

Automate Reflector Assembly Using a One-Armed Robot

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Introduction and background:

The background for the project is a need to further increase the production in a manual production environment that has been fully saturated. The production is of the company's highest-volume product, the PS-probe. It is today produced by hand, and this project aims to automate one of the assembly processes; the process in question is the assembly of a reflector onto the head of the PS-probe. Like the rest of the assembly, this process is done by hand and is a time-consuming and laborious process, which is notoriously susceptible to human errors. Automating this process aims to get a more repeatable assembly of the PS-probe with a higher yield and an overall better end-product.

The assembly process requires the use of a two-component adhesive with thixotropic properties. These properties make automating the process a challenge, as accurately dispensing the adhesive is crucial for the project's success. To achieve proper dispensing of the adhesive, a multivariate analysis of data gathered from tests will be performed to analyze the effect of different variables on the dispensed adhesive.

Problem description and objective:

The goal of the project was to create a system that could automate a particularly challenging part of the current assembly process. This was done by using a collaborative robot and creating an automation cell could be equipped with a variety of tools that is needed for the process. In addition, a multivariate analysis has been conducted on samples that were produced by the system to uncover the cause of variance in the units produced.

The system was largely successful in automating the assembly process it was designed for and is being put into a production environment once the project is finished.



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