projects the company undertakes. Jones Engineering currently has several million-euro worth of plant and equipment available to its project teams.

Before Jones Engineering adopted Lean Thinking, there was little or no record or control of the massive amount of plant and equipment in its arsenal – in fact, the company didn't accurately know how much plant and equipment it actually owned. Crews would carry gear from project to project or request more on an ad hoc basis. A plant management system was required to control the vast amount of equipment the company owned.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The Group's objective is to deliver quality work through quality people. Each of the operating divisions of Jones Engineering is certified to the International Quality standard, IS EN ISO 9001:2015, and is accredited with "Safe T Certification".

With an operation this size, a massive amount of plant and equipment is required to keep each project flowing. Until recently, there was no proper record of plant throughout the Group, and an Excel file was used that had to be manually updated and was dependent on information being passed from sites. Transfers from project to project were seldom recorded. This led to a lot of errors on the manual system with several items of plant being entered more than once on the log during site audits. It was virtually impossible to put a value on the amount of plant and equipment the company owned. Crews on projects were often hoarding tools, plant, etc., in job boxes and stores waiting for the next project to start. There is an urban myth in the company that during an audit on one of the sustaining projects more than 70 individual 9" angle grinders were discovered on a site that had only 28 employees. A lot of employees had the notion that when they were given a new drill, welding plant, etc., it was theirs to keep and not to be made available to other project teams when a project was complete. Another issue that arose out of this situation was that calibration and certification dates were missed as the company was dependent on the user to inform it when these tests were due.

In 2014, Jones Engineering's Lean Department was set up. This new method of thinking and learning led to the company looking at all of its different systems of work,

including Standard Operating Procedures (SOPs) and Quality System Procedures (QSPs). One of the QSPs (QSP 12) related to the control of plant. With the then current state of plant control, this was one of the first areas that needed to be addressed. The Lean Department began by looking at how Toyota became the largest and most efficient car manufacturer in the world due largely by its drive to achieve zero downtime on production. This was achieved by combining technologies with programs that focused on equipment performance combined with asset management.

Lean principles eliminate waste by reorganizing the plant into lines, or value streams, where work cells and assets perform certain tasks. This approach removes non-value-adding activities from the system, leading to more efficient processes".

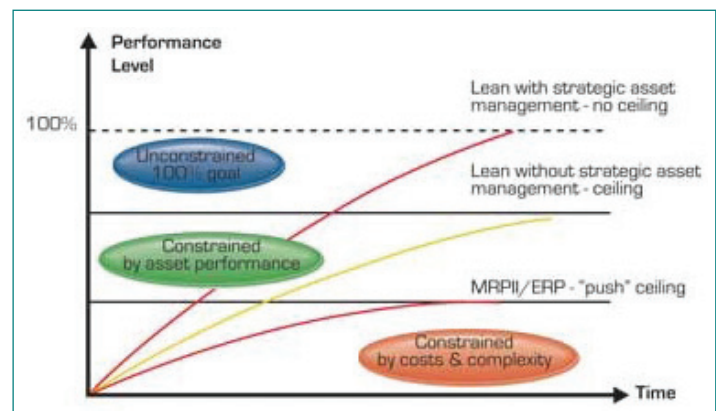


Figure 1. Strategic Asset Management Unlocks Asset Performance & Raises Achievements

Several methods of recording plant were trialled by the team over the following 12 to 18 months ranging from metal tags with barcodes on them to labels with QR codes. Problems arose with the QR codes as they wouldn't scan if damaged. There was also the problem of scanning itself. Handheld scanners were not always practical or even possible to use in the field. Working closely with their IT department, the project team investigated different systems with the goal of developing their own internal system of plant tracking. But the time delay here was a major issue.

Hilti, one of the largest manufacturers and suppliers of power tools, anchors, fasteners, etc., had recently launched its "On!Track" asset management system for the construction industry. In its promo, Hilti state that "At the touch of a screen or the click of a mouse, ON!Track tells you exactly what equipment you have, where it is and who is using it. When items need maintenance or calibration it alerts you. Our Bluetooth enabled smart tags offer a fast inventory check and tells you which equipment is nearby. When it's time to renew training or certification it tells you in advance. With this critical information at your fingertips, it's simple to keep your work on track, profitable and fully compliant". They go on to tell us how it works: "Rugged barcode tags on your equipment communicate with cloud-based asset management software that runs on mobile or desktop devices – meaning you can find your assets in an instant".

