In automotive manufacturing, replacing welding with adhesives helps designers engineer lighter cars. In some cases, stronger seams. Instead, side panels, and housings that must be joined in the main body or other parts of the vehicle’s adhesive requires a more accurate adhesive application to ensure parts and assemblies function as intended.

The adhesive application station at Ceely Automotive, China (www.ceely.com) is a case in point. Improperly oriented or placed parts identify the location for the station may result in waste, premature part failure, or lead to a catastrophic adhesive application. Colliding with parts on the tray, leading to substandard. Leaking parts into the tray is always manual but prevented. Parts were checked manually using a gang which was timing and cost efficient. It’s challenging for a human to detect part placement within 0.5 mm and out of focus. B’s machine vision solves this problem of up to 50 parts in one minute, manual inspection becomes unfeasible.

That’s why Ceely enlisted Bluewrist Inc. (Markham, ON, Canada; www.bluewrist.com) to develop a faster and more accurate method for automating part orientation in its adhesive application process.

Determining the correct orientation of up to 45 different types of automotive parts requires separate sequences, with each action coordinating five to eight different parts. Each batch of parts placed in a 1.7 x 1.7 m tray passes through a 50-foot vision sensor from Bluewrist. This identifies a unique barcode for each tray to determine which batch combination of parts is being inspected by the system. This software monitors an industrial computer build process via input information, allowing the operator to understand which parts should be in the tray.

Once the vision sensor scans the barcode, the tray moves into a tunnel where two 12-micron MLWL223 weCat3D 3D profile sensors from Wenglor (Hettlingen, Germany; www.wenglor.com) scan the tray and the parts inside from overhead as the tray moves along a conveyor.

Software processes 3D point cloud processing, feature extraction, and 3D alignment in a few hundred milliseconds and confirms part location and orientation in under five seconds, according to Jia Lu, Director of Engineering, Bluewrist.

There are large trays, so we are dealing with a huge 3D data set. Without optimized software, the process would take too long for the system,” he says. “In processing and presenting up to 50 parts to offline software, it could take a week to extract all the information we have—how ever much is in seconds.”

After generating a cloud point, the software identifies every part and determines its position in the tray. If a part is mismatched or not present, the robot cannot otherwise apply the adhesive bead. An alarm sounds for this part, and a notification pops up on the HMI for the operator, indicating which part has a placement issue.

That’s why a design for automotive, environmental monitoring, and other partVision systems such as Vision system verifies part orientation before adhesive application. Failure to properly apply adhesive onto car parts leads to waste and failure.

See the complete article online at: www.vision-systemsdesign.com/2012/04/20/scanxtream-robotic-adhesive-application-less-waste/

---