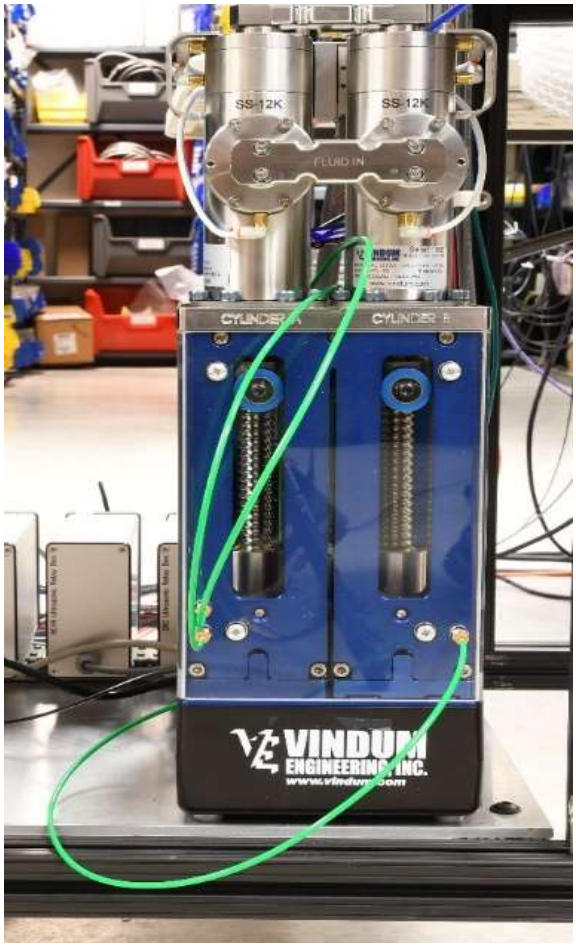
Geomechanical and Petrophysical Testing with CO_2

NER's upstream CO_2/brine pore pressure module serves as either an add-on to an NER AutoLab system or as a stand-alone fluid mixing and delivery system for general use with other equipment. The module is configured as a stand-alone mobile cart that can be easily moved to various testing apparatuses and docked for use during active flooding of CO_2 saturated brines or supercritical CO_2. Typical pressure and temperature limitations are 70 MPa and 120°C.



Experimental Setup

The computer controlled system includes a dual piston electromechanical pump that provides pressure control and a measure of volume of CO_2 injected. The heated reaction chamber contains an ultrasonic waveguide with internal reflector to provide a real-time measurement of the acoustic velocity in the brine. Detection of the reflection off the CO_2/brine interface provides a measure of CO_2 and brine volumes in the reaction vessel. Outlets top and bottom provide delivery of humidified $scCO_2$ or CO_2 (aq) saturated brine to the test system. Optional line heaters are available for applications that require temperature control between the cart and apparatus.

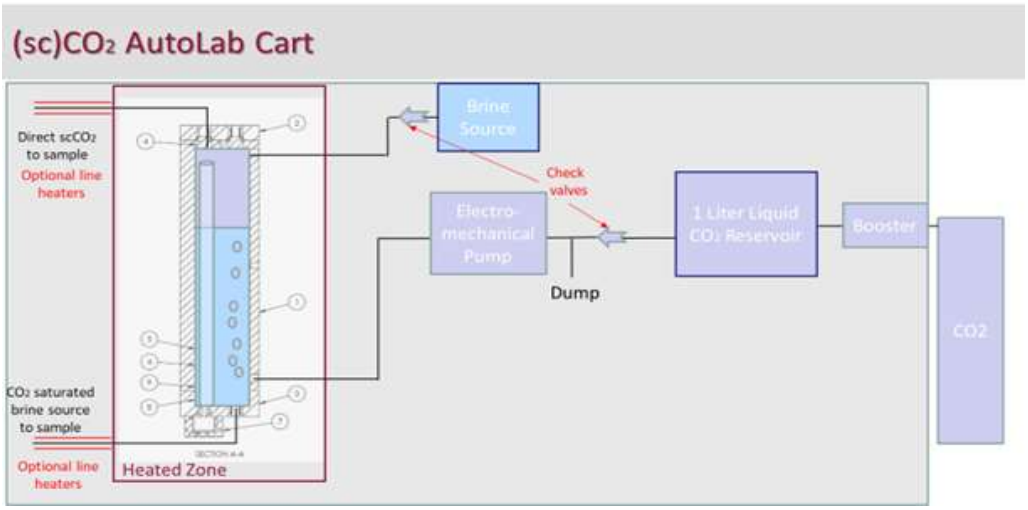


Figure 1: Schematic diagram of NER's CO_2 + Brine upstream pore fluid mixing and control module.