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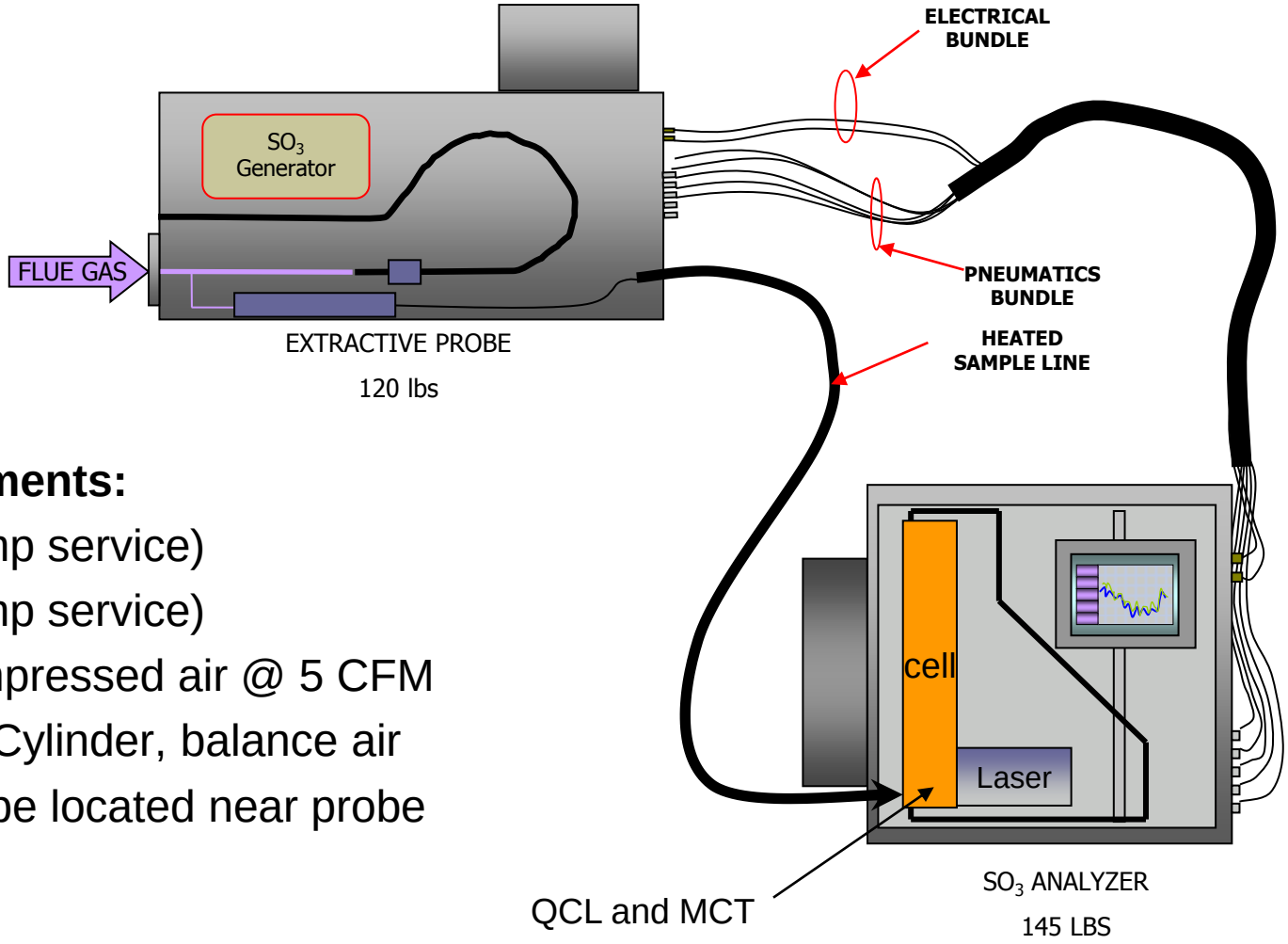
REAL-TIME MONITORING OF SO_3 IN FLUE GAS

Agenda

- SO_3 System Overview
- System Capabilities
- SO_3 Transport / Response
- Field Data
- Summary

