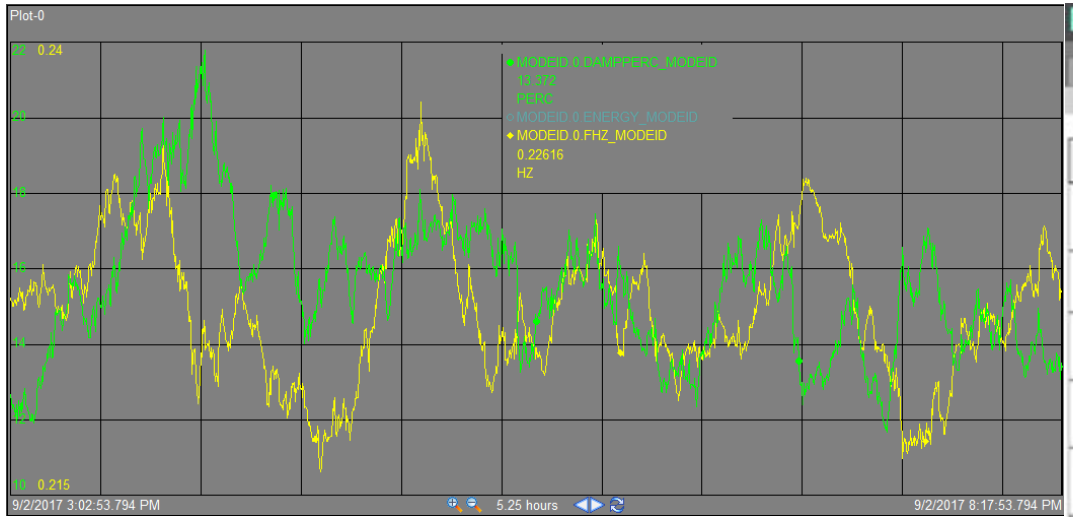
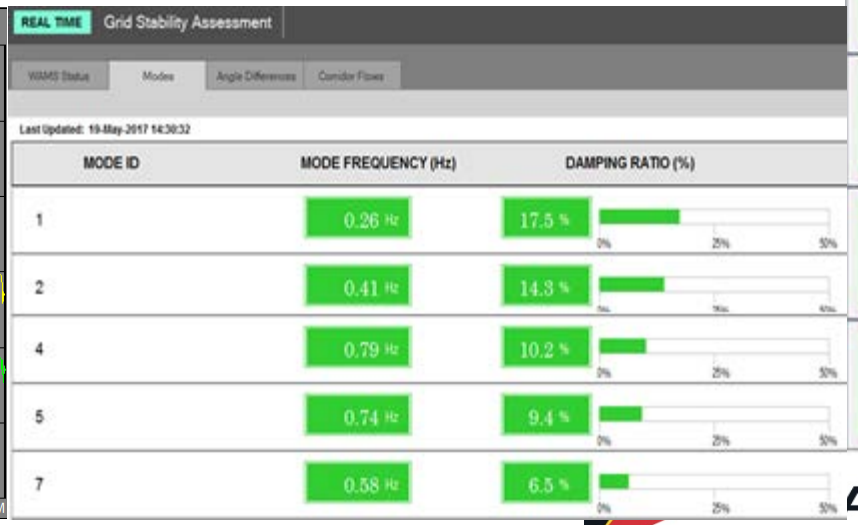
Success Story Spotlight

- Integrated MontanaTech MAS tool in GE-Alstom PhasorPoint (PP) and send online PP/MAS results in EMS. Enable calculating major inter area oscillation modes in real time for Mode Meter baselining.
- Develop Forced Oscillation Detection and Source Location (FODSL) tools in collaboration with WSU. Capture oscillation events and source units effectively.

Monitoring Inter Area Modes in Real-Time

- Peak implemented MontanaTech MAS engine in GE PhasorPoint (PP) and integrated PP/MAS solution results into EMS via Grid Stability Assessment (GSA).
- MAS is configured to monitor multiple inter area modes.
- All MAS results are available in EMS and PI Historian.

