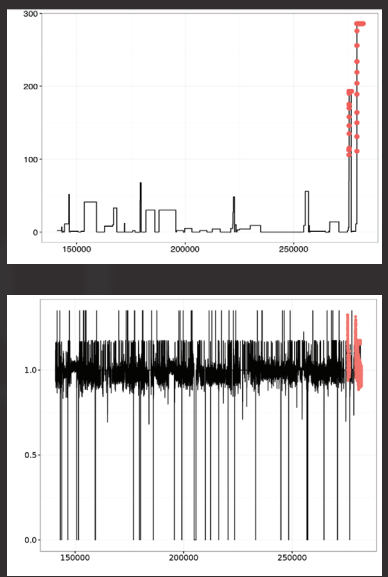
Case Study: Oxygen Leak

Acerta's technology optimizes and streamlines fleet monitoring. During the 3.2 days that a monitored vehicle was on the road it developed an issue causing deteriorated performance. By the end of the trip the problem was so severe that the driver had to shut down the vehicle.

Tracking down the cause of an issue from sensor readings can be a challenging task. Searching for the root-cause among the hundreds of signals tracked by the car is like "finding a needle in a haystack", and costs many valuable engineering hours. Two teams tracked down the problem to the fueling subsystem, but the one using Acerta analytics found it 100 times faster.

As a result of an air leak in the exhaust system, the vehicle ran continuously in a lean condition. The graph on the top depicts the behavior of a fault counter for an O2 sensor that monitors airflow. Acerta automatically picked out and labeled the spike in the reading at the end of the trip, right before the vehicle was shut down.

Fuel Bank Values

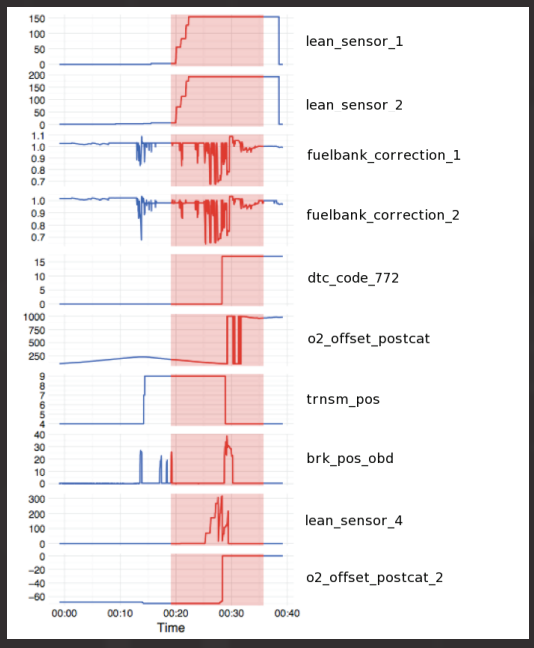


Although the trend in the top graph is easy to spot, the anomalous area in the fuel bank correction values in the bottom graph is indistinguishable to the human eye. Yet, the algorithms were picking up the disturbance in the signal nonetheless.

Many monitored parameters are typically affected when a vehicle issue starts to develop. In the case of the air leak, this includes other fuel system parameters. To help diagnose the issue, Acerta extracts a subset of signals that are most indicative of the anomaly.

The Anomalous Regions diagram below combines the 10 signals deemed responsible for the problem. The anomalous regions are highlighted in red and surrounded by context for review by engineers or technicians.

Anomalous Regions



Acerta

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