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Field Experience with the Provent CCV System.

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Abstract

Laboratory-based filter testing often produces quite disparate results from “real world” filter testing. For this reason, it is important to conduct extensive field performance testing of filter systems.

In addition to an extensive laboratory-based crankcase filter research and development program, a field test of the Provent CCV filter system was conducted in the harsh dusty environment of Australia. In many regions, Australia experiences high mean temperatures, low average rainfall, and has a high proportion of unsealed roads. These factors make Australia highly suitable for filter performance testing.

A sample of 50 on/off highway vehicles were selected, with 3 different direct injection turbo-diesel engines ranging from 2.5 to 4.0 liters in engine capacity. Individual vehicle use ranged from 100% offroad (or non-sealed road) to 100% on-highway. A standard Provent housing and element was fitted to each vehicle – in come cases replacing the standard cyclone. The mass of each filter was recorded initially, and the filter element fitted to the vehicle for intervals ranging between 5000 and 40000 km. The filters were then returned for laboratory testing, weighed to determine oil content, and installed in a laboratory test apparatus to test performance.

It was found that drainage of oil from the elements did not occur until 15-20 000 km had elapsed. Pressure drop across the filter was generally found to be within specifications. However, filters which were operated in an “open” (vented to atmosphere) configuration, were found to have a higher pressure drop, due to dust present on the outlet side of the element. It is believed that such dust is composed primarily of ultrafine particles which are able to diffuse into the filter chamber via the outlet when the flow rate through the system is sufficiently low.

Session Preference:

Engine Filtration (Crankcase Ventilation)