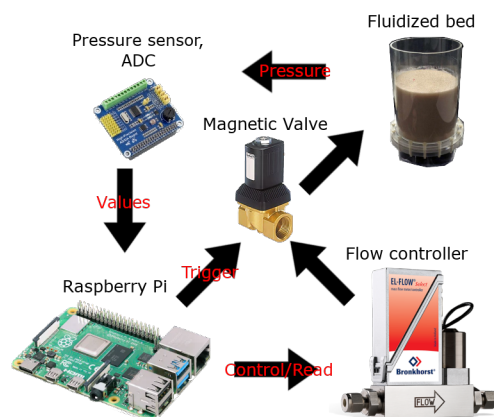


Design of a control and measurement system for fluidized beds in an MRI scanner

Fluidized beds represent an important reactor type in chemical engineering, yet their internal processes are not fully understood. The Institute of Process Imaging is employing Magnetic Resonance Imaging (MRI) techniques to gain insights into these system in three dimensions. The Institute will receive a new magnet system in 2022 for this purpose. To control the experiments properly, an interface has to be designed in this project. This interface has to serve several purposes

- Control the flow rate of the gas (pressured air)
- Start/Stop the flow immediately
- Determine minimal fluidization velocity (U_{mf}) of the reactor
- Allow pressured air pulses through valves (user controlled/externally triggered)

All these purposes should be achieved with simple hardware such as one board computer (e.g. Raspberry Pi) and a commercial flow controller (e.g. from Bronkhorst) We search



for a candidate for a research project, that (ideally)

- has basic experience with one board computers and microelectronics
- has basic experience with programming in Python
- is familiar with the basics of fluidized beds