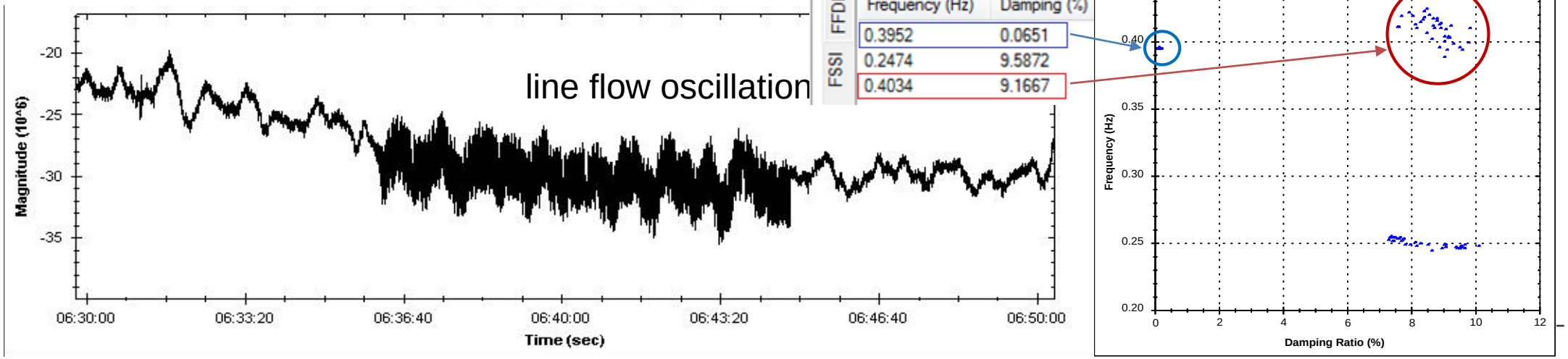




AKRELIABILITY

Forced Oscillation Detection & Source Locating

- Peak implemented WSU Oscillation Monitoring System (OMS) tools in Engineering Lab for forced oscillation detection in real-time.
- We collaborated with WSU to develop original algorithms for source locating by SCADA measurements: PMA and MVRA.
- The tools were used to find various forced oscillations, including one Resonant Oscillation on COI.



Real-Time FODSL Results Summary
(08/18/2017-09/07/2018)

- From the FODSL tool at Engineering Lab, we noticed hundreds of oscillation event alarms in Fig-1. By filtering those with damping <3% and confidence level>75%, we identified a subset of likely sustainable oscillations in Fig-2. We chose one 1.23 Hz oscillation event in Fig-3.

Fig-1:

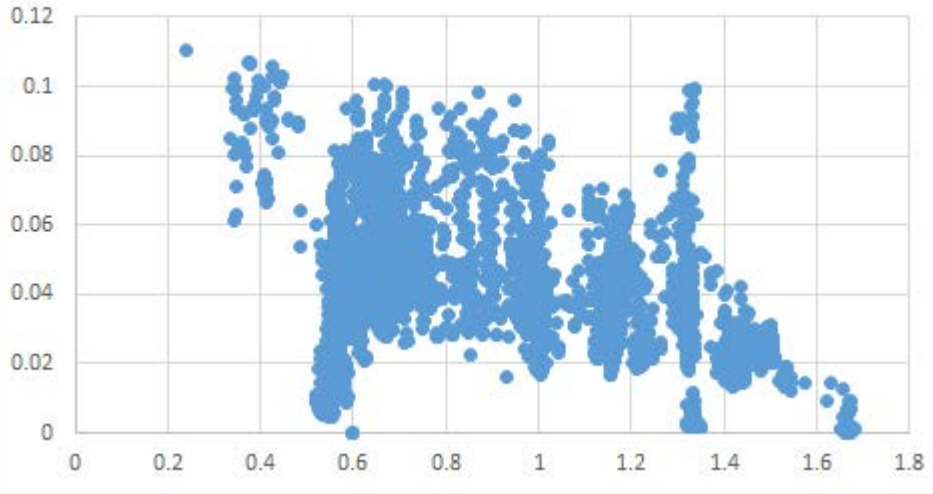


Fig-2:

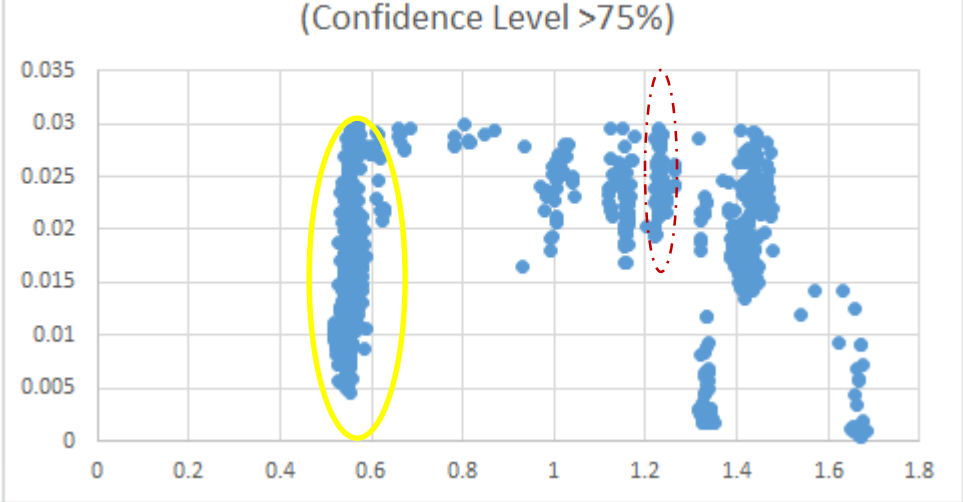
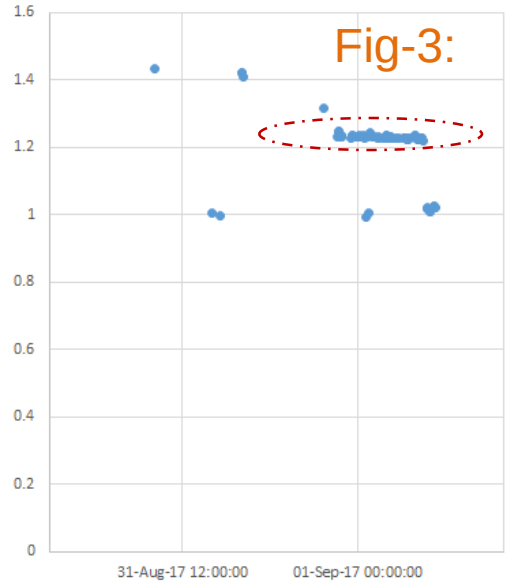
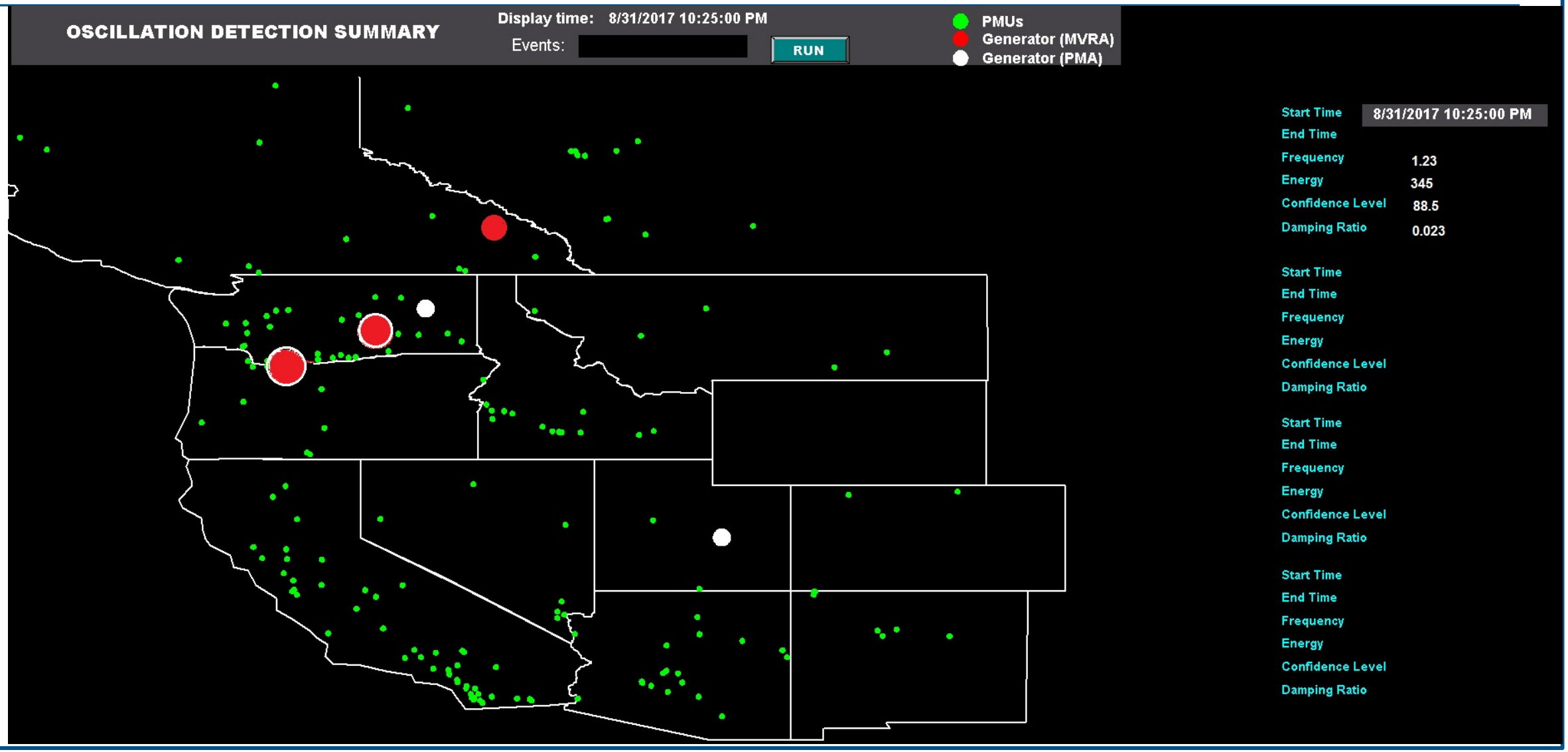


Fig-3:



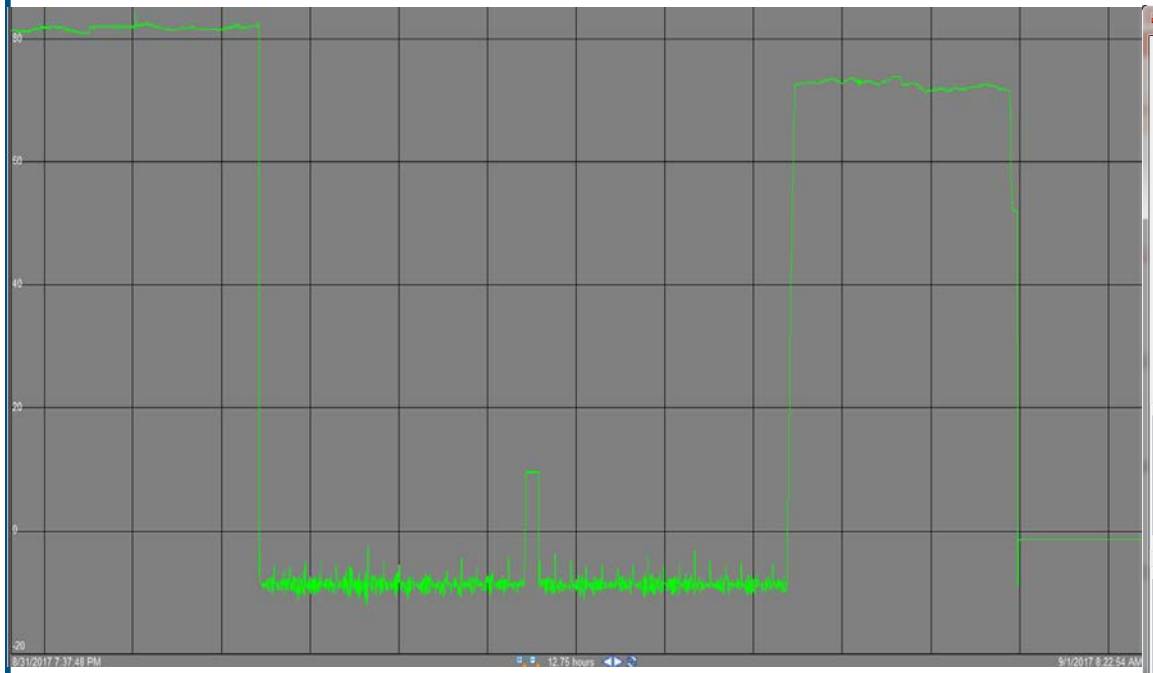
PEAKRELIABILITY

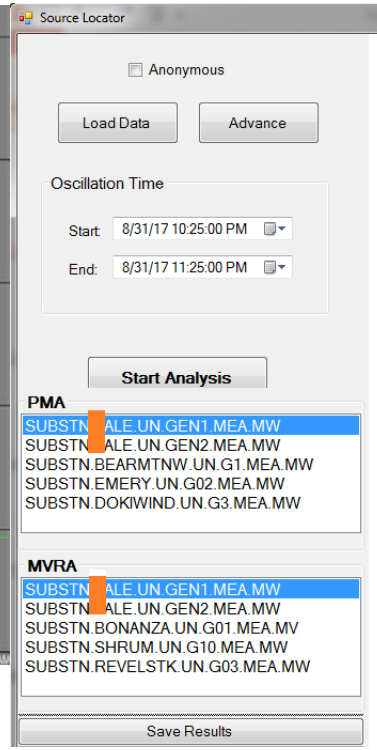
FODSL PI Processbook Visualization Tool

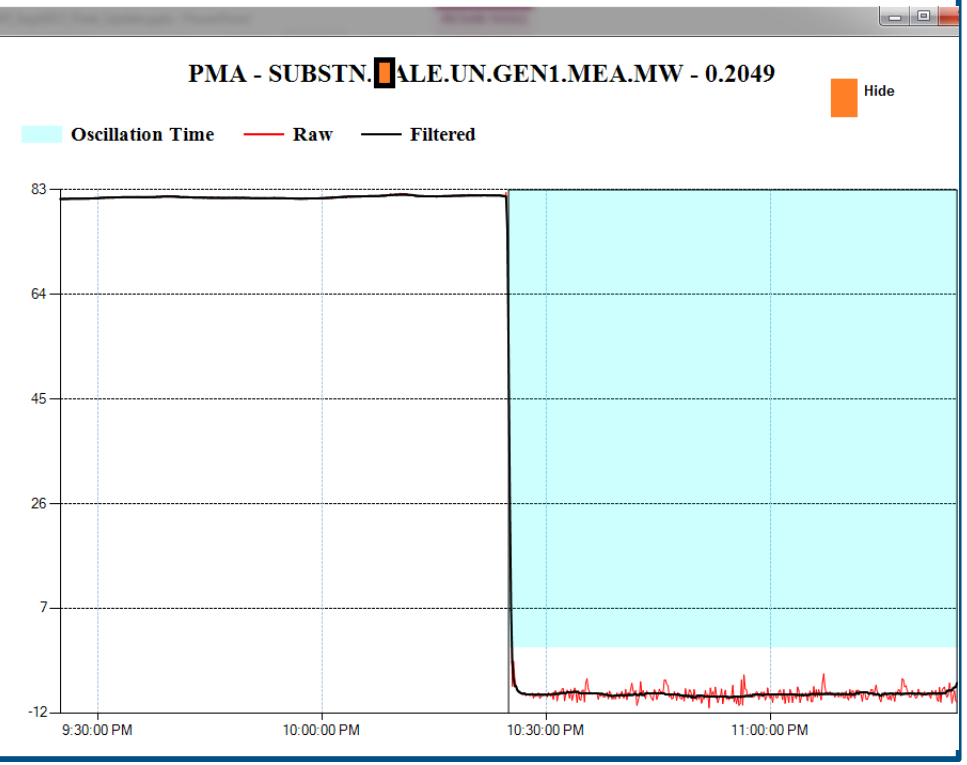


Offline Case Study by the PMA and MVRA Tools

- This 1.23 Hz oscillation event was captured by both BPA MAS/ODM and Peak WSU-FOD tools. Both PMA and MVRA tools identified the same source unit. It was on motoring mode with PSS turned on during the incidence. BPA and Peak contacted the unit owner and confirmed the root cause of oscillation.

