"DIESEL ENGINE CALIBRATION OVERVIEW"

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We all know that the automobiles are getting equipped with more and more electronics these days for better control, safety, and user satisfaction. But the engines have been controlled by ECU since long time due to their huge benefits over mechanically controlled
engines. ECU provides better controllability. Engine calibration is one such vast domain. Only people related to industry know more about such techniques in detail.

Diesel engines in current era requires a huge amount of optimization to meet the stringent emissions, efficiency, and reliability. Hence design and development along with the optimum calibration is a huge task. Considering the stringent emission norms and the new age drivability requirements, all the actuators require a real time control which can only be achieved by ECU calibration Engines are calibrated majorly in three stages, test bed, chassis dynamometer and on road.

Most of the combustion related work is carried out at test bed level, known as the steady state combustion. The finalization of the combustion strategy to meet the performance and emission. Key aspects like the rail pressure, injection timings, air mass set points, boost set points, exhaust gas recirculation requirements are finalized on the test bed. Further the engine is fine-tuned at chassis dyno level within a controlled environment. Most of the emissions targets are finalized post chassis dyno level calibration. The vehicle is test bed on different standard cycles approved by the government authorities for the performance and emissions. Based on the outcome, further fine-tuning is done at test bed and dyno level.

This is an iterative process. Post the base work the vehicles are finally tested on road with different terrains, altitudes, and weather conditions for performance and emissions. This is majorly termed as drivability calibration. It has a subjective as well as objective outcome.