Long Block Verification

SCIEMETRIC POWERTRAIN SOLUTIONS

Challenge

A major engine manufacturer was experiencing excessive warranty charges from customers, who were complaining about their vehicles emitting black smoke. This smoke is typically symptomatic of an engine that is burning a disproportionate amount of oil. Upon closer examination, it was determined that the problem was caused by missing piston rings in the engine. Repairing this defect, once the engine is installed in the vehicle, is time consuming and costly. The manufacturer's existing end-of-line testing could not detect the missing piston rings or the resulting compression defects.

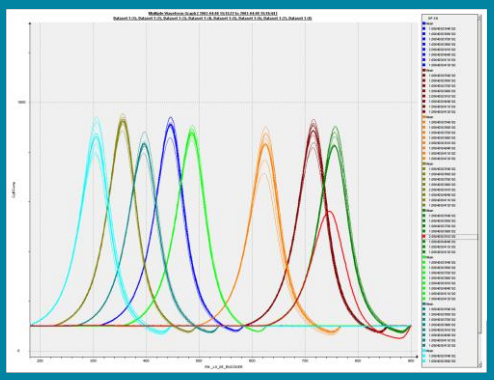
Solution

The engine manufacturer required a test system that was more effective at identifying timing and compression-related defects. The manufacturer decided to implement Sciemetric's Long Block Verification at key points in their assembly process. This in-process test approach enables them to catch the defects that were having the biggest impact on their bottom line and yield, such as improving detection of compression and piston defects.

The Long Block Verification solution measures torque and combustion cylinder pressure as the crank is rotated through 720 degrees. Advanced algorithms, based on Sciemetric's core signature analysis technology and designed specifically for engine long block verification, assess the entire torque versus angle and the pressure versus angle signatures for each cylinder. The Long Block Verification System is designed to provide consistent and reliable detection of defects such as: low compression, mis-assembled timing chains, head installation problems, incorrect engine timing, valve seating problems, missing piston rings and soft lash adjusters. With Long Block Verification the manufacturer could identify piston ring and compression problems that were not previously being caught during end-of-line hot or cold testing.

LONG BLOCK VERIFICATION KEY FEATURES

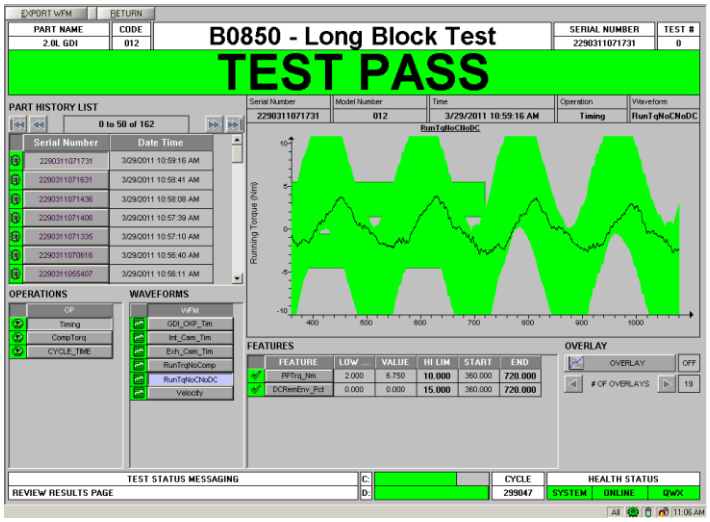
- Part of the Sciemetric IPT System
- Uses signature analysis for most accurate verification
- Finds defects at the point of introduction, improving quality, decreasing manufacturing costs and saving repair time.
- Catch defects that would not be identified using traditional end-of-line hot or cold testing.



the science of quality

Results

By testing throughout the assembly process, the engine manufacturer was able to find defects at the point they were introduced during assembly. Early detection reduced the costs for engine rework and scrap. Overall, Sciemetric's Long Block Verification solution enabled the manufacturer to improve the quality of the engines shipped to customers, improving customer satisfaction while decreasing warranty costs.



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