SO_3 CEMS Overview



System Requirements:

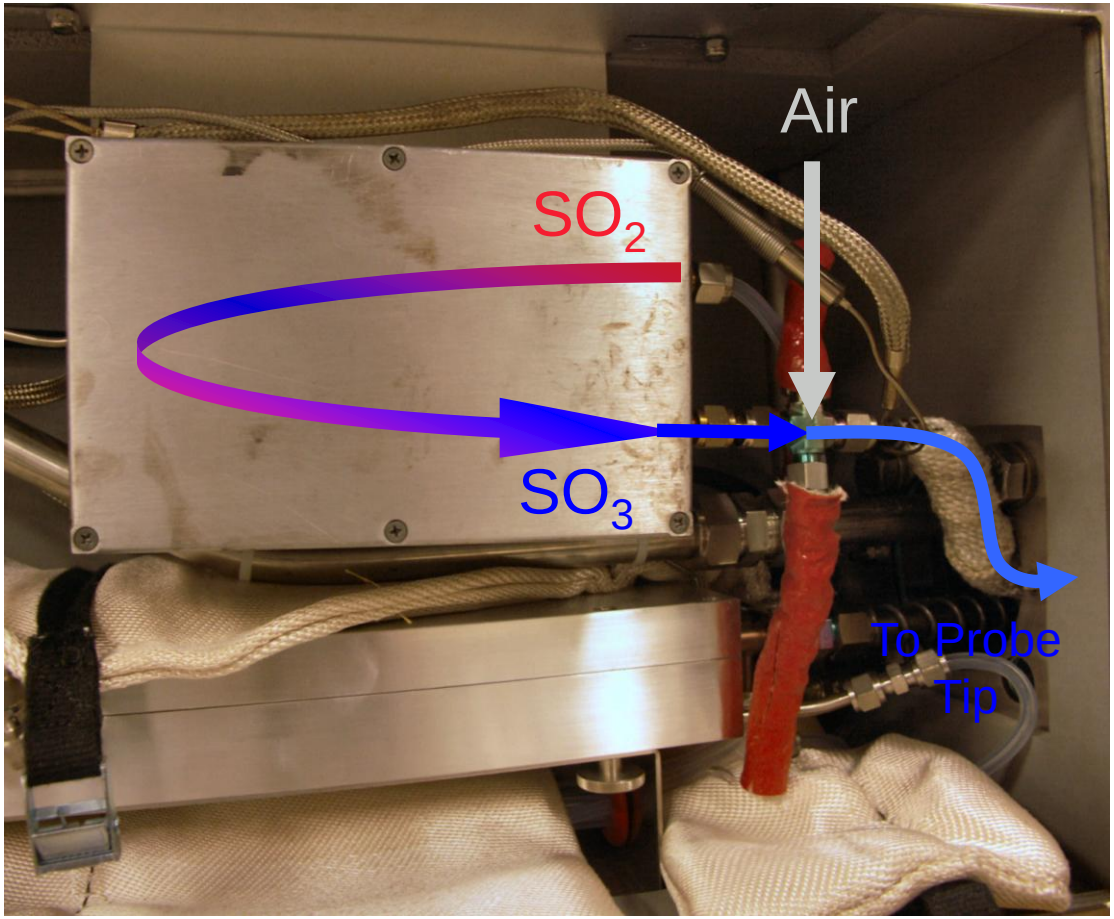
- 208 VAC (30 amp service)
- 120 VAC (15 amp service)
- 80 PSIG of Compressed air @ 5 CFM
- 1000 PPM SO_2 Cylinder, balance air
- Instrument can be located near probe

