FCoE Public Data Set 03 – 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 a signature of (simulated) process fouling at XCaliber. This fouling builds up gradually and is flushed out under certain process conditions.

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_Run_CMD	status indicator (pump command running)
12.	P_101	P_101_Running	status indicator (pump running)
13.	P_101	P_101_SDDEVCTL_ST.PV	Motor/PUMP speed RPM
14.	PT_101	PT_101_AINPUT1_ST.PV	process value (barg)
15.	PT_201	PT_201_AINPUT1_ST.PV	process value (barg)
16.	TT_201	TT_201_AINPUT1_ST.PV	process value (o C)

Data set type

Raw data – multiple conditions.

Sequence of Events

The system is running with 1 pump ; Frequency SP = 30%, base pressure: 0 barg

1.	16:05:08	start logging
2.	16:07:11	start developing fouling (3 minute steps)
3.	16:25:33	fouling at max
4.	16:28:39	fouling starting to break off (1st part)
5.	16:30:45	start breaking off 2nd part
6.	16:31:39	stop logging