

## What is Engine Polygraph®?

**Engine Polygraph® (EP)** is a procedure using a computer application that tells you the truth about what is the condition of your internal combustion engine's basic components while **in operation**. It does this using advanced mathematical analysis of data from SenX FirstLook® sensors ([SenXtech.com](http://SenXtech.com)) measuring pressure pulses from your engine's exhaust and crankcase.

With EP, we upload ([EnginePolygraph.com](http://EnginePolygraph.com)) and analyze sensor data quickly and easily captured using the Engine Polygraph kit to determine the physical integrity of the spark or diesel ignition engine and generate "scores" for components on your report. The score rating system uses '1' to represent 'best possible' and '9' to represent 'worst case' – but still running.

In a 'perfect' engine, each cylinder produces the same pressure variation in the exhaust and into the crankcase. By analyzing the variation between cylinders in terms of pressure waves measured and the duration of the stroke associated with the wave, a score is assigned to the upper engine (primarily exhaust) and another score to the lower engine (primarily crankcase). The worse of the two is assigned as the health of the engine since it is the most likely to result in catastrophic failure (in which case, any other problem area is not of concern).

The power stroke is associated with the crankcase since most blow-by occurs during the power stroke of a cylinder; the exhaust stroke is associated with the maximum output pressure in the exhaust pipe. (This is not always the case; i.e., when an injector fails so the expected exhaust pulse does not present.)

In addition, poorly seated valves produce high frequency waves that are detected in the exhaust. These waves are mathematically extracted and measured, providing a measure of 'poor exhaust valve seating' and Volumetric efficiency scores indicate vibrations in the exhaust pressure wave that suggest troubles with moving the air smoothly from intake to exhaust. Very high frequency vibrations in the crankcase suggest metals rubbing without lubrication and other ranges measure 'rumbling' from pitted camshafts, bad bearings, etc.

Using the [EnginePolygraph.com](http://EnginePolygraph.com) application, you can request an Assessment report to get an evaluation of the 'physical health' of your engine. This is useful if you are interested in buying or selling a used engine/vehicle. You can also request a Diagnostic report that is especially useful in diagnosing an engine with an observed problem, whether or not the engine has triggered an OBD code.

The concept of the **Engine Polygraph** takes full meaning when a report is generated before an engine 'repair' procedure, whether a cleaning treatment for carbon buildup or a mechanical tear-down and 'replace or fix' procedure. (Typically, that report was very helpful in the diagnosis.) Then, after the procedure is completed, another report can show the change of engine integrity – was the procedure effective at solving the problem, or not? In this way, the 'truth' of the diagnosis AND the fix can be documented!