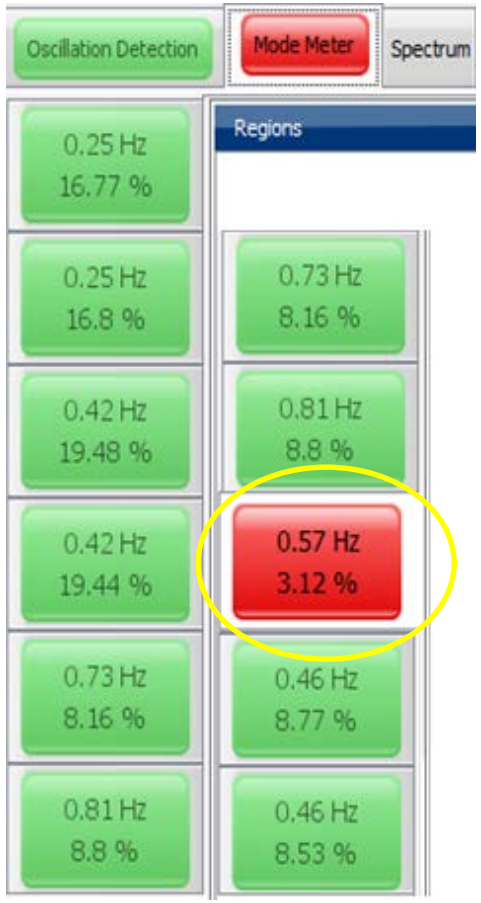


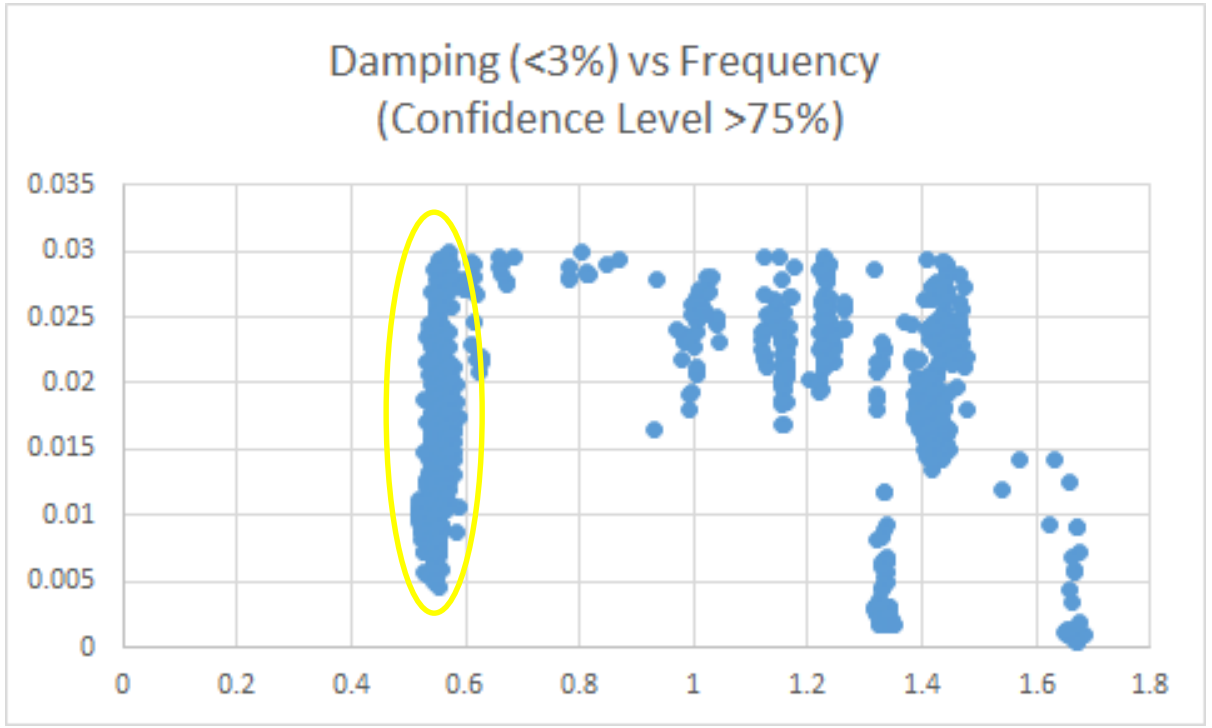




0.57 Hz Oscillation Reported by MAS and WSU Tools

- What's caused the coincidence?





