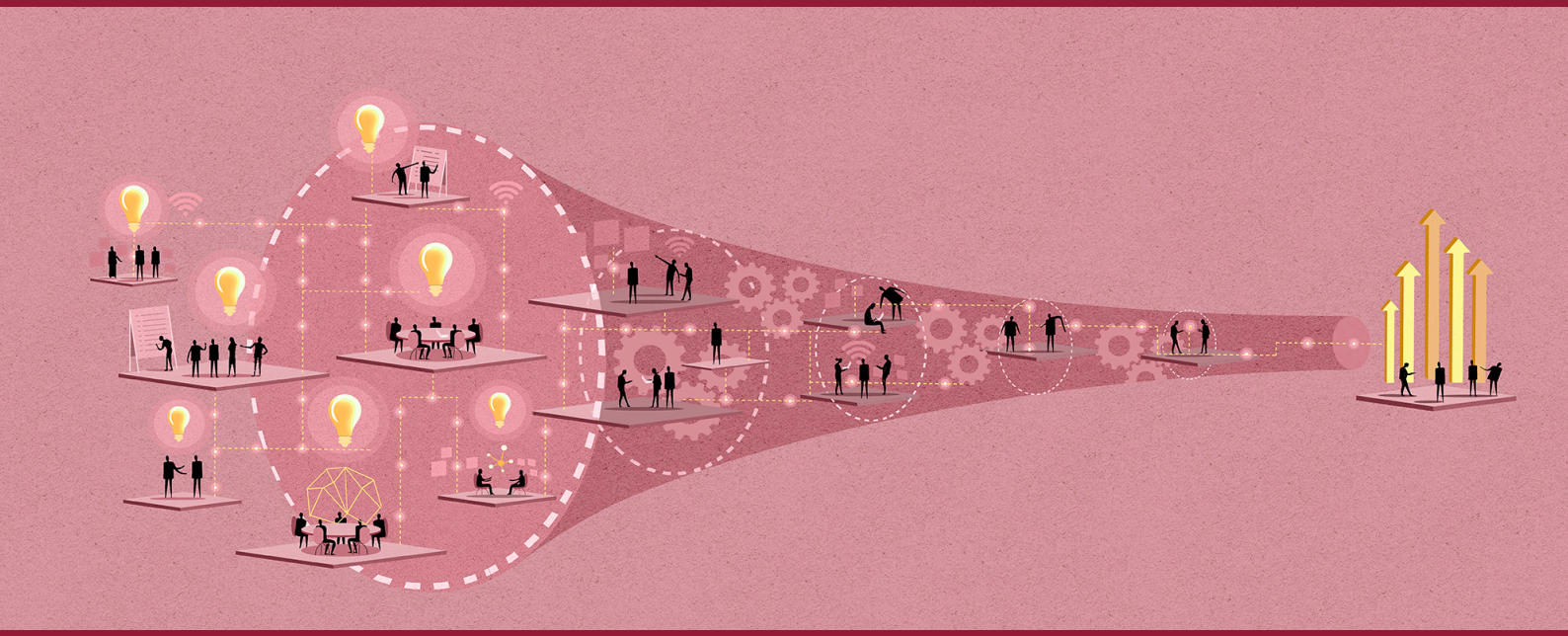

LEAN ELECTRONICS

FP

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BACKGROUND

From Fleming's invention of the vacuum tube in 1904 through the semiconductor and the microprocessor revolutions, electronic technology has been changing at a fast pace. Electronic products are becoming more and more integrated in everybody's life: it is estimated that there are on average 24 home appliances per household in the USA, computer speed doubles on average every two years, 80% of the global population have access to mobile phones, a third of the world's population have access to the internet and one out of five cell phones is a smart phone. Such a fast changing market with constant global competition arises the necessity of maintaining nimble yet sturdy processes that can deliver both the flexibility and the quality needed to deal with these challenges, while relentlessly driving costs down. By applying Lean, whether in automated or manual assembly processes or in high or low conditions of volume and variability, these disparate goals can be achieved.

CHALLENGES

Fast changing market dynamics and aggressive competition from emerging countries are putting competitive pressure at the highest levels, thus generating the need for shorter product development times, more innovative products and better service at cheaper prices in the market. These results can be achieved through the implementation of Lean principles to remove inefficiencies and waste from processes.

Waste can be difficult to spot in highly automated environments such as assembly lines using SMT (Surface Mount Technology) or wave soldering processes. Nevertheless, just because it is harder to spot does not mean it is not there, and through our experiences in the application of Lean in such processes we understand that there is always room for substantial improvement.

Another challenge in electronics is dealing with supplier lead times that are generally longer than average compared to other industries, making it difficult to react efficiently to production plan changes. We have first-hand knowledge of companies facing similar challenges that embarked on their respective Lean journeys with their suppliers leading to substantial quality improvements, lead time reductions and savings for both parties through our Supplier Integration Programme.