SO_3 System Overview: Probe

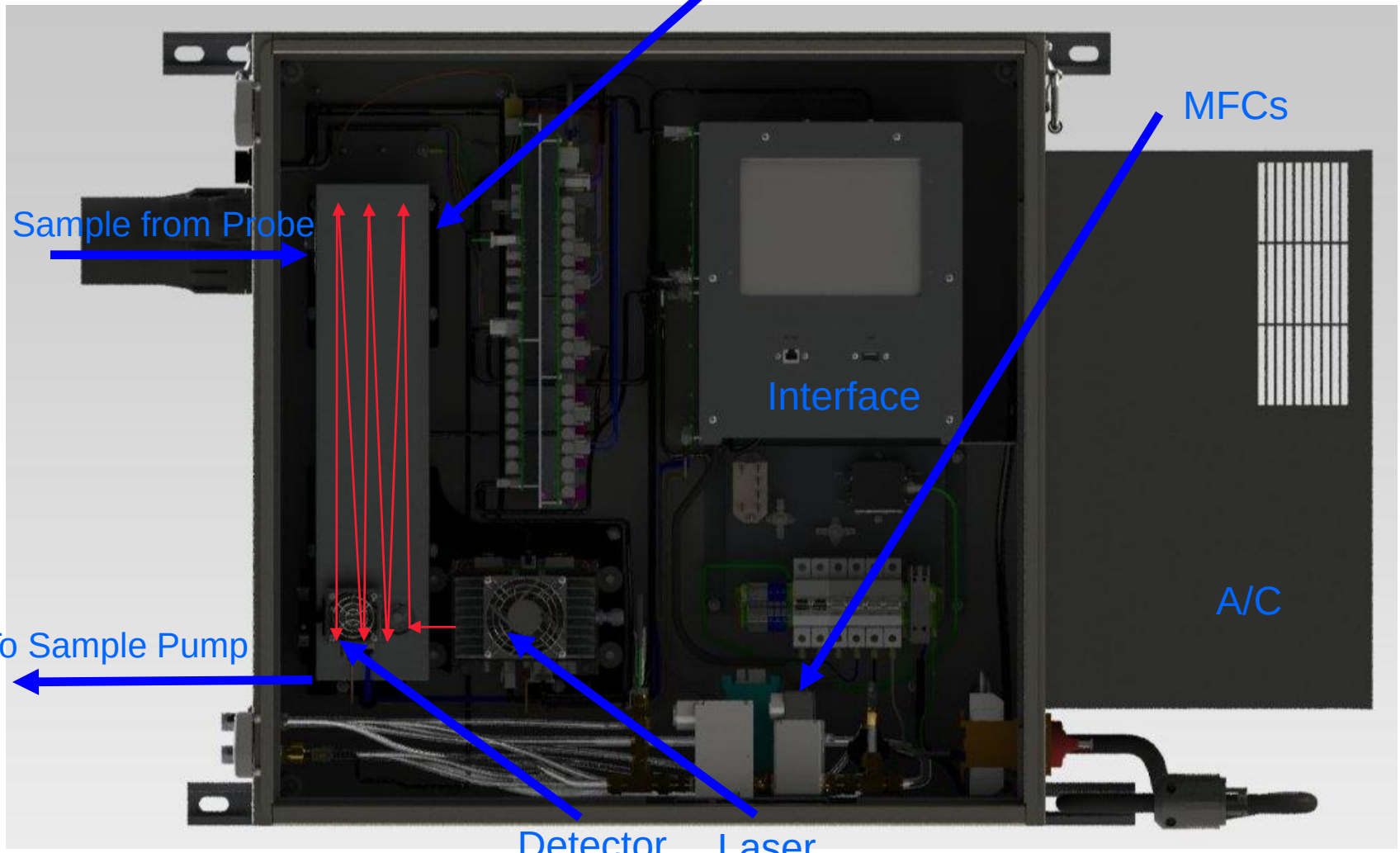
- Inertial Filter for “Universal” sample location
- Quick connects for re-location
- Integrated SO_3 Generator

SO_3 System Overview: Generator

- Converts SO_2 cal gas into SO_3
- >98% Conversion efficiency
- Lasts for >1 year
- Calibration Gas injected at probe tip (rule out bias)
- Generator bypass for SO_2 Check

