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## 2. OBJECTIVES

The objective of this project was to design and commission a hydrogen test rig with particular emphasis being placed on the development of an onboard, hydrogen-generating device, capable of supplying hydrogen on demand to an internal combustion, spark ignition engine.

Furthermore, a subsequent objective of the project was to develop a comparative set of performance and emissions curves for two fuelling scenarios; one being conventional petroleum fuelling and the other being the supplementation of the petrol fuel with hydrogen from the onboard generating device.

The specific aims of the experiments would be:

- To design, manufacture and commission a hydrogen-generating device capable of supplying hydrogen to an internal combustion engine.
- To commission a hydrogen test rig comprising a test engine, dynamometer and all other equipment necessary for the measurement of the engine performance from both petroleum and hydrogen fuelling.
- To determine the levels of  $\text{NO}_x$ , CO and  $\text{CO}_2$  emissions for petrol and hydrogen-supplemented fuelling so as to draw comparisons across the engine speed range.
- To determine the torque and BMEP curves of the engine for the two fuelling instances detailed above.