

Industrialization of complex medical devices in high labor cost countries

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INTRODUCTION: The Swiss medical industry develops and produces complex medical devices in Switzerland. In order to stay competitive (especially in a high labor cost country like Switzerland), production needs to be continuously optimized. Thanks to cutting edge technologies and high level of innovation, the Swiss machine builder industry can contribute to their success in Switzerland. Medtronic and CPAutomation SA collaborate successfully since many years to optimize the production of high value added complex medical devices in Switzerland. Thanks to this collaboration, Medtronic produces thousands of high quality and cost effective medical devices in their Tolochenaz plant. CPAutomation SA supplies turnkey systems based on standard configurations and platforms. Its customers have the benefit of a large range of competencies in the fields of micro assembly, micromanipulation, laser machining and intelligent aesthetic inspection.

CHALLENGES: The medical industry requires high quality automated equipment that offers high reliability, and must be flexible so that it can be implemented in lean manufacturing production lines. They also require robust solutions providing minimal down time. The equipment configuration and operation must be easy to use and ergonomic for all operators. Operators are required since their main function is quality control. In addition, the global competition is quite large so that costs and delivery time must be optimized. In order to achieve these goals, Medtronic decided to lower its level of automation [1] below the “great divide” (level 2 or 3).

Table 1. The five levels of automation.

	Load Machine	Machine Cycle	Unload Machine	Transfer Part
1	Manual	Manual	Manual	Manual
2	Manual	Auto	Manual	Manual
3	Manual	Auto	Auto	Manual
	<i>The “great divide”</i>			
4	Auto	Auto	Auto	Manual
5	Auto	Auto	Auto	Auto

RESULTS: The market feedback is that fully automated, multi-process equipment induces high costs and very low flexibility which in this global

fast changing environment are no longer required. The market is moving toward single process, semi-automated machines which show much higher flexibility with low capital investment costs (Fig. 1).

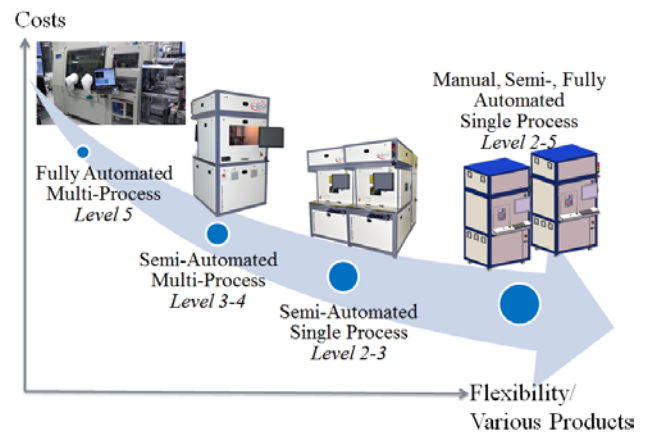


Fig. 1: Cost of manufacturing equipment in function of flexibility and level of automation.

DISCUSSION & CONCLUSIONS: To achieve level 2 and 3 of automation, CPAutomation has standardized their automated cells (Fig. 2) which bring the following advantages to the customers: simplified concept and quotation, shorter delivery times, higher flexibility, improvement of the serviceability (non-complex cell), optimized cost and limiting of risk.

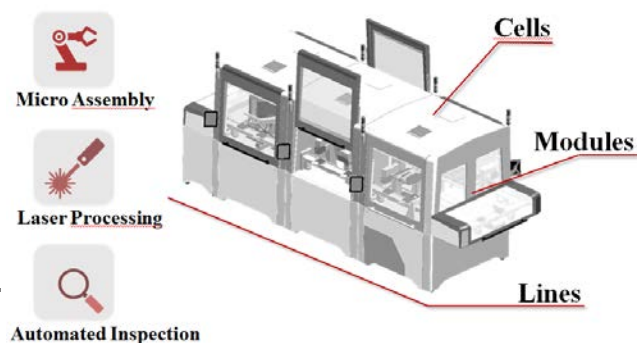


Fig. 2: The CPAutomation SA standardized automated platform concept.

REFERENCES: ¹Mike Rother, Rick Harris, (2001) *Creating Continuous Flow: An Action Guide for Managers, Engineers & Production Associates*, Lean Enterprise Institute: p 38.

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