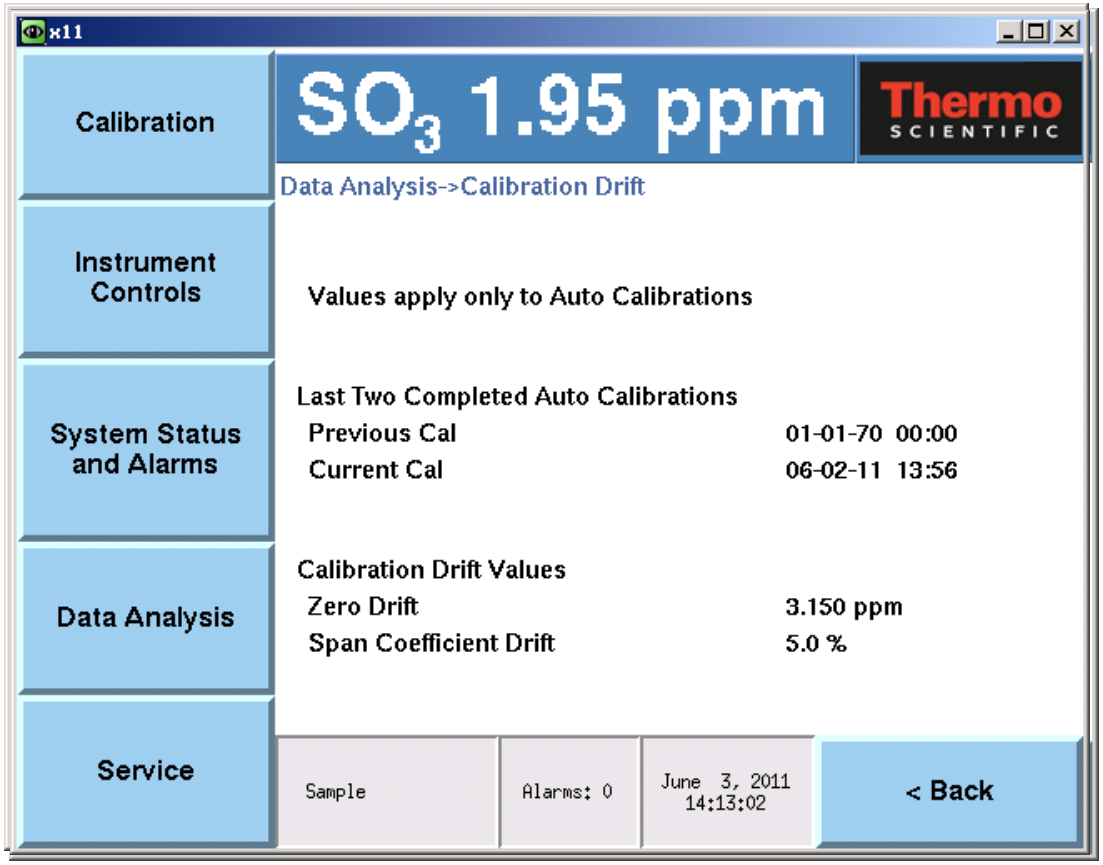


SO_3 System Overview: Analyzer



System Capabilities

- Designed for stand-alone operation
- Automatic System Zero and Span Calibration, or Check
- Automatic Blowback
- Statistical Data
  - Min/Max/Stdev
    For all parameters