A final challenge is the relatively short lifecycle of products. Applying Lean in the design phase helps you embed quality, and designs sustainable assembly processes from the start, maximising your returns.

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FOCUS AREAS

Whether your business operates in an OEM (Original Equipment Manufacturer) or in a consumer market, Lean always starts with focusing on customer's needs to effectively improve quality and lead times. Focusing on these two cornerstones of customer satisfaction improves your production, which in turn leads to cost savings and more flexibility. We use a holistic approach that combines Lean principles and re-engineering in which we aim to improve your entire production system - not just individual process steps.

INVOLVING ALL DEPARTMENTS WITH A JOINT GOAL OF REDUCING WASTE CAN PRODUCE AND SUSTAIN LONG-TERM IMPROVEMENTS:

DISTRIBUTION

Re-definition of the distribution network for consumer markets to achieve a wider presence in the market at a lower cost.

PRODUCTION

Increase the output of the production lines using fewer resources, increase machine availability by reducing set up times for automatic assemblies and testing equipment, integrate and streamline production steps, achieve higher levels of quality, improve the flexibility of the production lines and stabilise production plan requirements.

LOGISTICS

Reduce inbound and outbound logistic costs, optimise inventory levels, reduce the amount of transportation required inside the plant.

PROVISIONING

Improve supply chain performance by integrating the strategic suppliers in your processes and by improving their performance through the application of Lean principles.

NEW PRODUCT DEVELOPMENT

Understand what the market really needs, design the product right the first time, reduce the amount of work necessary to assemble it, embed fewer opportunities for defects, select the right supplier from the beginning.

PRODUCT PORTFOLIO

Review and rationalise your product portfolio to eliminate bleeders or make them profitable.

PARTS PORTFOLIO

Reduce the number of parts and raw materials required for production to achieve better performances at lower cost and to increase negotiation power with suppliers.

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FOCUS AREAS - CONTINUED

AREAS OF WASTE OFTEN IDENTIFIED IN AN ELECTRONICS PRODUCTION ENVIRONMENT:

The relative expensive nature of end products and components leaves an electronics manufacturer especially vulnerable to certain types of waste that end up tying up large amounts of capital.

OVER-PRODUCTION

Of course, over-production itself is waste and that's especially painful when your end product is a high value item. But this also includes over-specification; creating a product that can do more than the customer is actually asking for.

WAITING

Unnecessary waiting times increase the amount of work in progress. In our experience, too high work in progress levels are strong drivers of long lead times and high working capital requirements.

DEFECTS AND RE-WORK

Electronic components are often delicate. Handling requires special protection against ESD (Electrostatic Discharge) and products can be complicated with many interconnected components. Bringing down the number of defects or catching them early generates large savings and frees up production capacity.

INVENTORY

The high relative worth of components makes inventory control even more important. The amount of space needed to stock may be limited, but the amount of capital tied up is definitely not. A good assessment of your true requirements and diminishing supplier lead times can deliver large benefits in this area. This also diminishes the chance that certain parts will go obsolete (e.g. old firmware versions or part change due to redesign) while held in stock.

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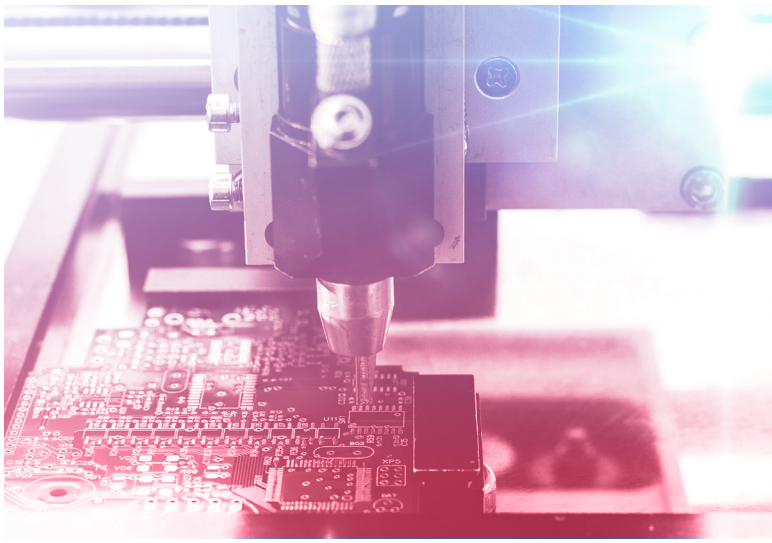
LEAN SOLUTIONS

The application of Lean allows building stronger processes that provide a much better output requiring less effort through eliminating defects, re-work, unnecessary handling and movements etc. This shortens the overall lead time and diminishes the cost of the products.

Lean principles can also be applied right at the beginning of the life cycle, during the design phase. This embeds quality and designs sustainable assembly processes from the start, reducing unnecessary expenses later in the product life.



