Impingement Identification in a High-Speed Diesel Engine Using Piston Surface Temperature Measurements

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Abstract:
The objective of this investigation was to identify the impingement event on a diesel piston surface. Eight fast response, surface thermocouples were installed in one of the pistons of a 2.0-liter, four-cylinder, turbo-charged diesel engine (97 kW @ 3800 rpm). Piston temperatures were transmitted from the engine using wireless microwave telemetry. An impingement signal was identified on the piston bowl lip. A simple parameter for characterizing the impingement event is proposed. The results show an impingement signature at one of the bowl lip thermocouples, under specific operating conditions.