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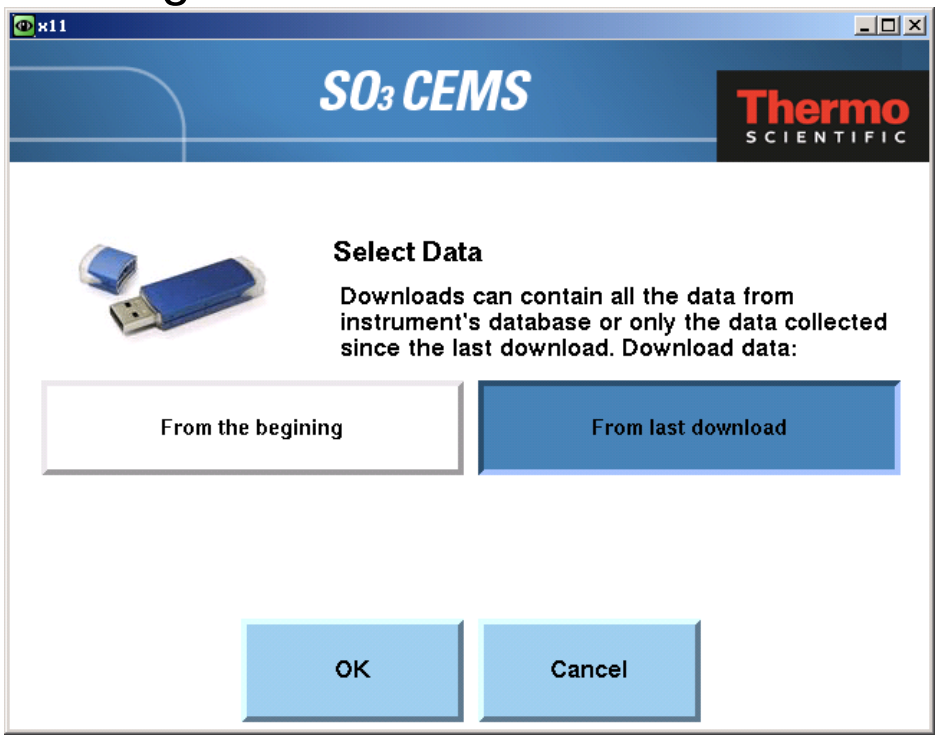
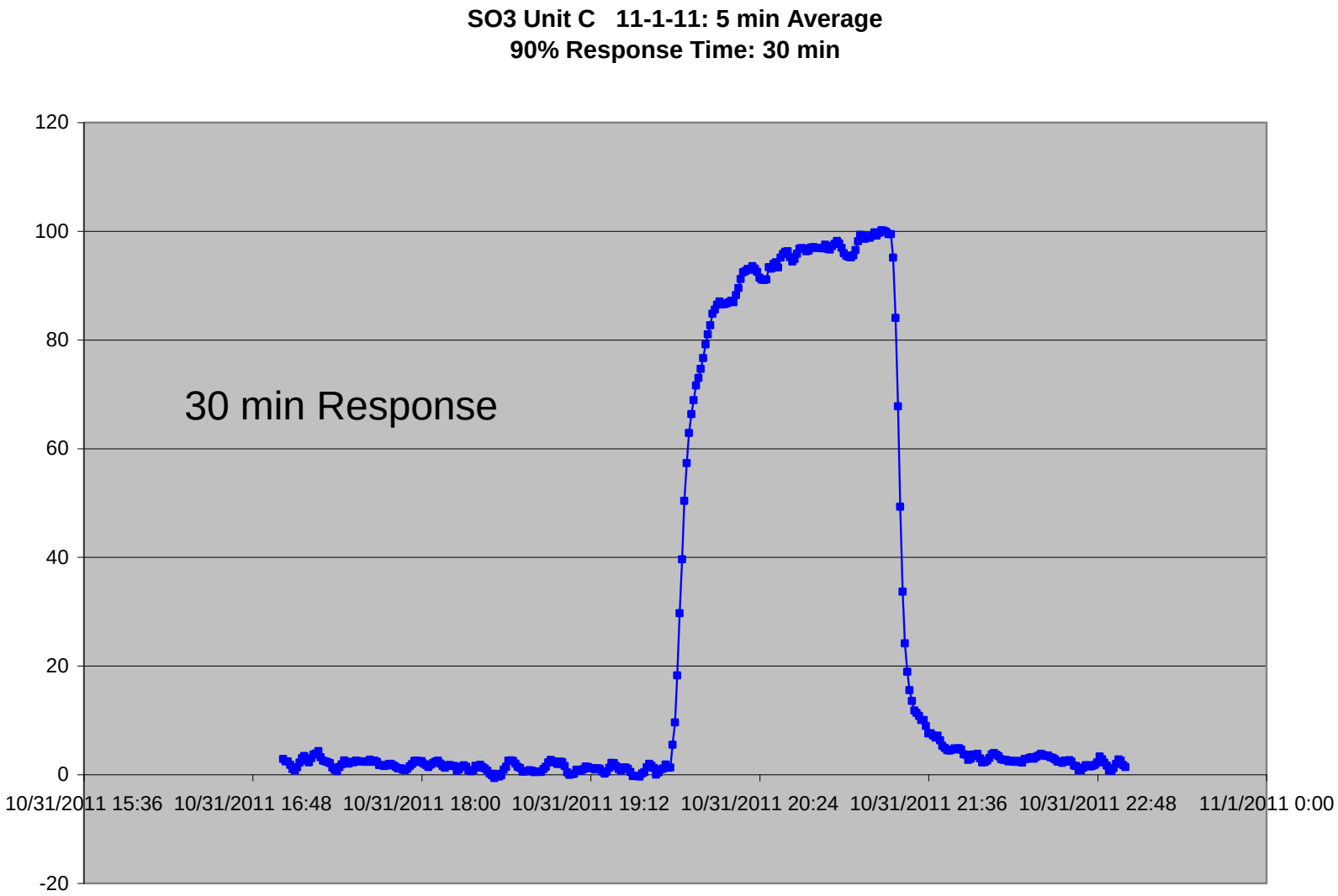
System Capabilities

