



BLUE CUBE QUARTERLY.

2018 | Quarter 1

The Blue Cube Calibration Sampler

The Blue Cube MQi Analyser uses a pneumatic in-line 'poppet' sampler to collect calibration samples.

The advantage of using the Pneumatic Sampler is that the sampling point is very close to where the optical data is collected during a calibration scan. It is necessary that the optical data and physical sample be representative, as these sets of data are matched using proprietary mathematical algorithms.

It is very important that the passing flow is well mixed, and that the grade profile within the pipe is as homogeneous as possible.

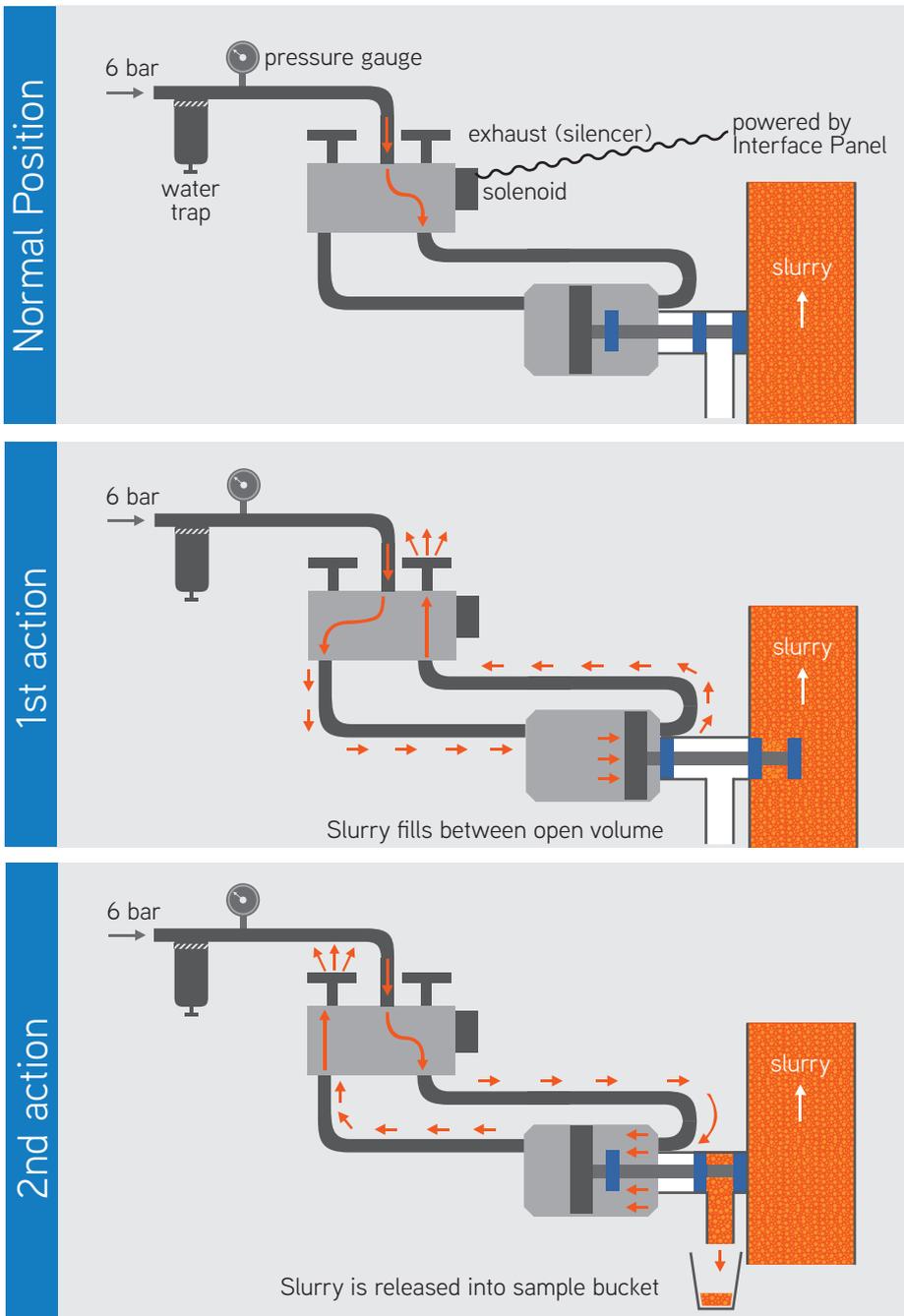
The first reason for this is that the optical data is collected from the side of the pipe through a sapphire window. This data must be representative of the process flow and the physical sample.

