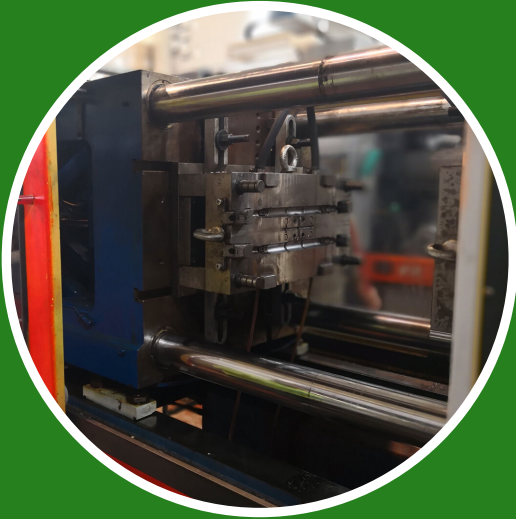




CASE STUDY

INDUSTRIAL SHIELDS

IMPROVING A MANUFACTURING LINE



This project is designed to improve the production line of a small factory which is dedicated to the production of indicator parts for cars. Our customer needs improvements in three verification processes to reduce non-compliant products. The company needs to ensure that the holes made by a drill in the pieces using a support are placed in the right position. They also need to check that the LEDs placed in the pieces work correctly. Finally, they need to verify that the QR sticker deposited on the products can be correctly read. In this case, the company requests a solution as economical as possible.

SUMMARY

A small company which works making components with indicators for cars needs to improve its manufacturing process because they have detected problems during the drilling process and in the QR used for traceability. They have detected that QRs are not correctly read in 7 % of the cases. In addition, they want to verify that the LED strips of the system work correctly as well.

As the support was manufactured with a measurement error, there is a problem in the drilling process which makes the piece not fit perfectly.

Due to the environmental state of the factory, QRs are not sometimes printed correctly. Regarding the LEDs, they never had any significant problems, but the company wants to be able to verify their quality even changing their supplier.

As this is a small company, a very economical and efficient solution is requested.



GOALS

The main points of the project are as follows:

- Ensuring that the plastic part is correctly located when the drilling process begins.
- Turning on the LED strip so that the operator can verify that they work correctly.
- At the end of the process, verifying that the QR codes can be read correctly and allowing the operator to check it before finishing the process.
- Minimizing the budget, so that these improvements do not involve a very high cost and the expenses can be recovered in the short term.

CASE STUDY

CONCLUSION (HARDWARE)

In this case, we will use an **ARDBOX PLC 20 I / Os RELAY HF** which will allow us to act with the relays on the 230V supply of the drill.

First of all, we have to keep in mind that we will take advantage of a 12V / 2A power supply that the company had from a prototype that they made long ago. In this way, we will be able to feed the PLC without spend resources on a new power supply.

To make the first modification, we will place a small button on the support which will be active when the piece is correctly placed. We will develop a program to disable the current on the drill if no pieces are detected or they are wrongly placed. Therefore, it will not be possible to make any holes while the piece is misplaced.

Regarding the LEDs, the same power supply used to power the PLC will be connected to a relay, so that when pushing a button, this relay will be activated and the LED strip will turn. This will let the operator see that the lights work correctly.

Finally, we will place a reader that works by RS232 in order to check the QR. The PLC will read the QR. If it receives a correct reference, a LED will be lighted up to inform that the QR has been correctly read.

The whole system we have installed has cost less than 300 € (including the QR reader, the LEDs and the button). Moreover, we must keep in mind that there are still free PLC inputs and outputs, so more processes could be carried out with the same PLC.