- Thumb Drive Data Dump (csv format)
- System can hold several months worth of 1 minute data
- Modbus, AK protocol, Digital I/O, Streaming Data
- Remote control via VNC or ePort
- Graphing, View spectrum



Sample Transportation: Unit C in Lab 100 ft Line



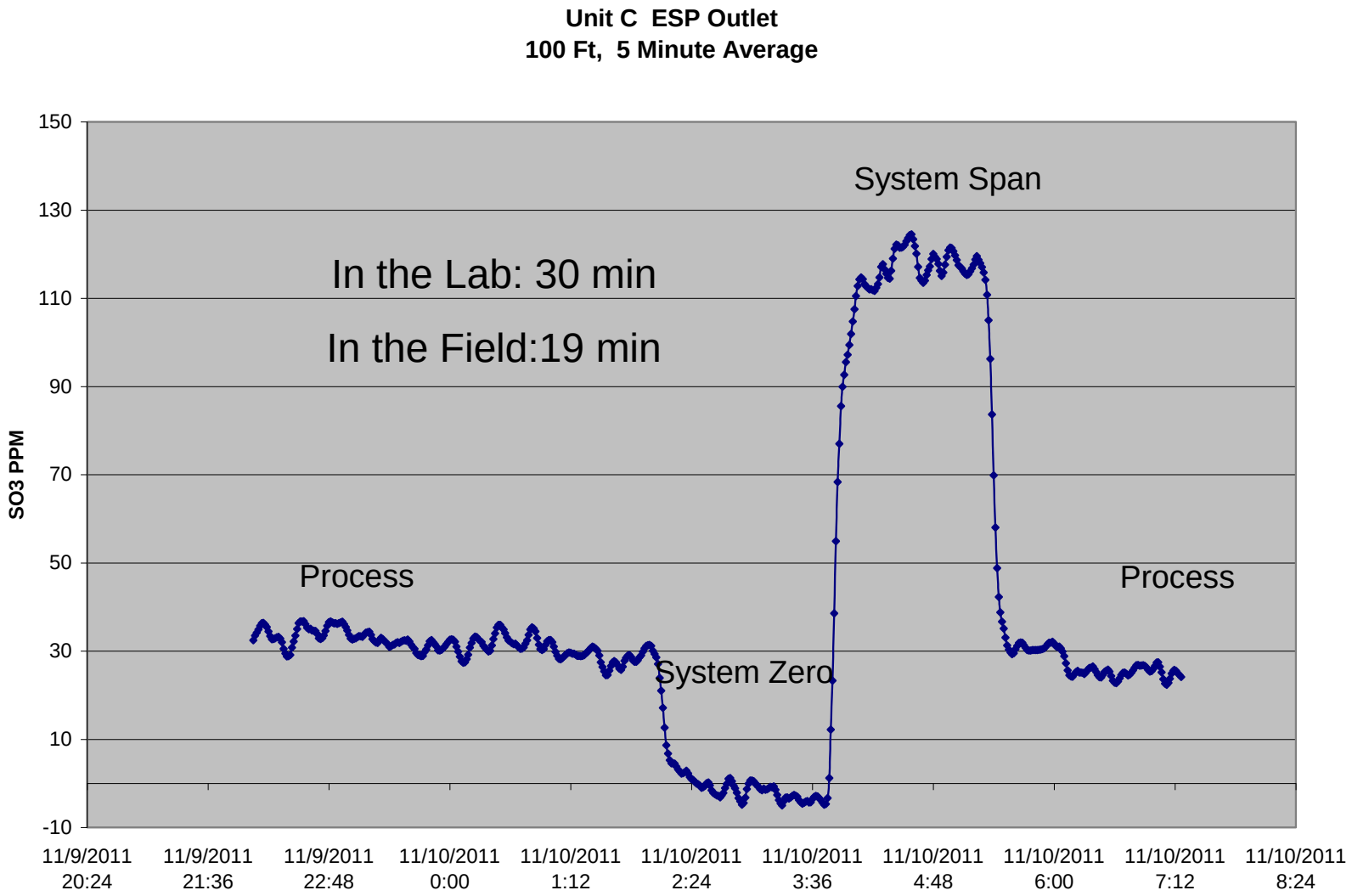
Field Data

