

## Siemens Grand Prairie Switchboard Workstation Tool Management

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**Industrial Engineering Capstone Design | IE4350** 

# SIEMENS Ingenuity for life

## **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 lowvoltage 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]

## MEASURE:

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

## BEFORE

### ANALYZE:

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

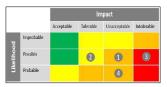
### IMPROVE:

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

### CONTROL:

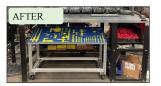
Provide Recommendations for...

- Tool Drawing Process
- Change Management



Supplier	Inputs	Process	Outputs	Customers (for 'rocess)		
Vallen Tools				Mechanical Assembly		
Grainger	Toobox		Completed job	Section Wiring		
Amezon	Tool list	See Below		GreenTag		
McNaster	Consumables			Testing		
Manufacturing Engineering Dept.	Tool Requirements			Pan Wiring		
Opera determine tool is ou	s what		Place tools on toolbox	kin NO isjeb complete		

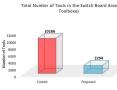




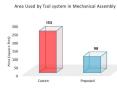
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	2021										
TASK	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	De
Stakeholder Analysis	~										Т
Capstone group x Mgmt. meetings											Т
Operator Interviews											Т
Mtg. with Supplier to share prototype design			-								Т
Iterative Prototype testing											Т
Mtg. with supplier to finalize design					П.	Y					Т
Supplier manufactures and ships shadowboards for al Switchboard work areas											
Shadow board Kickell Mtg. (introduce 5s audit, rollout shadow boads for all work areas)								~			
Introduce operators to shadow board during new hire orientation (on-going after Sept start)											Г
Management Reflection Mtg									,	*	

## 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