This new system seemed to fit the requirements Jones Engineering was looking for. Armed with 200 Hilti tags, trials were run on several sites around the country. The results and feedback were positive and a decision to roll this system out across the whole group was made. In June 2017, a new Group Plant Department was set up with the responsibility of controlling plant and equipment in all companies across the Jones Engineering Group. This consisted of a Plant Manager and several Plant Administrators.



Figure 2. Tools Displaying Barcode Tags

The Plant Department began systematically visiting every job site, project, and workshop/stores that Jones Engineering had a presence on. Every piece of plant and equipment had a barcode tag fitted and the following information was recorded on the database:

- Barcode Number (Scan Code).
- Alternate Number (Jones Engineering Plant Number).
- Serial Number (Manufacturers Unique Number).
- Product Template.
- Asset Group (Drills, grinders, Saw, Welding Plants, Site Vehicles, etc.).
- Status (On site or In Transit).
- State (Operational, Broken, Stolen, Retired, Lost).
- Description (Ladder-Podium, Ladder-Straight, Ladder-A-Frame, Ladder-Platform)
- Model.
- Manufacturer.
- Managed (Owned or on hire).
- Current Location.
- Default Location (Company in the Group).
- Responsible Employee (Person to whom an asset is assigned).
- Owner (Location Manager).

This proved to be a massive undertaking with over 190 live projects and 9473 pieces of plant and equipment being tagged and logged on the new plant management system. Over 300 members of staff were trained up on the use of the system and the Plant Department even travelled to the Middle East to set up the system and train the personnel out there. This new system proved an immediate success as all that was needed to use it was a smart phone. Tags could be scanned using an app and no handheld scanners were required. The Plant Department put together a short PowerPoint presentation showing users of the system how to add and transfer assets using the mobile phone app.

The new plant management system gave full visibility of what was on every project and who was responsible for it. It had the ability to set alerts for calibration and certification of plant. It also enabled the company to put an accurate value of its assets on any site at any given time by systematic audits being carried out using the app.

Current Location	Asset code/Emp ID	Manufacturer	Model	Description	Alert Type	Alert Message
Pfizer Grange Castle	21017324	J & L Lifting Eur...	Webbing...	Sling Endless	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21108841	Chain & Rope S...	Webbing...	Sling E&E	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	20998366	CraneCare Ltd.	WBS We...	Sling E&E	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21017398	GT beam trolley	0.5 Ton ...	Beam Trolley	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21017384	Kratos	FA Self-r...	Self Retracting ...	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21017399	Eller	5 Ton Be...	Clamp-Beam	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21017338	Lift IQ	Ston Cha...	Chain Block	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	21108838	J & L Lifting Eur...	Webbing...	Sling E&E	Service Due	Asset service is due in 22 days
Pfizer Grange Castle	50414869	GT	Beam Cl...	Clamp-Beam	Service Due	Asset service is due in 22 days

Figure 3. Plant Management System Showing Service Alerts Due

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Following the transition onto the new plant management system and some initial teething problems, the majority of users are now fully conversant with its various functions and operations. The system has given the company improved accuracy and accountability with each plant item assigned to an individual supervisor/user. That accountability has two

specific benefits:

1. Plant items are returned promptly when not in use.
2. Each item logged against an individual commands better attention and a heightened focus on security.

Complete visibility across the entire organisation is also a big plus. In the past, if a supervisor needed a piece of plant

they could check with the central plant stores to see if one was available, and failing that, they had to make a phone call to the person who managed the original plant list to see how many of those items we owned, where they were last recorded, and then start making phone calls – not an efficient process. Now, they simply open the application on their mobile phone and at a glance can see which project the items are located on. With a little knowledge of how busy each site is, an individual can track down an available piece of equipment very quickly and arrange for it to be transferred to them without delay.

Transferring a piece of plant is vastly simplified through use of the app and built-in scanner on each individual's phone to record the identifying plant number by pointing and clicking at the bar code on the tag. The simple operation of the app means the company now has a much higher compliance rate among plant users. The previous system of writing down the number, then having to enter it into an email, and forwarding it to someone else to complete the transfer was double-handling at its best.

Scanning the equipment tag avoids potential typos which used to involve frantic phone calls or emails for plant numbers to be rechecked as they did not match items on the database. The company is also seeing less downtime among the crews in the field due to locating or waiting for plant, and also less money wasted hiring or purchasing additional plant as a result of the visibility. Previously, if a supervisor could not locate a plant item easily it was safer to either hire or buy a new one as opposed to having his team held up.

