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Solid Oxide Fuel Cell Test Rig

Solid Oxide Fuel Cells (SOFCs) are a very promising alternative energy source. SOFCs have many advantages, especially their high fuel flexibility. As opposed to other fuel cell types, the SOFC can use a multitude of different fuels including pure hydrogen and methane. Because of the high commercial use of methane as a fuel, we decided to create our rig to be run off of methane. The purpose of the test rig is to run the fuel cells and gather data on the V(i) curve of the cell and how efficiently it runs. Because of the cell's high operating temperature (800 centigrade), heat resistant materials must be used to run the cell. In order to get the methane to the cell, it is run through a series of tubes connected to mass flow controllers that runs through a humidifier and finally comes in contact with the cell via an aluminum oxide tube that the cell is glued to. This poster will explain how the rig is put together and the startup and shutdown procedures. We hope to use the rig to run many fuel cells in the future and do a multitude of test on SOFCs.