

ABSTRACT

The goal was to reduce tool-related operational expenses within the Switchboard area at the Siemens Grand Prairie plant. To achieve this goal, the team followed the DMAIC process. In the current state, significant variation was found among work areas and within work areas, resulting in excess costs and lower productivity. Further, no standardized tool lists existed for each work area. To improve the current state, standardized tool lists were developed, and tool management systems were designed for each work area.

INTRODUCTION

Siemens is a German multinational conglomerate company headquartered in Munich and the largest industrial manufacturing company in Europe. Siemens provides a wide variety of products and services in areas ranging from energy to healthcare. The Siemens Grand Prairie plant provides consistent, safe, and intelligent low-voltage power distribution systems in residential, commercial, and industrial applications. The scope of this project covers the Switchboard product line. Currently, the use of toolboxes in the Switchboard area is resulting in missing tools, incorrect tool uses, excess costs, lower productivity, and potential missed calibrations for ISO purposes. These issues have a significant likelihood of occurring and negatively impacting the plant.

REFERENCES

- [1] Imke, Steven. "How to Develop a Risk Matrix." Business 2 Community, 27 Aug. 2019, www.business2community.com/strategy
- [2] The ultimate guide to cause-and-effect diagrams. (2020, July 20). Retrieved March 07, 2021, from <https://www.juran.com/blog/the-ultimate-guide-to-cause-and-effect-diagrams/>

METHODOLOGY

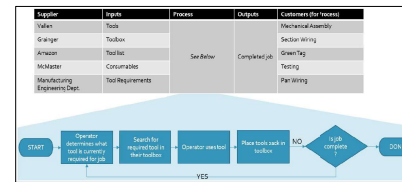
DEFINE:

- Stakeholder Analysis
- SIPOC diagram
- Process map
- Risk Assessment matrix [1]

		Impact			
		Acceptable	Tolerable	Unacceptable	Intolerable
Likelihood	Improbable				
	Possible		2	1	3
	Probable			4	

MEASURE:

- Operator interviews
- Stakeholder interviews
- Swim Lane of current process



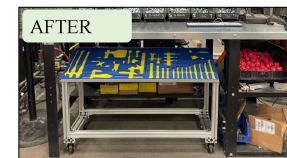
ANALYZE:

- 5 Whys
- Cause and Effect diagram [2]
- CorelDRAW for tool drawings
- Supplier selection analysis



IMPROVE:

- Tool System Evaluation Criteria
- Generate Design Alternatives
- Prototype Selected Design
- Supplier Collaboration
- Iterative Prototype Testing



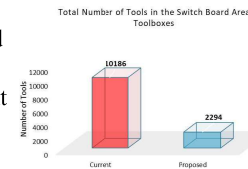
CONTROL:

- Provide Recommendations for...
- Tool Drawing Process
- Change Management

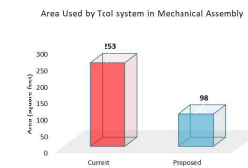


RESULTS

- Management can ensure they order all the tools the operator needs for their job
- The number of tools on the shopfloor is expected to decrease from 10,186 to 2,294 once all "current state" toolboxes are phased out



- The space consumed by tool system is expected to decrease from 253 to 98 square feet



CONCLUSION

- Tool lists were updated for Switchboard area
- Prototype shadow boards (selected tool system) were designed and built for Mechanical and Wiring work areas
- Supplier selected to manufacture shadow boards
- Developed sustainability recommendations and a phased approach to change management
- Total number of tools in Switchboard area anticipated to reduce by **77.48%**
- Factory floor area consumed by tool system will reduce by **61.4%**

FUTURE WORK

- Improve initial prototype design through iterative testing and operator feedback