Statistically, the company found that across the 13 most frequently used plant categories, there were almost 4000 assets and more than 3000 transfers in the twelve months of 2018. Based on the purchase price of new assets, if people did not have the visibility of plant locations and went ahead and bought new items instead of transfers, they would have spent in excess of €7Million. This highlights the scale of potential savings possible due to an increase in plant transfers.

Another benefit that Jones Engineering sees with the new database is that it now receives automatic notifications when equipment calibrations are due. Based on the expiry date, a reminder email is sent automatically to the plant manager and also the person the asset is assigned to. This gives them time to arrange re-calibration and removes the human element of someone having to run reports manually or constantly check the database to keep up to date.

An unintended consequence here has been the development of an internal local calibration capability for the welding equipment. The company now has a dedicated maintenance team of direct employees who have received specific calibration training and are certified as approved to carry out this work to calibrate both orbital and manual welding plant.

This may not seem like a big win, but when you consider that across all operations the company has in excess of 400 welding plants spread across more than 100 domestic projects as well as 50 sites overseas, having control of this internally gives the company more flexibility through use of in-house expertise. A small amount of initial investment was required to purchase specific test meters and load banks etc., but this has given the company the ability to be self-sufficient and

minimise potential delays as they are not tied to availability of third-party calibration expertise.

Other improvements have become apparent since the process began and one of these has been with the PA Testing process.

The team noticed that this process could be improved by purchasing some new label printers where a variety of label colours were available as standard. JEG only had one label colour with its previous label printer. By using a different colour label for each three-month period, the new coloured labels now provide a good visual indicator that equipment is within its three-month calibration period even without having to check the tag for the calibration expiry date.

Again, some minor investment was required, but the company's existing printers were nearing end of life anyway as the vendor had phased out this particular model, so changing to more modern equipment was more economical and efficient.

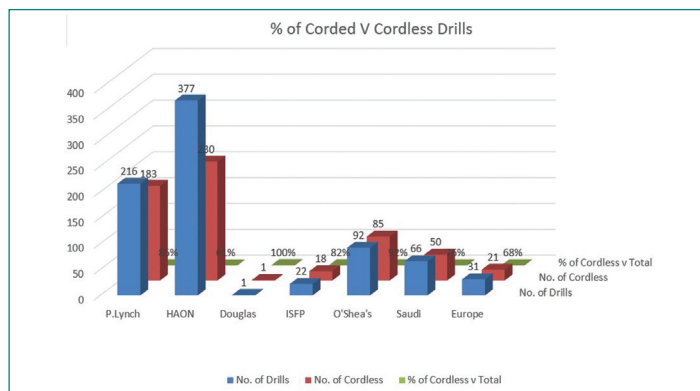


Figure 4. Percentage of Corded Versus Cordless Drills in JEG

Analysis of this data is really powerful and is giving JEG insights into other areas where efficiencies can be made. For example, Figure 4 shows the comparison between corded and cordless drills across the group. Improving cordless numbers means time savings on site, no trailing leads, reduced PA Testing, etc.

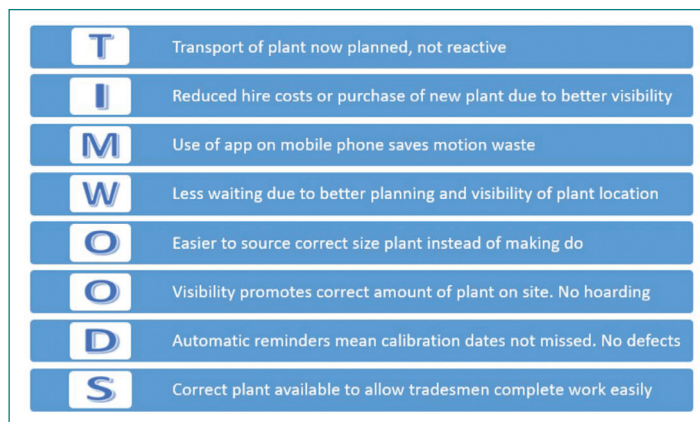


Figure 5. TIMWOODS Plant & Equipment Waste Reductions

In summary, implementation of the new plant database has improved overall efficiency in all areas where plant and equipment are used within Jones Engineering, and utilising the TIMWOODS model has reduced waste in each of the eight waste categories.