

Status: Filled

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Project Description

This Capstone project will develop improved fuel management, consumption monitoring, hydrogen leak monitoring, and Ballard Power Systems' current generation of Heavy Duty Fuel Cell hydrogen-fuelled backup power systems. Figure 1 presents two views of the HD7 Fuel Cell Module: a) as packaged in its enclosure (left) and b) as viewed showing its internal components (right).

Figure 1: Packaged & Internal (Concept) Views of FCve

The proposed Capstone project would target several systems to implement fuel flow monitoring in the Pressure Control Valve (PCV) system. When the fuel consumption on-line while the vehicle is operating and diagnostic capability is available, this on-line estimation of the instantaneous fuel consumption compared with the instantaneous fuel consumption by the PCV system, fuel being lost to purging and by any external leaks. This has potential for not only giving fuel correction but also identifying fuel leaks, where this is the second area that

be targeted in this project is one of possibly making the Cathode Outlet H2 sensor (and another Ventilation Outlet H2 sensor [not shown] that monitors for system external H2 leaks) less safety-critical by being able to detect when these sensors are not working properly. The goal here would be to review this work and try to develop ways of detecting when the H2 sensors in the module are not working, or when they exhibit a level of default safety-