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TANGIBLE IMPROVEMENTS

LEAD TIME

- Process integration and improvement produced lead time reduction by more than 60% in electronic manual assembly
- Workshops on automatic assembly machines (soldering machines and SMT technology machine) improved changeover time from one model to another by at least 30%
- Lead time reduction of 50% (from two days to one day) of in-stock finished goods shipping
- On-time delivery rate increase of new product development projects from 20% to 100%

QUALITY

- Reduction of defects found at final functional tests by 23%
- Reduction of forecasting inaccuracy by 55%

COSTS

- Work content reduction and quality improvements resulted in USD 135,000 savings annually
- Office process review allowed a reduction of 50% of the office space needed while simultaneously improving working conditions
- Production line optimisation allowed an 80% reduction on the production area needed from 25 to 4.4 square metres

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Should you be interested to know more about our Lean services regarding this topic, then please contact us:

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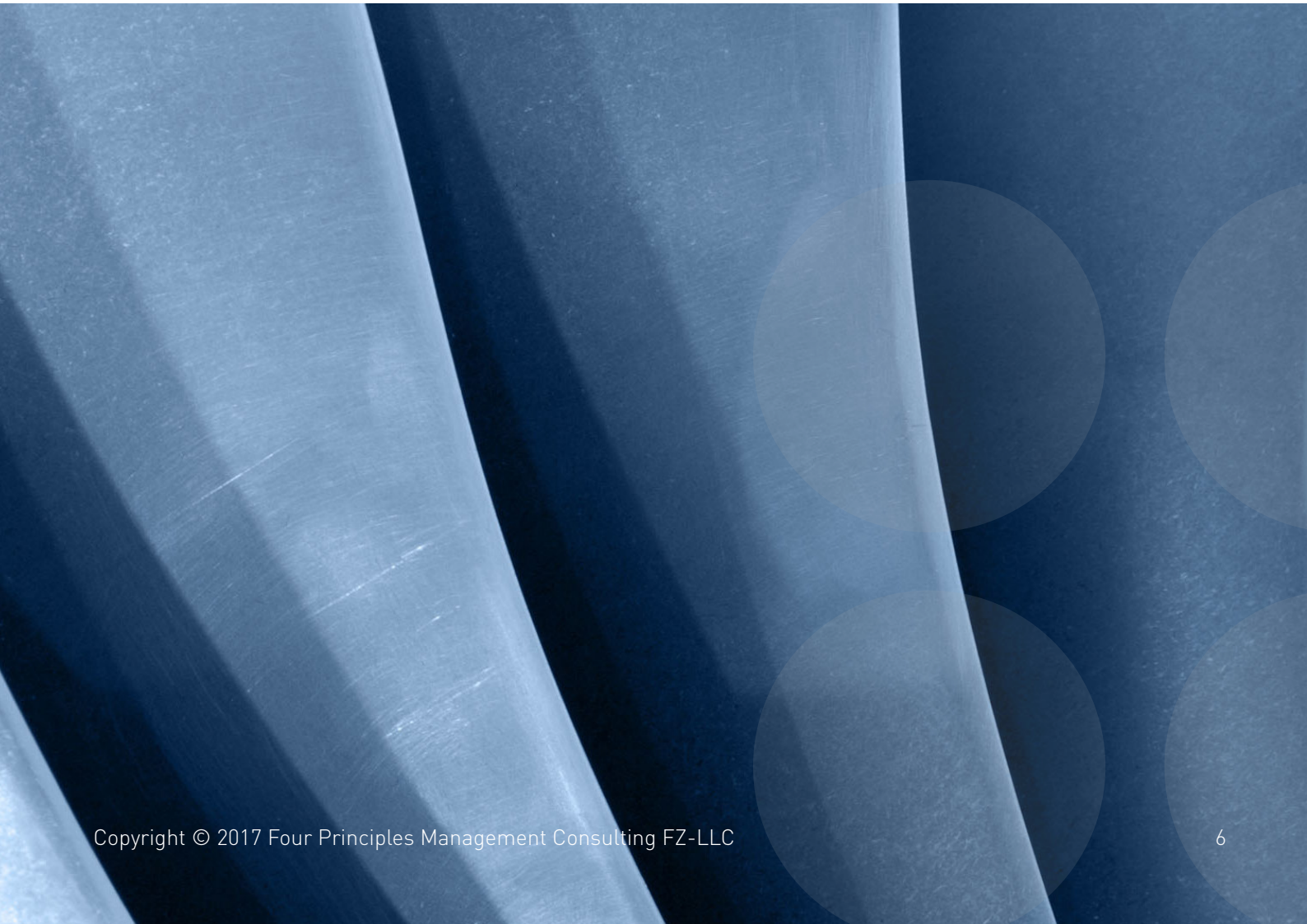

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