

Application of a portable coordinate measuring machine onto automotive door panel for quality inspection activity

ABSTRACT

An experimental investigation was conducted to explore the feasibility of replacing the current inspection method by a portable coordinate measuring machine (CMM) for daily quality inspection in automotive industry. The experiment focusses on inspecting stamped body parts due to the significant number of inspection points that could be time consuming for inspection activities. Two inspection methods were performed, i.e. the application of checking fixture (CF) which is the current method and the second method was using a portable CMM. Both inspections were performed onto the same loose freeform surface of an outer door panel. Factors related to inspection duration, economical and data reliability were all compared to understand the practicality of replacing the current inspection method with a portable CMM. It was found that a portable CMM provide a significant shorter inspection duration, more economical and better data reliability but at the same time is unable to match the performance of conventional inspection onto freeform surface. The conclusion was made that a portable CMM alone is not sufficient to replace the current inspection method thus require further study.

Keyword: Automotive industry; Manufacturing; Portable CMM; Quality inspection