MM AND FILTER DATA COLLECTION

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Performance you can rely on.

Infineum

Outline

Goal: Compile all the data available

Note that profiles are needed, so operational data are needed, not just final aeration values.

1. Identify existing data and new data:
   - Update existing LTMS file adding need ***new columns*** to the file
   - Update existing LTMS file adding need ***new rows*** to the file: MM Testing data that are not part of the LTMS file would be added to the LTMS file for oils K, oil G, 832, 833 and 1005
2. On test operational data is needed to build profiles
3. Warm-up data needed to obtain MM density: how accurate is the MM? we could potentially learn more about the filters (initial state)
4. During recent SP meeting, we talked about confounding and that there are other factors that impact aeration: What are they? Are these being recorded already?
5. Reminder: Please, record the test validity for all tests
6. On test data format: Please, add Lab and Oil to the format used for the VGRA data file
7. Data location: Data could be sent to the TMC (if Sean is ok with it)

Required data: Preliminary thoughts to start the discussion

TESTKEY	LTMSLAB	**MMSERNO**	MM model	transmitter model	transmitter SERNO	last MM calibration date	calibration location	ASK EMERSON any software change during MM life (yes or no)	ASK EMERSON any software change during transmitter life (yes or no)	flange description
				blue cells: existing data				yellow cells: ask Emerson		

Currently, two labs are using numbers; one lab using model

OILFILDC	# of pleats	porus size	filter origin	number of shutdowns before 30 hours

MM testing data shared in April 2016: review

nomenclature and what has changed from one test to another: model, transmitter or both? Oil? Test validity?

Are these tests included in the LTMS file?

Industry MM Usage

SUCCESS TOGETHER

Lab		Sensor Model #	Transmitter Model #	Date Installed	Flange Description
SwRI	MicroMotion used during COAT Precision Matrix	CMF025M319NU	RFT9739E4SMA	4/15/2013 is the date that the first test data was recorded.	319 is #8 VCO fitting
SwRI	Active MicroMotion used in test stand	Same	Same	Reinstalled after calibration at Emerson on 2/1/2016	319 is #8 VCO fitting
ICES	MicroMotion used during COAT Precision Matrix	CMF025M313NU	RFT9739E4SUJ	7/2014 Started; 1/2015 Ended	313 is 1/2" Weld Neck Flange
ICES	MicroMotion used during Aeration Testing	CMF025M313NU	RFT9739E4SUJ	7/30/2015 Removed after seeing a density shift during 50 hour test and could not determine cause.	313 is 1/2" Weld Neck Flange
ICES	MicroMotion used during COAT VGRA Matrix	CMF025M313N2 BAE3ZZ	5700R12ABAAZZZ w/ PUCK800	8/21/2015 Installed; 10/2015 started VGRA; 12/2015 ended VGRA	313 is 1/2" Weld Neck Flange
ICES	Active MicroMotion used for test stand	CMF025M313N2 BAE3ZZ	5700R12ABAAAZZZ w/ PUCK800	Next MM Calibration expected in 8/2016	313 is 1/2" Weld Neck Flange
LZ	MicroMotion used during COAT Precision Matrix	CMF025M319NU	RFT9739E4SUJ	Installed July 2014 and utilized for both the Prove-Out and Precision Matrix	319 is #8 VCO fitting
LZ	NEW MicroMotion (Acquired Jan 2016)	CMF025M319NB AEZZZ	PUCK800	Newly Acquired (not utilized for testing)	319 is #8 VCO fitting

Any new data?

It was stated in the July 6th telecon that SwRI experienced a 1.5% shift up with the Puck800. In this experiment, was the sensor model the **SAME**?

Both changed

What is the difference between CMF025M319**NU** and CMF025M319**NB AEZZZ**?

Does Flange affect aeration?

Lubrizol

APPENDIX

Performance you can rely on.

LTMS data: Example Lab G

Does the table below capture the data properly?
Should additional columns be included?
Flange type? How many fields to describe flange?
"Puck/Transmitter" = 5700R

Existing column

Added columns???

TESTKEY	LTMSLAB	LTMSDATE	**MMSERNO**	transmitter model	transmitter SERNO	meter SERNO
103954-COAT	G	20141206	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
103455-COAT	G	20141208	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
103468-COAT	G	20141211	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
103462-COAT	G	20141214	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
104083-COAT	G	20141216	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
103629-COAT	G	20141219	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
106458-COAT	G	20150130	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
100263-COAT	G	20150311	CMF025M;RFT9739E4SUJ	RFT9739E4SUJ		14476409
110235-COAT	G	20150902	CMF025M;5700R	5700R	12120911	
110728-COAT	G	20150906	CMF025M;5700R	5700R	12120911	
109830-COAT	G	20150912	CMF025M;5700R	5700R	12120911	
111346-COAT	G	20151014	CMF025M;5700R	5700R	12120911	
111347-COAT	G	20151205	CMF025M;5700R	5700R	12120911	
112704-COAT	G	20160317	CMF025M;5700R	5700R	12120911	
112705-COAT	G	20160702	CMF025M;5700R	5700R	12120911	

MM Experiments: Questions for all labs

- When did the labs undergo calibration for the operational measurements as per section 8.3.1.1 relative to when the new sensors / new transmitters were used?
- What densities were recorded during warm-up with new sensor vs old sensor, with new transmitter vs old transmitter?
- How different were the temperature drops across the MM? Although within spec, 0.9 deg C difference vs a 0.1 deg C difference can help contribute to some differences.
- Has anything changed about the engine (new block, new gasketing, etc.)? Did Si levels remain passivated for all MM experiments?
- Do we expect 313 vs 319 flange to affect aeration? If so, can we run an experiment to confirm?

5700R = PUCK800

- The puck800 is the inner core of the transmitter. Basically, the processor. We went from 700 core processors to 800 core processors about 4-5 years ago. All 5700's have 800 cores but no 9739's do.