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Pressure Regulator Optimization in LPG Fuel Injection Systems

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Abstract : LPG pressure regulator is a device which is used to change the phase of LPG from liquid to gas by decreasing the pressure. During the phase change, it is necessary to supply the latent heat of LPG to prevent excessive low temperature. Engine coolant is circulated in the pressure regulator for this purpose. Therefore, pressure regulator is a type of heat exchanger that should be designed for different engine operating conditions. The design of the regulator should ensure that the flow of LPG is in gaseous phase to the injectors during the engine steady state and transient operating conditions. The pressure regulators in the LPG gaseous injection systems currently used can easily change the phase of LPG, however, there is no any control on the LPG temperature in conventional LPG injection systems. It is possible to increase temperature excessively. In this study, a control unit has been tested to keep the LPG temperature in a band. Result of the study showed that the engine performance characteristics can be increased by using the system.

Keywords : temperature, pressure regulator, LPG, PID
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