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(57) Abstract :
The invention discloses a compact device for real-time fuel injector performance analysis, comprising an injector mounting unit (1), fuel supply system (2), pressure sensor (3), optical spray analysis module (4), data acquisition unit (5), microcontroller (6), and display interface (7). The device captures injection pressure, spray characteristics, and fuel flow to provide immediate diagnostics. With its portable design and compatibility with various injector types, it enables in-field analysis, reduces downtime, improves fuel efficiency, and ensures early detection of injector faults in internal combustion engines.

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