

Fig. 1 – Power flow instrumentation summary.

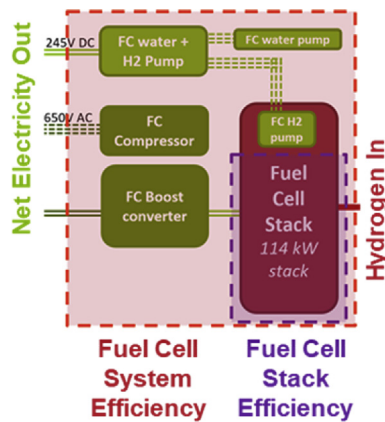


Fig. 2 – FC stack and system boundary definition.

$$\text{Efficiency}_{\text{Vehicle}} = \frac{\text{SAE J2951 Positive Cycle Energy}}{\int_{t_{\text{initial}}}^{t_{\text{final}}} \text{MassFlow}_{\text{Hydrogen}}(t) \times \text{LHV}_{\text{Hydrogen}} dt} \quad (3)$$

Standard North-American certification drive cycles

Drive cycles are specific speed profiles defined as a function of time. Three major certification cycles were used in this assessment:

- **UDDS:** The Urban Dynamometer Driving Schedule is a city drive profile with mild accelerations. The Federal Test Procedure (FTP) for city fuel economy is composed of a cold-start UDDS, followed by a hot-start UDDS after a 10 min key-off break. A “cold start” test means that the vehicle, and therefore the powertrain, was soaked at the target ambient temperature for over 12 h before the start of the test.

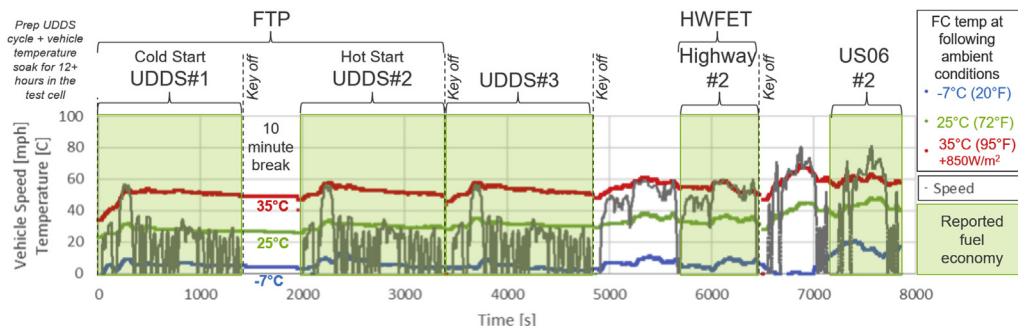


Fig. 3 – Standard drive cycle test sequence.