FCoE Public Data Set 04 – September 2020

Summary

This data set contains readings from a wide array of instruments and actuators available on the **XCaliber flow Loop** at the **Flow Center of Excellence** in Dordrecht the Netherlands.
The data set contains an interval, approximately after 3 minutes, where air is introduced to the system (just before FT-211 and temporarily captured around FT-211).

License

More Information

More information on XCaliber and the Flow Center of Excellence is available at https://www.flowcenter.nl/en/home-en/

Required Citations

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Data Collection & Storage Info

Data was obtained from an OPC factory Server by Schneider Electric using UReason's APM-Studio. Original raw data format, stored by APM-Studio, is available in Microsoft SQL-Server.

Data Information

Key devices in the data set:

1. ATV_101 : Frequency Controller (pump drive) for pump 101
2. FT_100 : Magnetic Induction Flow Transmitter (Main line)
3. FT_102 : Coriolis Flow Transmitter (mass meter , Main Line)
4. FT_210 : Magnetic Induction Flow Transmitter (MUT section A)
5. FT_211 : Magnetic Induction Flow Transmitter (MUT section A)
6. FT_220 : Magnetic Induction Flow Transmitter (MUT section B)
7. FT_221 : Magnetic Induction Flow Transmitter (MUT section B)
8. P_101 : Pump 101
9. PT_101 : Pressure Transmitter (right after pump section)
10. PT_201 : Pressure Transmitter (just before pump section)
11. TT_201 : Temperature Transmitter (just before pump section)

The P&ID (piping and instrumentation diagram) of XCaliber, is provided as part of the data set.

Key features in the data set:

	Device	OPC-item	Description
1.	ATV_101	ATV_101_ATV_ST.PresentValue	Drive RPM - process value
2.	ATV_101	ATV_101_ATV_ST.SetPoint	Drive RPM – setpoint
3.	FT_100	FT_100_Calc_flow	flow (m3/hr; calculated)
4.	FT_100	FT_100_KFact_Value	# puls /hr (KFact = 20000)
5.	FT_102	FT_102_Calc_flow	flow (m3/hr)
6.	FT_210	FT_210_Calc_flow	flow (m3/hr; calculated)
7.	FT_211	FT_211_Calc_flow	flow (m3/hr; calculated)
8.	FT_220	FT_220_Calc_flow	flow (m3/hr; calculated)
9.	FT_221	FT_221_Calc_flow	flow (m3/hr; calculated)
10.	P_101	P_101_Freq_OP	frequency (%) as set by drive
11.	P_101	P_101_SDDEVCTL_ST.PV	Motor/PUMP speed RPM
12.	PT_101	PT_101_AINPUT1_ST.PV	process value (barg)
13.	PT_201	PT_201_AINPUT1_ST.PV	process value (barg)
14.	TT_201	TT_201_AINPUT1_ST.PV	process value (° C)

Data set type

Raw data – multiple conditions.

Sequence of Events

The system is running with 1 pump ; Frequency SP = 20%, base pressure: 0 barg

1. 16:39:08 start logging
2. 16:42:06 start air inlet around FT_211
3. 16:45:15 start flushing air out (increasing freq. SP to 60%)
4. 16:46:16 start air bubble in/around FT_211 'blow away'
5. 16:48:29 freq. SP set back to starting frequency (20%)
6. 16:51:30 stop logging