ABSTRACT

The SASSI machine that assembles the first stage of an armature line is obsolete and unreliable. Three adjacent semi-automatic presses perform the same operations the SASSI machine does but for a different type of armature. Retrofitting these presses will increase the reliability of the line. Each press received new SMED pieces to make changing out the parts easier and any new sensors needed. The machines also received new programming so they can correctly make the new part types and detect if a defect occurs. The overall project was a success. The new pieces for the stations should work perfectly fine and the programming was finished to the percentage specified in the project goals.

OBJECTIVE

To eliminate the SASSI machine and replace it by retrofitting an existing line.

METHODS AND MATERIALS

- SMED Methodology
- Poka Yoke Design
- D2 Steel with tempering (All the designs were manufactured at the tooling shop at brose)

RESULTS

The new tooling worked correctly and they will consistently make armatures to spec and last for the life of the machine.

Mechanical
- All manufacturing tolerances are met by the parts
- Only minor adjustments were needed

Electrical
- All required new Sensors were installed.
- New Programming is almost complete
- New Cabinet is nearly ready to implement

Project
- The presses were released to start production this Wednesday after the run & rate of some phase 2 models, and now they are producing parts without the SASSI Machine.

CONCLUSIONS

The project was a success. All the new pieces needed to retrofit the machines were manufactured completely and are working as they should, as well as the sensors. The new programming is also working well even though it is not perfected.

With this project done at 100%, the next step is to remove the SASSI Machine and finish the Cabinet with the HMI that is going to replace the SASSI Machine as the brain of the line.

Recommendations
- Duplicate of all parts should be made to reduce downtime if they are damaged.
- New Safely elements for stations 2 and 3
- More Poka Yoke design elements if operator error becomes a problem.

ACKNOWLEDGMENT

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REFERENCES


TEAM MEMBERS

Héctor Perrusquia
Emmanuel Hernández
Aaron Nesselroade

STAKEHOLDERS / SUPERVISORS

Alberto Botello
Francisco Iturbe
Héctor Perrusquía

BACKGROUND

The SASSI machine and the Semi-Auto Presses perform the same processes in the armature assembly. The differences lie in the models that they made, the semi-auto presses assemble the first stage of new armature (MQB) while the SASSI machine is able to make 17 different type parts that right now only are used as a spare parts (PHASE 2) some of them have a slight differences as the insulator color and the length or diameter of the shaft. When the SASSI machine breaks down because of some failure, stops the entire line and it is unsure how long would take to fix it.