

No	Company			Experience	
	Field	Size ¹	Description	Relevant	Further
1	Consulting	1	Consultant	15 years	CIP-Manager, Toyota Kata Coach

¹k = 1,000

Similarities and Differences - Overlaps and Deviations in Terms of Objectives, Methods and Underlying Philosophy

Manufacturing has always been concerned with conserving resources, so there is an overlap between LM and CE.

Improvement of machine maintenance through TPM. Long use of process and production aids ensures quality and reduces waste of materials. If necessary, packaging or process materials can even be returned to the supplier. Optimize machine maintenance. Use consumables for a long time and, for example, return them to the supplier.

In the production of wear-prone cutting tools, the production of the cutting surface results in a loss of 80% of the HSS steel. This means that the expensive steel is lost. A rethinking of the manufacturing process led to the use of trimetal with the valuable HSS in the middle. Mirroring the profile results in material savings and an increase in production capacity.

Better machine availability through suppliers in the vicinity avoids logistics costs and thus also saves resources. Efficient cooling water treatment or heat recovery also saves money in production and improves the environmental balance.

The long product life as a company goal often also corresponds to customer demand. However, resharpening of cutting edges is rarely done today, replacement is more economical.

In manufacturing, FMEA is used to ensure quality and can be easily combined with process monitoring (SPC).

The involvement of the customer for a holistic view of the product life cycle and the feedback of improvement ideas for the development or improvement of the product. KVP should be applied in practice. It is important to involve complaint management and to use 8D, for example, to develop suppliers and involve shop floor management.

There is a practical example of streamlining combined with material savings for corrosion protection. The raw material on pallets is wrapped with hoods and foil and thus protected from corrosion. An adaptation of the material and a reduction of the delivery quantity made the welding unnecessary. The hoods were developed from a disposable product to a reusable packaging material. The hoods are then returned to the supplier together with the pallets. CE should always be considered in the context of KVP.

Key figures are always relevant. In projects for project success, especially the budget or for error detection in production. However, CE key figures are usually missing in the project or LM context.

21. Feb 2024

Economically sensible approaches can be found in energy consumption to avoid expensive load peaks. Machines with high power consumption should be identified and replaced if necessary. Efficient lamps, green compressed air, tight networks, CO2 footprint and VSM with energy content are further thoughts in this context.

High quality is no longer the goal of companies. Cheap disposable products are more likely to be manufactured. In the future, the customer benefit of a longer service life must be shown, especially in order to be able to realize AAS services. The added value for the customer for service products or the later activation of features can serve as a competitive advantage.

The food industry seems to be quite far ahead in CE. There, for example, plant residues and production waste are processed into fertilizer or biogas.

The waste of CE must be transferred to LM. Green will is not enough to implement CE. A holistic view of transports and areas in production is important to bring CE and LM together. Creating and then operating cycles in production is the big challenge. The question of security of supply is a particular sticking point. In case of doubt, delivery guarantees for the return of materials depend on the customer and not on the delivery schedule. Solutions for the absence of raw material deliveries, such as recycle, must be taken into account.

In the future, error analysis (e.g. with 5W or 8D) can include environmental aspects. Disruptions in the cooling water supply, excessive power consumption or expensive peak loads can lead to additional costs or even standstill in production and should therefore be more strongly linked to LM methods in the future.

Conflicts in CE clearly arise when a material requirement cannot be met, especially if cycles are to be strictly closed. The transport costs for the return of packaging and transport material are also a factor.

Synergy Effects and Target Conflicts - Interactions and Results in the Joint Implementation of CE and LM

Resharpener of cutting tools and the refurbishment of high-quality tools can be lived as Lean, but requires appropriate goals and KPIs. However, refurbishing is probably more likely to be done by other service providers rather than the OEM, especially with regard to EU targets (e.g. Right-to-Repair). However, products must be designed accordingly R-friendly; especially if other products are also to be manufactured from recycled material in the course of remanufacturing. Standard parts such as screws would be an approach, and other components at the supplier level certainly also have overlaps. A merger of companies and standardization would further advance CE. Social life also needs to be rethought. How sinnvoll is, for example, individual transport?

3D printing fits very well with LM (little transport and process waste) and goes hand in hand with CE (Repair). The spare part can be created on site without major logistics effort. Data for 3D printed parts can be sold as a business model. Upcycling of metal residues to 3D printing raw material is also conceivable.

Transport and logistics generate congestion, energy costs, wear and tear on infrastructure and should therefore be avoided - CE requires, but additional logistics services. However, overproduction as the mother of waste is not influenced by CE. In principle, in LM, an increase in less critical types of waste is permissible if critical waste is reduced. Furthermore, the additional effort of administrative processes must be taken into account. CE leads to additional bureaucracy.

Conflicts in the return process are conceivable, as a return is not always guaranteed. This is especially true if repair, reuse or refurbishment takes place. Replacements must be ordered and produced.

21. Feb 2024

Further Thoughts on Strategies, Methods and Tools

In the context of Poka-Yoke, the goal is to make assembly easier, but this does not always have to go hand in hand with easy disassembly. However, R-strategies should be considered in the future. Intelligent solutions for self-controlling processes can reduce administrative effort.

Process standards are the core of LM and should always be expanded in order to be able to function holistically. Flexible organizational forms in which production, administration and even management lines are more closely linked allow a quick response to the market and customers.