The second reason is that the physical sample collected from the Pneumatic Sampler should be representative of the process flow and the optical data.

The Pneumatic Sampler is a third-party component; it is supplied by eDART, who also supports it.

With each actuation, the Pneumatic Sampler collects a fixed volume sample between two seals connected to the piston shaft. A calibration scan takes place over a period of two minutes, during which time the Pneumatic Sampler is actuated between 10 and 20 times (application specific). The composite samples collected over the two-minute calibration sequence are then filtered, dried and split in preparation for chemical analysis.





How it works

The calibration sequence is actuated through an electric signal from the Interface Panel of the MQi Analyser to a solenoid. The solenoid mechanically switches a valve to let instrument air into the cylinder, to force the piston assembly into the process line.

The piston consists of wear-resistant polyurethane seals, which push into the pressurised process line as the first action of the dual-action solenoid valve. The volume between the two front seals fills with a sample of passing slurry, and then, as a second action, the seals retract to release the sample at atmospheric pressure into a bucket through the sample downpipe.

The end cap of the piston assembly is made of Tungsten Carbide-coated steel.



Safety and maintenance considerations

The Pneumatic Sampler operates under pressure; therefore, it is important to ensure that it has been disconnected and depressurised prior to starting any maintenance work. The power supply and signal must be disconnected to avoid accidentally powering up the unit.

To avoid serious injuries, fingers and loose clothing should be kept away from moving parts. If a body part or clothing makes

contact with the moving parts, it may cause serious injuries, broken bones and even amputation.

Maintenance should be arranged with eDART. This will typically include tightening the sampler seals (to prevent leaking) and replacing worn out seals.

BLUE CANVAS

AT THE OFFICE



Training

An internal training session was hosted by eDART for the Blue Cube technical team.

From left: Janelle Theron, Bubele Booi, Frans Jansen, Duane le Roux (E-dart), Zakaria Mellas, Itai Ndaanyana, Alex Zheng (Process IQ) and Phanus Bekker.

Brainstorm

The Blue Cube team during a recent R&D brainstorming session.



Team building



The Blue Cube team playing bubble soccer for team building.

ON THE PLANT



Glencore – Merafe From left: John, Bubele, Able, Pieter and Annanius.



Glencore – Thorncliffe

Bubele with Vusi Mothebe.



Northam Booyssendal

From left: Ryan, Bubele and Brian.

Commissioning

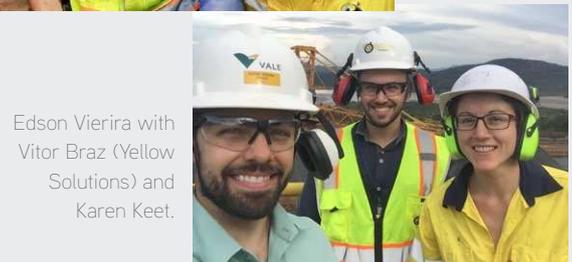
Vale Brucutu, Brazil



Ruan Botma with Ruberto Dias, Edson Vierira and Tiago Caixeta.



Ruan with Paulo Longo from Yellow Solutions.



Edson Vierira with Vitor Braz (Yellow Solutions) and Karen Keet.