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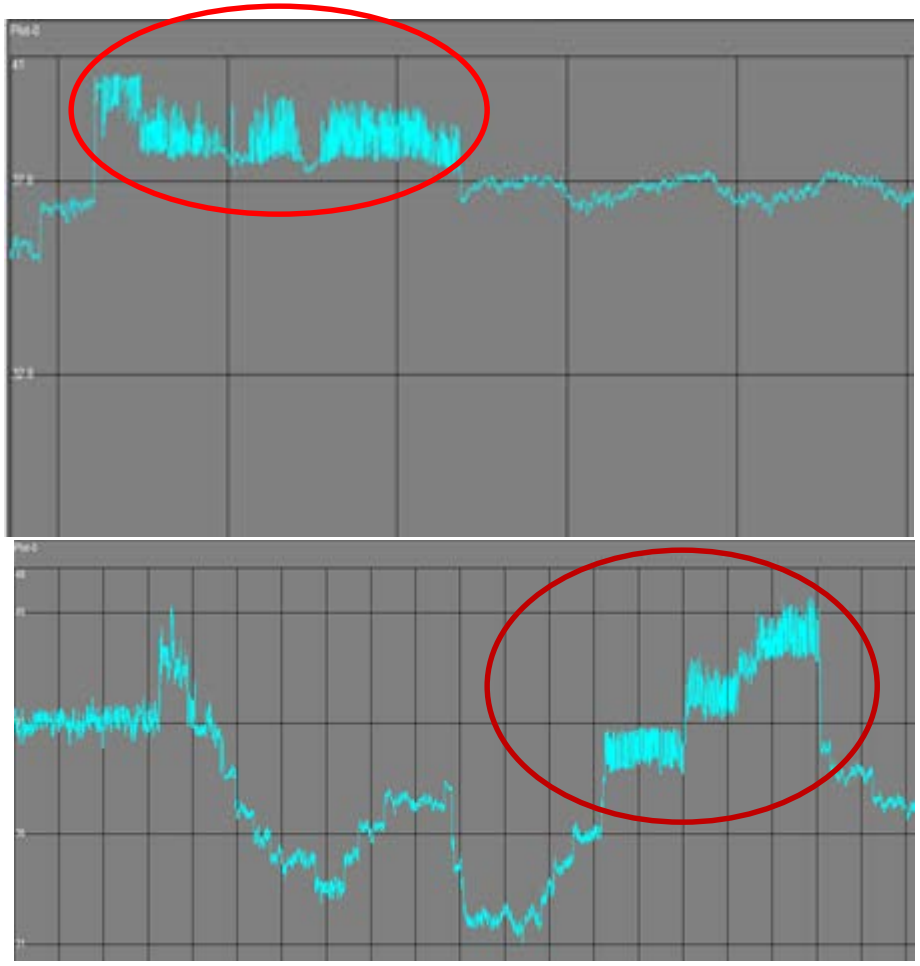
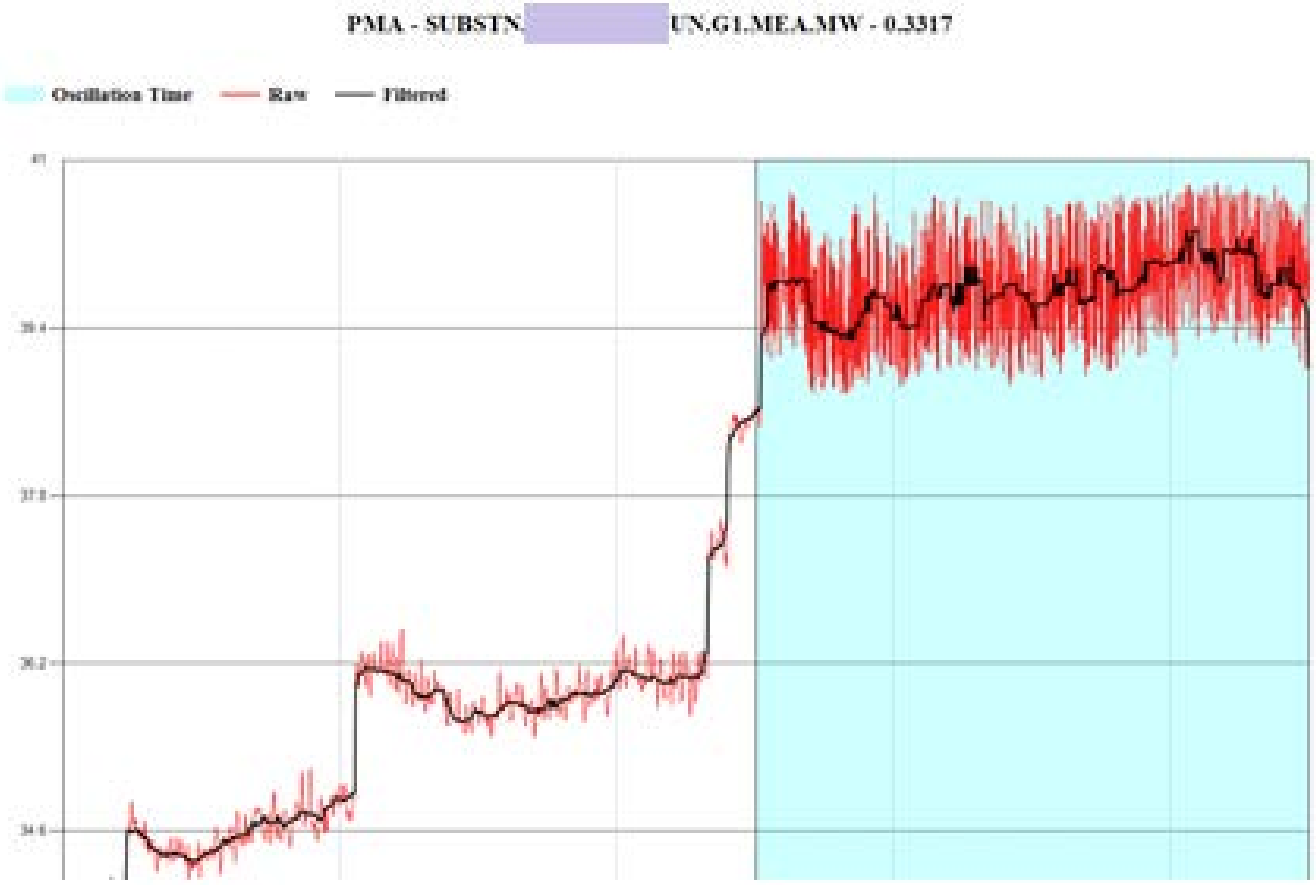
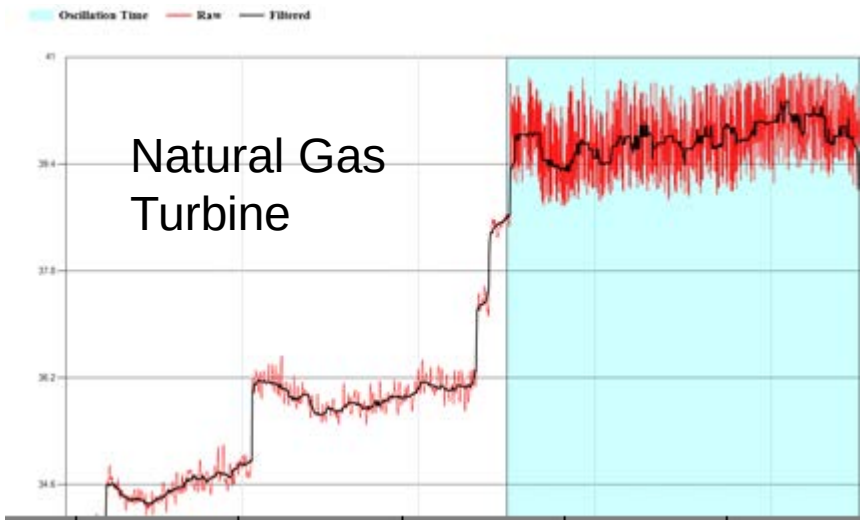
Another Forced Oscillation Event under Investigation

