

# CVM

## CELL VOLTAGE MONITORING UNIVERSEL & MODULAIRE



### OBJECTIVES:

Each cell in a fuel cell is monitored by a system called Cell Voltage Monitoring (CVM). This function is essential to measure the performance of a fuel cell during the test phase as well as during the serial life.

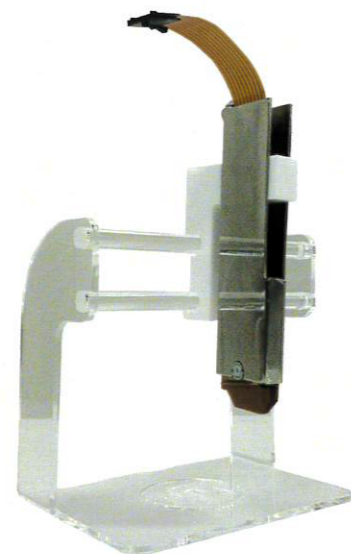
In addition, the CVM allows to monitor each bipolar plate more precisely than a measurement at the output of the cell and also allows to locate one or more defective ones.

However, current CVMs are not suitable for high volume production. Indeed, they are installed individually and manually. Moreover, they are not common to each type of cell from a design and dimensional point of view.

This is why DAM Group is developing a CVM that can be used for any type of bipolar plate as well as for research or high-speed production.

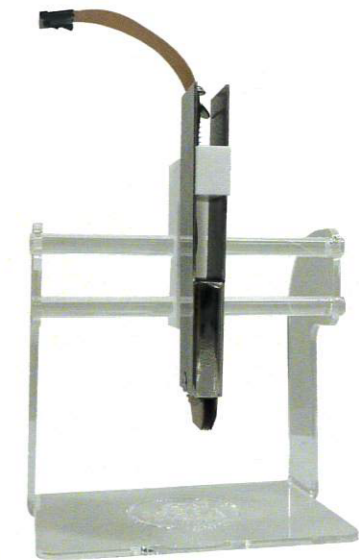
### ACHIEVEMENTS:

- The cvm must be able to :
  - Be assembled on all existing bipolar plate designs (plug, socket, contact) and avoid premature wear especially for graphite and carbon based plates
  - Able to communicate with the vehicle's on-board computer (fault detection)
  - Adapt to the deformations of the battery (traction, torsion), during its operation
  - Have a life span that corresponds to the duration of use in the various fields of application (mobility, electrolyzers, etc.).



### RESULTS:

- DAM has finalized the mechanical part of its CVM which allows it to be installed on all known bipolar plate designs on the market.
- DAM's current design allows for a 20,000h service life. This represents 1.2 million kilometers traveled by a bus or truck at 60km/h.



### BUSINESS PROFITS:

- The CVM allows a gain in cycle time for mass production (1 CVM for 8 cells instead of 1 CVM per cell)
- A common CVM for all designs allows to limit the cost of the studies and thus its future purchase price
- The CVM must allow the detection of a defective cell that can be replaced and thus avoid the replacement of an entire stack

### PROJECT HOLDER:



### WITH THE SUPPORT:



### FOLLOW-UP

- DAM has finalized the mechanical part and is currently working on the electronic part of the CVM so that it can communicate with onboard computers for example
- Dam is looking to develop additional functions for the CVM such as the measurement of the intensity or the spectroscopic impedance for the wear of the cells