

Process Development

New Process Development Leads to Methods and Throughput Improvements for Military Truck Manufacturer

Client

Military Truck Manufacturer

Objectives

1. Return costly outsourced work to plant
2. Increase capacity by 50%
3. Develop process content, sequence, times & flow
4. Develop work station tooling & layout requirements
5. Develop operator instructions & work flow charts
6. Develop material handling layout & operations

Sandalwood is an engineering and ergonomics consulting firm. Since starting in 1989, Sandalwood has designed over 3,000 projects that have executed strategic solutions for manufacturers.

By providing their knowledge, research, technology, and resources, Sandalwood supports its clients from the executive level to the factory floor so you can...

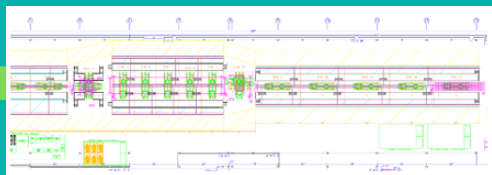
Work Smarter. Work Safer.

STANDARD OPERATIONS SHEET				
Step #	Task	Cycle Time (min)	Where From?	Where To?
1 SA	Get Exhaust/Escrow/Escrow (1000337), Flexible Exhaust Pipe # 1001557 (and 1) Lap Joint Clamp# 1001562 (1)	0.40	Est.	
2 SA	Assemble Pipe to Exhaust and position Lap Joint Clamps.	0.40	Est.	
3 SA	Get Power Tool and secure Lap Joint Clamp.	0.20	Est.	
4 SA	Get Exhaust Pipe Wrap (1000338) which has been soaked in water.		Est.	
5 SA	Wrap around of Exhaust Position Standard Clamp over Wrap and secure with Power Tool.	1.00	Est.	
6 SA	Continue to wrap Pipe to connection end.	1.00	Est.	
1	Get Wrapped Pipe/Escrow (1000342) and (1) Lap Joint Clamp (1001562).	0.30	Est.	
2	Position Escrow New Nut.	0.50	Est.	
3	Position Wrapped Pipe to Exhaust end position Clamp.	0.30	Est.	
4	Get Power Tool and secure Lap Joint Clamp.	0.30	Est.	
5	Continue Wrap/over Lap Joint Clamp to Nut. Cut Wrap to desired length at joint.	0.50	Est.	
6	Position Standard Clamp over Wrap and secure with Power Tool.	0.30	Est.	
Cycle Time Total:		5.30		

STANDARD OPERATION SHEET				
Process #	Process Name	Cycle Time (min)	Where From?	Where To?
1	Engine Harness to Engine Compartment Harness	1.0	Est.	
2	Power Steering Hose to Steering Gear	6.5	Est.	
3	Air Compressor to Dryer / Governor	2.5	Est.	
4	AC Hose to Quick Disconnect Fittings	3.0	Est.	
5	Electrical Connections to Generator	6.1	Est.	
6	Cooling System Hose Connections	13.5	Est.	
7	Air Filter Connection to Turbo Inlet	3.0	Est.	
8	Install Pre-Filter and Air Filter Connection		Est.	
9	Internal Exhaust Connections	5.3	Est.	
10	AC Refrigerant Charge	10.0	Est.	
11	Power Steering Fill	10.0	Est.	
12	Radiant Cooler Fill	10.0	Est.	
13	Fuel Fill - 60 Gallon	10.0	Est.	
14	Fuel Fill - 10 Gallon	2.0	Est.	
Cycle Time Total:		82.9		

Project Description

Increased capacity and improved cost were required to produce product orders in the time required by the client. Sandalwood provided a multi-disciplined engineering team to work with the client in evaluating product content, methods, labor and equipment requirements. A new manufacturing layout was developed for an existing warehouse facility. Operation layouts and assignments were developed incorporating material handling requirements, operator instructions and work flow diagrams. Material handling operations and equipment were developed for flexible material flow. New process equipment and tools were designed, purchased and implemented to provide improved throughput capability.



Process Layout

Standard Operation Sheet & Station Summary Sheet

SYS #6891		STATION 1		
SYS #6894		SOUTH SIDE (DRIVER)		
PFD #10580		FRONT SU SPEN SION HANGER S		
KIE	1009126	FRONT HANGER (S-204)	1 EA	
	1011482	NUT - HXK PREV TORQ MTKX CL10 9 ZN	4 EA	
	1011481	WASHER FLAT HARD M16 - REGULAR SERIES	8 EA	
	1011485	NUT - HXK PREV TORQ MTKX 7/8 CL10 9 ZN	2 EA	
	1011480	NUT - HXK PREV TORQ MTKX 7/8 CL10 9 ZN	2 EA	
KIE	1011483	WASHER FLAT HARD M16 - REGULAR SERIES	4 EA	
	FRONT SUSPENSION REAR SPRING HANGER BRACKET			
	1009127	REAR HANGER (S-204)	1 EA	
	1011486	SCREW - HXK MTKX AND CL10 9 ZN	6 EA	
	1011484	NUT - HXK PREV TORQ MTKX 7/8 CL10 9 ZN	6 EA	
PFD #10581	REAR SU SPEN SION HANGER S			
	KIE	1009148	REAR SUSPENSION FRONT SPRING HANGER	
		1011487	SCREW - HXK MTKX AND CL10 9 ZN	6 EA
		1011482	NUT - HXK PREV TORQ MTKX CL10 9 ZN	6 EA
		1011481	WASHER FLAT HARD M16 - REGULAR SERIES	12 EA
KIE	REAR SU SPEN SION CENTER SPRING HANGER			
	1009113	CENTER SPRING HANGER	1 EA	
	1011485	SCREW - HXK MTKX AND CL10 9 ZN	6 EA	
	1011482	NUT - HXK PREV TORQ MTKX CL10 9 ZN	6 EA	
KIE	REAR SU SPEN SION REAR SPRING HANGER			
	1009111	REAR SPRING HANGER (S-204)	1 EA	
	1011483	SCREW - HXK MTKX AND CL10 9 ZN	4 EA	
	1011481	WASHER FLAT HARD M16 - REGULAR SERIES	8 EA	

Work Station MBOM

Results

- Capacity increased by 50%
- Costly outsourced operations returned to in-plant operations.
- Assembly line process method installed to improve product flow and throughput.
- In station process control system updated to assure a complete, high quality assembly process.

- Flexible material handling operations and layout installed to allow model mix variations.
- DC Power tool systems installed to provide improved quality for critical fasteners.
- Assembly fixtures, methods and tools designed and installed to improve process quality and repeatability.