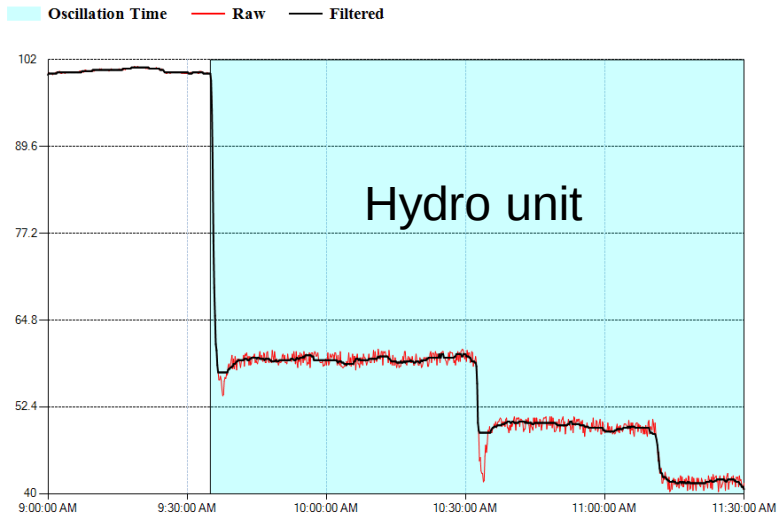
- A Gas turbine unit falls into oscillation when output >40 MW