- 2 systems are undergoing beta evaluation at 2 power plants
  To shake out issues before commercialization

- Site B is downstream of FGD

- Site C is downstream of an ESP

Field Data: Site C



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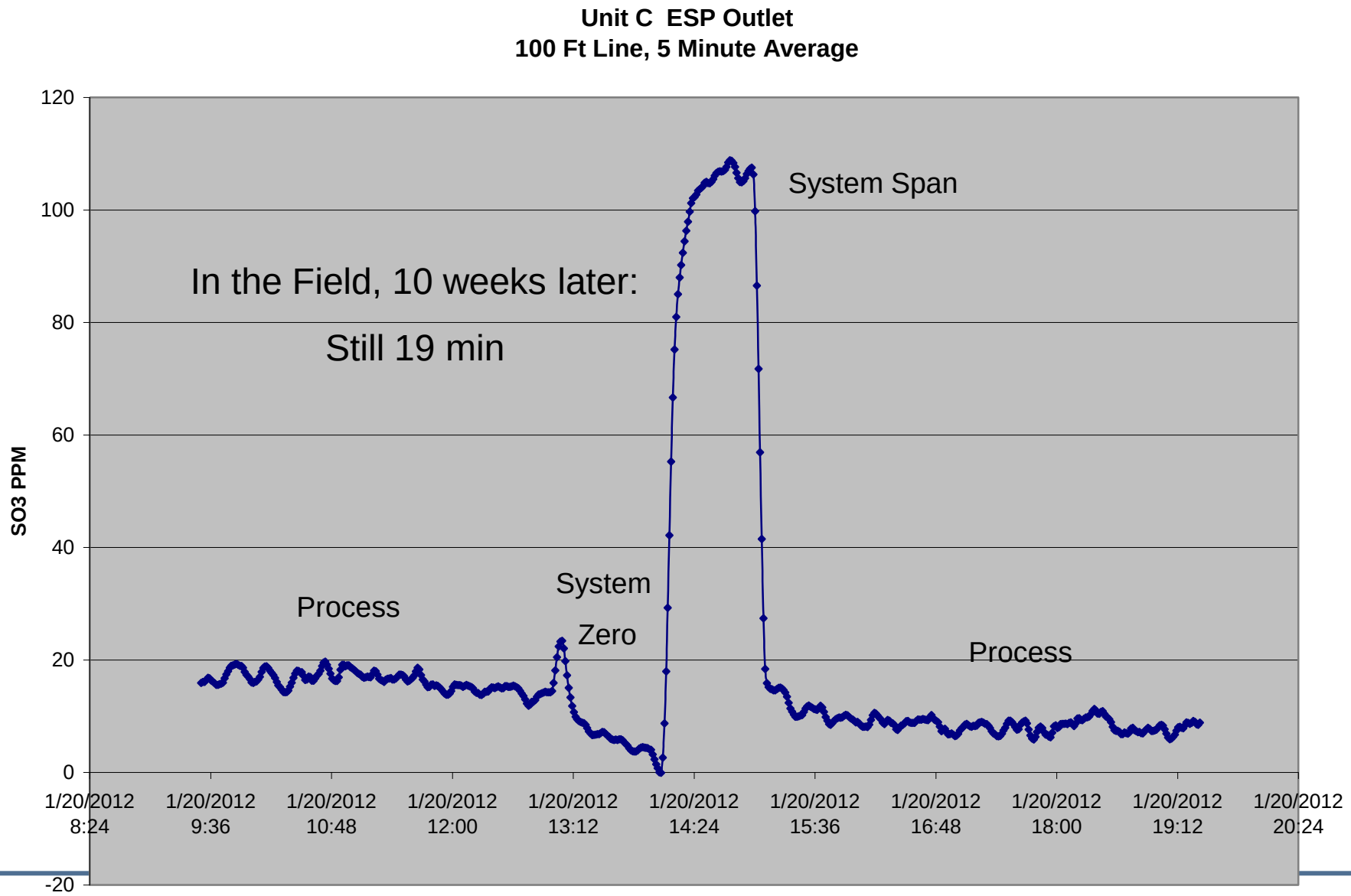
Field Data: Site C



