

Segment: Automobile Industry

Application: Case Study of Machine Tending

Organization: Yaskawa India Pvt.Ltd.

Description:

Yaskawa is supplying robotic Handling system for Automobile Industries. In this system Gear will Pick from Double decker conveyor & place it on Hobbing and chamfering machines.

Objective: Automated solution for placing Gears on two machine's and final component placed on same conveyor.

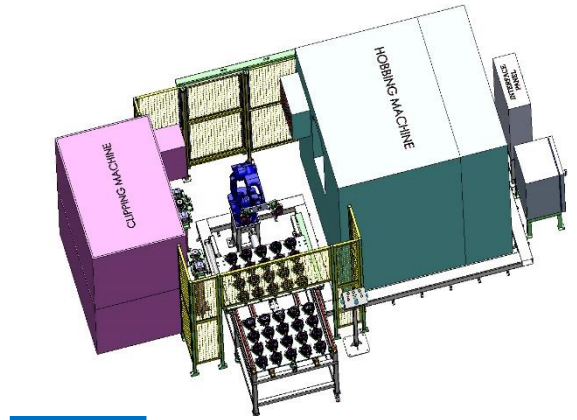
System Overview:

Operator placed 114 component's on double decker slide conveyor which travels on THK rails with the help of Pneumatic cylinders. When cycle start given, at a time one slide go ahead towards robot at fix position & robot pick component from there. That component placed on Hobbing m/c & output of Hobbing m/c placed on teeth confirmation SPM where teeth position confirmed, and that part placed on clipping machine. Output of clipping machine placed on slide conveyor.

Scope of supply:

- Robot : MH24
- Controller : DX200
- Communication Protocol : Hardwiring
- PLC: Allen Bradley
- HMI - Proface
- Dual Gripper (Pneumatic Schunk gripper)
- Safety Fence & Safety Door
- Poka Yoke Station for gear teeth matching.
- PLC panel & Operational Panel
- Variants Proved: 12

Application Layout:

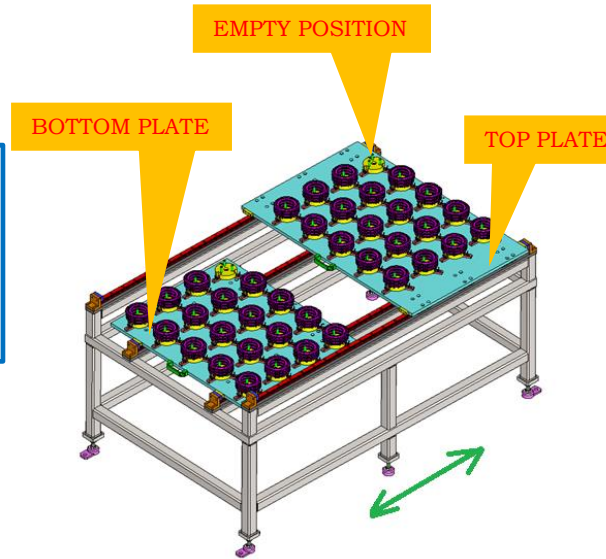


Actual Site Images:

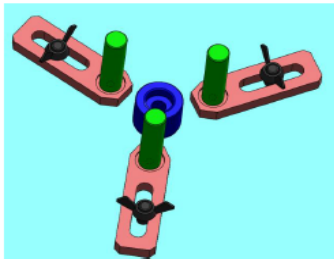


INPUT & OUTPUT STATION

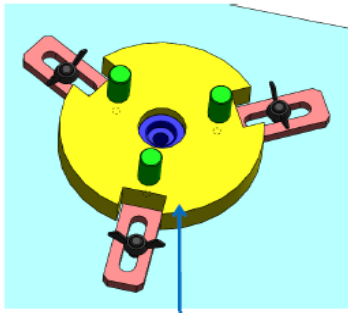
- NUMBER OF GEARS PER PALLET- 57 NOS
- TOTAL NUMBER OF GEARS PER LOADING – 114 NOS
- OPERATOR LOADS 114 COMPONENTS AT A TIME
- BOTH PLATES MOVE THRU PNEUMATIC CYLINDERS SEPERATELY
- COMPONENT CYCLE TIME- 125 SEC
- LOAD / UNLOAD FREQUENCY FOR 114 PARTS -4 HOURS
- ONE EMPTY FIXTURE FOR OUTPUT PURPOSE
- NEW COMPONENT SETUP CHANGE OVER – 15 MINS



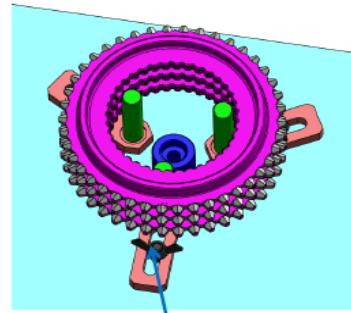
COMPONENT LOCATION



FIXTURE FOR COMPONENT LOCATION WRT INNER DIAMETER FOR 5 DIFFERENT VARIANTS

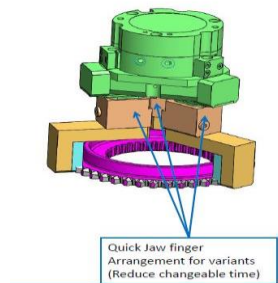
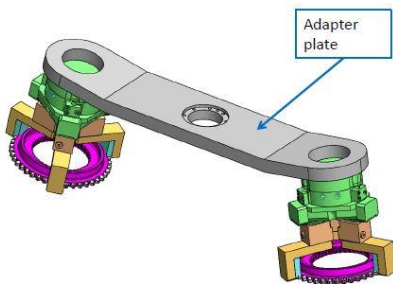


GAUGE PLATE FOR ALL FIXTURE TO SET THE PINS ACCORDING TO 5 DIFFERENT COMPONENT VARIANT ID.

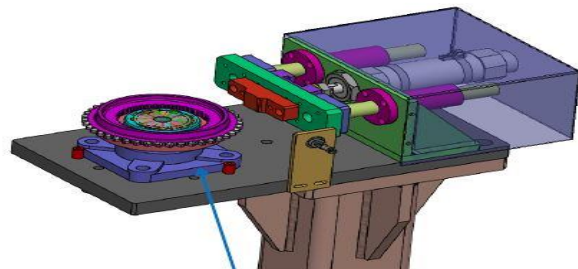
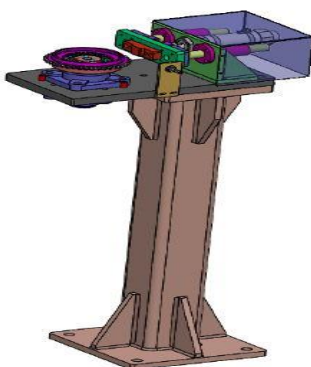


QUICK ADJUSTMENT ARRANGEMENT FOR COMPONENT VARIANTS (REDUCE CHANGING TIME)

DUAL GRIPPERS



GEAR TEETH MATCHING STATION



Dial arrangement not shown due to not availability of complete data of dial assembly. This will be done in final design.