

The Client

The Client is manufacturer of car seats to Toyota.

Business Situation

Customer assembles the car seat for world class quality car manufacturer (end client). End client expects the customer to keep record of car seats produced, including seat belt buckle test value, torque speed at which nut runner assembled the product, seat movement test value, type and color of the seat etc. End client also expects how many times and duration the conveyor belt stopped due to production delay, material shortage, quality issue, and/or maintenance. End client expect there by calculate the capacity utilization and plant capacity to calculate their own production.



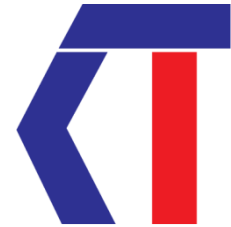
Technical situation

The plant is being new there was no old assembly line.

The Challenges

The issues to address are:

1. How to design the new PLC controlled assembly line with proper software to process the entire assembly.
2. How to reduce production delay due to down time



The Solution

Provided new PLC controlled assembly line developed and deployed. The PLC is programmed to collect barcode of the model from barcode scanner, torque speed from nut runner, color of the seat from color sensor, type of seat, type of production delay due to various reasons based on type of button pressed by operators. Each value is designated to PLC node/tag and collected by software to process and store the data required by the above requirement. The production report generated and customers ERP is updated with finished goods inventory once the seat has reached the end point of conveyor belt. Based on when the delay started and problem addressed there by ending the delay the statistics are maintained and reported for each station and reason like material shortage, quality issue, maintenance, production delay, safety, no pull etc and capacity utilization is calculated.

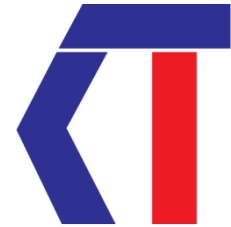
Business Impact

Apart from automated conveyor belt that collected data automatically and consistent output following benefits are realized:

- Data such as torque value collected automatically to determine quality of the car seat
- Inventory information collected automatically to update ERP with accurate information.
- Capacity utilization is determined to do production planning.
- The reason due to which conveyor belt stopped to determine the root cause
- Down time report and capacity utilization rate (see below)

Value Adds

Apart from improved understanding of reason why the assembly line is down, understanding the quality by reading torque at which bolts are tightened, it also



provided capacity utilization of the assembly line which in turn helped production planning.

Downtime Report - Day Wise Date: 14/11/2010 Shift: 2
 Total Operation Time: 465:00

Time in Mins										
Station	Station Name	Operator Name	Quality Issue	Production Delay	Material Shortage	Maintenance	Safety	No Pull	Total	Downtime %
Station1	Riser Assy RH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station2	Riser Assy LH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station3	FSB Skinning RH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station4	FSB Skinning LH		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station5	Loading		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station6	FSC & Seat belt buckle		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station7	FSB Marriage		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station8	Plastic parts		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station9	Steaming		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station10	Spare		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station11	Pokayoke#1		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station12	Pokayoke#2		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station13	Efforts		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station14	Visual Inspection		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station15	Unloading		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station16	RSB 1		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station17	RSB 2		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station18	RSC 1		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station19	Spare		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station20	Steaming		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station21	Visual Inspection		0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station22			0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station23			0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Station24			0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Total Operation Downtime(Mins)			0:00	0:00	0:00	0:00	0:00	0:00	0:00	0.00%
Total Operation Downtime(%)			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Capacity Utilization										100.00%

The Technology

- Oracle 11i Applications
- Oracle 9i
- MSSQL
- SQL, PL/SQL
- .net, VB
- MSSQL
- Unix/Windows