

Case Study Part Assembly Quality

Comparison of the Part Position with the Part Drawing

Inea's vision system discovered that 7% of faults were going through undetected. Now, we don't only have a more precise measurement on our end, but we can also ensure that every part we ship out is up to the standard.



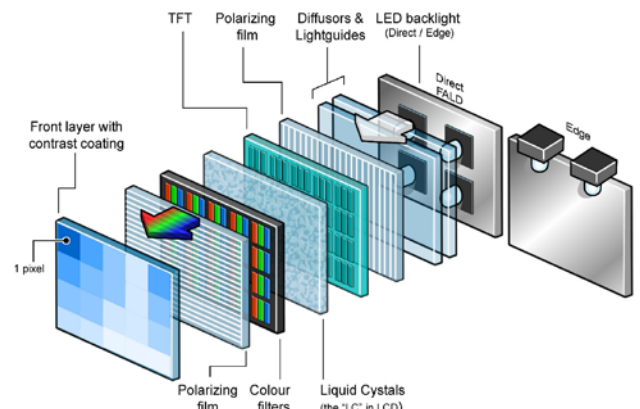
– Production Manager

The customer.

A Tier 1 supplier to one of the largest car manufacturers in the world. This specific production line assembles displays for digital instrument clusters in a recently released series of cars.

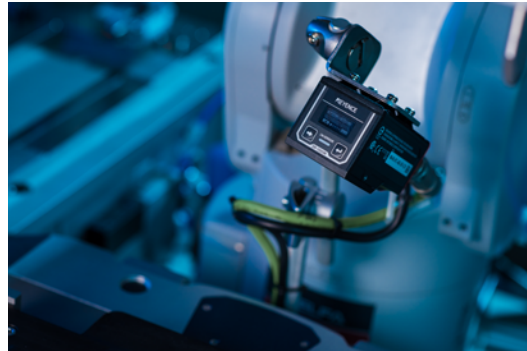
The challenge.

During assembly, the display frame comes to the vision station with four adhesive tapes on it that were applied at previous stations. It needs to be measured to see if the tapes are positioned according to the part drawings with a deviation of maximum $\pm 0.5\text{mm}$ to ensure the highest possible level of quality. If any part does not adhere to these criteria, it must be rejected, so further operations wouldn't be performed on it down the line.



The solution.

The measurement was done in three stages. If the part failed at any stage, it was rejected and not measured at the next stage. At each stage, the measurement precision was set to $\pm 0.1\text{mm}$.



We first measured the surface of the part using a blob search tool – if tape is present, the surface of the examined part will match the surface in the drawings. Then, we checked tape straightness. With a tool for line search, we grabbed edge samples and calculated the deviation from the perfect line. All straightness measurements needed to be under the setup value.

At the last stage of inspection, we checked for tape length using a pattern search tool that detected the end points of each piece of tape. If any of the eight points (both ends of 4 tapes) were not found, the part was rejected and the inspection terminated.

The results.



100%
quality control
of each part



7%
detection increase
of faulty parts



300%
reduced chance
of faulty part installation in car