

ABSTRAK

Penelitian ini bertujuan mengevaluasi sekaligus meningkatkan proses produksi komponen *injector* di sebuah perusahaan otomotif dengan menitikberatkan pada pengendalian cacat 2ms, yang tercatat sebagai jenis kecacatan paling dominan dalam satu tahun terakhir. Cacat tersebut muncul saat pengujian laju aliran bahan bakar pada kondisi idle, menandakan adanya ketidaksesuaian distribusi aliran di sistem *injector*. Untuk mengidentifikasi penyebab dan mengurangi variasi proses, digunakan metode *Statistical Quality Control* (SQC) melalui *check sheet*, diagram pareto, peta kendali, dan diagram sebab-akibat. Analisis menunjukkan cacat 2ms plus disebabkan suplai bahan bakar melebihi batas spesifikasi, sedangkan 2ms minus terjadi akibat suplai di bawah standar. Kedua kondisi ini berdampak buruk terhadap kestabilan *idle* dan performa mesin. Faktor dominan penyebab cacat berasal dari aspek mesin, seperti perawatan pencegahan yang kurang terjadwal, kalibrasi yang jarang dilakukan, serta keausan *jig* dan aspek manusia, yaitu keterampilan operator yang belum optimal, kedisiplinan rendah, serta minimnya pendampingan bagi tenaga baru. Sebagai tindak lanjut, penelitian menyarankan penerapan *preventive maintenance* terstruktur, kalibrasi rutin, standarisasi pengaturan mesin, serta penguatan pelatihan dan evaluasi operator. Implementasi rekomendasi ini diharapkan mampu menekan angka cacat 2ms, meningkatkan produktivitas, serta memperkuat sistem mutu jangka panjang perusahaan.

Kata Kunci : pengendalian kualitas, *injector* NG 2ms, *statistical quality control* (SQC)

KARAWANG

ABSTRACT

This study aims to evaluate and improve the production process of injector components in an automotive company, focusing on controlling the 2ms defect, which has been identified as the most dominant type of defect over the past year. The defect occurs during the fuel flow rate test under idle conditions, indicating an inconsistency in flow distribution within the injector system. To identify the root causes and reduce process variation, the Statistical Quality Control (SQC) method was applied, utilizing check sheets, Pareto diagrams, control charts, and cause-and-effect diagrams. The analysis revealed that the 2ms plus defect results from fuel supply exceeding the upper specification limit, while the 2ms minus defect occurs when the supply falls below the lower limit. Both conditions negatively affect engine idle stability and performance. The dominant causes were found in machine-related aspects such as inadequate preventive maintenance, infrequent calibration, and worn jigs and human-related aspects, including insufficient operator skills, weak discipline, and limited mentoring for new workers. As a corrective measure, the study recommends structured preventive maintenance, regular calibration, machine setting standardization, as well as enhanced training and operator performance evaluation. Implementing these recommendations is expected to reduce the occurrence of 2ms defects, improve production efficiency, and strengthen the company's long-term quality management system.

Keywords: *quality control, 2ms injector NG, statistical quality control (SQC)*



KARAWANG