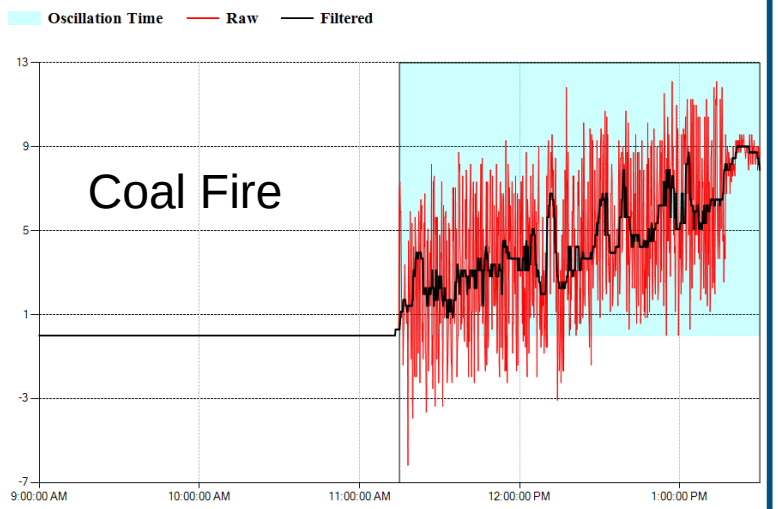


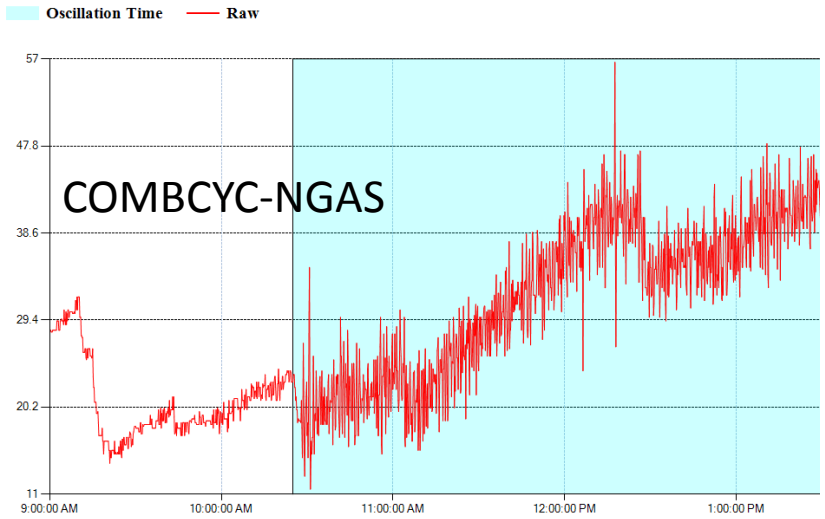


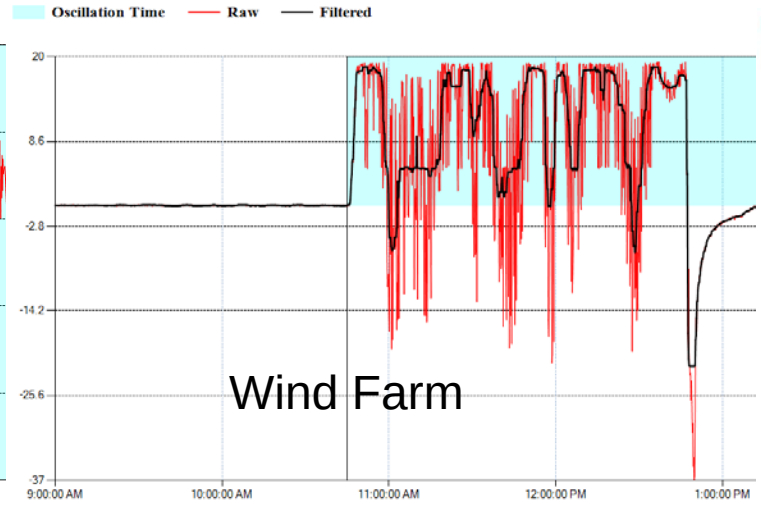
More Possible Oscillations to be Investigated

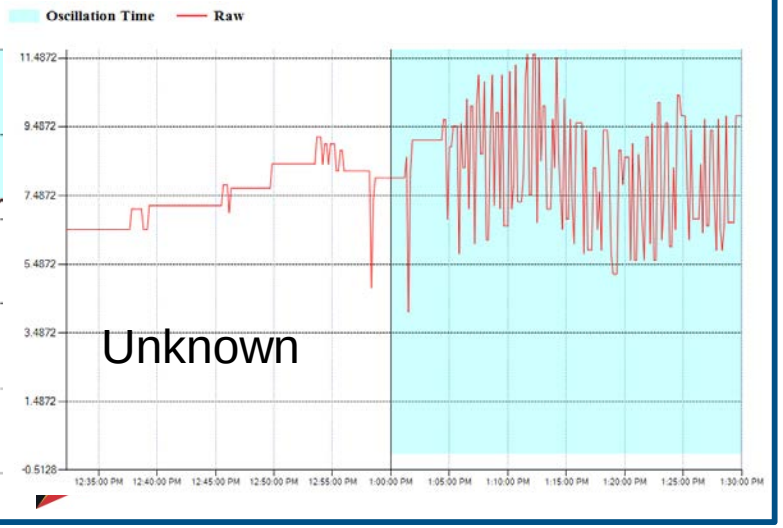












FODSL Tool demo (offline version)

- The demo will show and tell:

(1) What did the tools detect and how?

(2) What was the process to follow up?

(3) What's positive outcome or identified cause of the event?

(4) How does it help to familiarize any future reliability issues?

Discuss what's the threshold to pick a oscillation event that warrants for inquiry and mitigation plan.

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