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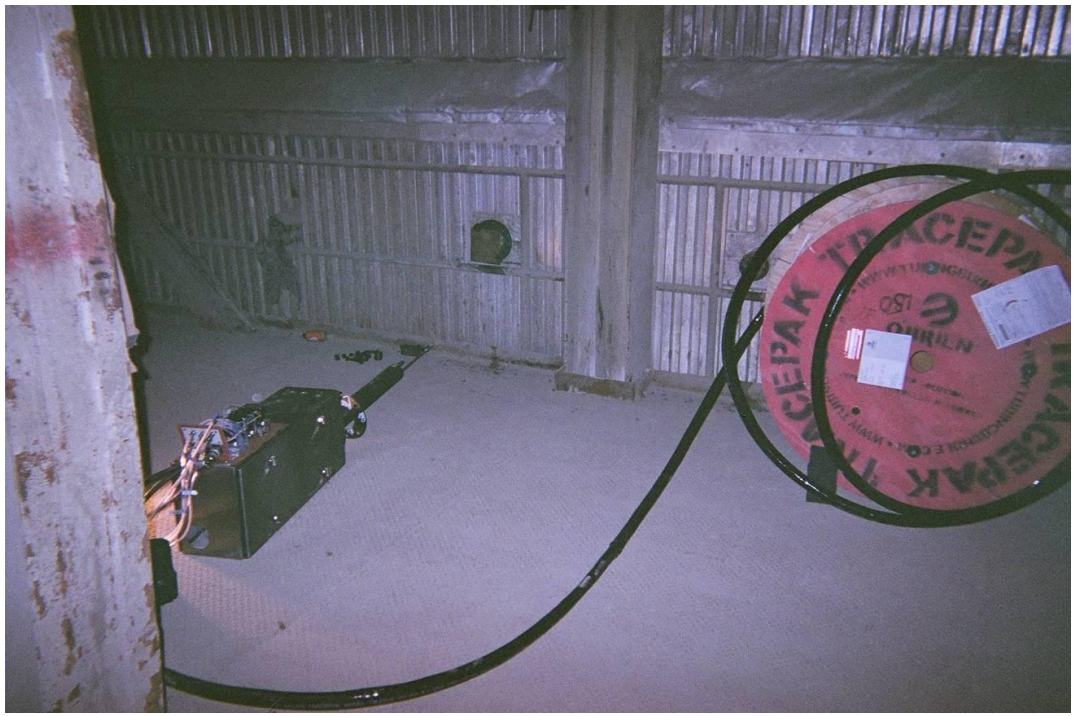
Field Data

- System span response time is better in the field
  - Same system / same hot line
  - 30 min response time in lab
  - 19 min response time in field
- Surface passivation or moisture appears improves response time
- Site C sampling location is worst case *(cold ambient)*



Summary / Conclusions

- System Response time is better after the system is exposed to flue gas
- Sample Line length is not the limiting factor of response time (acceptable for process control)
- Dynamic spiking capability can detect measurement bias
- 0.4 ppm **System** Detection Limit
- A known and reliable calibration gas is the difference between trending (other technologies) and measuring
- Test data from FGD in the following weeks

Questions?

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