

An Automated Patternator System Development

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ABSTRACT

Spray patternation is a quantitative measurement of droplet properties such as size, density, and velocity within a spray. This process is required in industries involved in fuel injectors, thin film coating, agriculture, and consumer products in which faulty nozzles can lead to quality degradation. The patternator from En'Urga incorporate, a ring-shaped device that analyzes droplets through the laser sheets in the middle, is required to make such measurements, and some industries demand a large amount of injectors to be tested before engine assembly. As a result, the development of automated patternation system is paramount to reduce testing time of mass produced products. In this research, the automated nozzle test system using patternators was developed with the construction of 3-axis linear system for the nozzle delivery and a gas supply control system that regulates the flow rate and pressure. With this system, approximately 500 nozzles can be investigated per day. Ultimately, the automated system explained in this paper reduces the nozzle testing time, improving production rate at mass production.

KEYWORDS

Patternation, patternator, droplet properties, droplet measurement, automated system, nozzle testing