TEXAS STATE

INGRAM SCHOOL OF ENGINEERING

### **Problem Statement**

- Our team is tasked with addressing two critical challenges:
- Optimizing the processing specifications for Toyota's new paint line, which is used for the small parts and axles on Toyota trucks.
- Creating an effective and scalable paint line process for the new battery case of the unreleased electric Toyota Tacoma.

### Project Purpose

- Determine what the optimal operation times are for the paint production line.
- Find out where the first failures or bottlenecks would occur given any irregularities.

# **Project Objectives**

- Discover the optimal operation speeds.
- Obtain the proper wait, unload, and load times for each type of pallet/AGV (Automated Guided Vehicle).
- Implement the unreleased electric battery cases and dealership parts.

# **I1.01 - Toyota Paint Production Line**

# Bryce Garza, Emily Guajardo, Simeon Owoeye

## **Paint Production Line**



# **Arena Simulation**



# Arena Model based on the Paint Production Model above.

# **Gantt Chart**

oyota Sinulation Floject								Project start:																						
	Bryce Gar		Display week:								1																			
SIMPLE GANTT CHART by Vertex42.com https://www.vertex42.com/ExcelTemplates/simple-gantt-chart.html								7 00	25				E.			0.01	-			_	Mor	2.0	0.25							
TASK	ASSIGNED TO	PROGRESS	START	END	17	/ 18	19 2	20 2	1 2 1 2	2 2	3 2	4 2	25	26	27	28	1	2	3	4	5	3, 2 6	7	8	8	8	3	3	8	8
nitiation					м	T	w	T	F   1	5   5	5   1	N	T	w	T	F	S	S	м	T	w	T	F	5						
Define goals	BG, EG, SO	100%	2/20/25	2/28/25																										
Kick-Off Meeting	BG, EG, SO	100%	2/28/25	2/28/25			I																							
Statement of Work	BG, EG, SO	100%	2/28/25	3/5/25																										
Initial Design Review	BG, EG	95%	3/24/25	3/29/25																										
Planning and design																														
Get Arena Pro	EG,BG,SO	100%	3/31/25	4/2/25																										
Plan to make Simulation	BG,EG,SO	0%	4/3/25	4/3/25																										
Execution																														
Create Simulation	EG, BG, SO	0%	4/5/25	4/19/25																										
Complete Simulation	EG, BG, SO	0%	4/20/25	4/21/25																										
Manage resources	BG	50%	2/20/25	4/26/25																										
Testing and validation	BG,EG,SO	25%	4/21/25	4/25/25																										
Evaluation																														
Check-In Meeting 1	BG,EG,SO	100%	4/2/25	4/2/25																										
Check-In Meeting 2	BG,EG,SO	100%	3/31/25	3/31/25																										
Practice IDR	BG,EG,SO	0%	4/2/25	4/2/25																										
IDR Presentation	BG,EG,SO	0%	4/3/25	4/3/25																										
Check-In Meeting 3	BG,EG,SO	0%	4/11/25	4/11/25																										
Check-In Meeting 4	BG,EG,SO	0%	4/25/25	4/25/25																										
Convey Findings of Semester	BG,EG,SO	0%	4/26/25	4/26/25																										





#### Methods

- Kaizen
- Process Flow Analysis
- Simulation Modeling
- Facility Planning

#### **Future Work**

- Create a more detailed simulation for improved accuracy, efficiency, and actionable data insights.
- Discover bottlenecks and failure points within the paint production line.
- Analyze the data and investigate any other irregularities that are present.

#### **Group Photo**



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