



## EARLY GAS DETECTION VIA DIFFERENTIAL FLOW AUTOMATION ON THE FLOWLINE MINI RIG

### BACKGROUND

The Customer (Anglo American) approached our customer (Flowline) and requested the ability to monitor the flow of water entering a drill and the flow of water exiting the drill as it drills into the ground to look for pockets of gas. If the flow out is higher than the flow in, then it means that they are hitting something. They needed an automation panel that could monitor the differential flow percentage and display an alarm locally to the operator to be able to vent out the gas within a certain time frame, to stop a build-up of gas pressure and therefore protect the operators on the drilling rig from a fatal explosion.

### CHALLENGE

The challenge for this scope was that the customer needed to give detailed data due to the nature of the scope being a dangerous operation. Without the automation, this would be a very dangerous drill to operate. We needed to arrange with the end customer just what alarms are needed and also provide a cloud solution so that other users across the business are able to monitor and see relevant data trends so that they can use the data to replicate their findings to other systems.

### SOLUTION

The solution we provided was to use a 10" Unitronics PLC with a suitable license and connection to the Unicloud Cloud telemetry system. With this, we can take in all the flowmeters, the RPM sensor, and the pressure, and display all these readings on an HMI on the panel itself. With this PLC, we were able to generate Formulas in the back end to perform the mathematical calculations required to calculate differential flow percentage and display them in a gauge format, along with fully customisable alarm settings, while they were in the R&D stage of their project. This HMI/PLC would also be able to display localised data trends on separate pages to help keep a local record of how all the different readings are doing, while also sending all this data up to the cloud so anyone can view the drill's data from other locations and send out daily reports to those that require it.

### RESULT

The Result of this provided the customer with a fully viewable Cloud system and localised data reading system, which would also use customisable alarms on there over pressure and Differential Flow Percent exceeding a certain defined amount.



**Nicholas Rocks**  
Control & Automation Apprentice

