Analyzer & PLC Replacements: What to Consider

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Analyzer & Sample System Replacements

- Need to define what is staying and what is being replaced – are the components remaining in the system compatible and adequate to handle the new system. Be as concise as possible:
  - Analyzer depth – are extra supports needed? Do components need to move?
  - Analyzer style (vacuum versus pressure)
  - Power outlets (some analyzers have external pumps and require an extra outlet)
  - Sampling system components (pressure regulators and flow meters)
  - Sample pump – adequate size?
  - Sample dryer (style and size) – water baths often had low entry points into the bulkhead and thermoelectric coolers have high entry point requirements
  - Heated sample line; probe support bundle

Analyzer & Sample System Replacements

- Is a plant visit by CiSCO required, expected or beneficial?
- CiSCO always wants to send our techs in earlier to do a complete system evaluation before tearing into the existing system, even if we are just replacing the analyzers (we will be looking to see if there is water in the system, is the system passing calibrations, etc.).
- What drawings are available – whose system was it, have there been any modifications that need to be addressed? Are they documented in the drawings?
- Remember you/we need to do a CGA and/or Linearity on the analyzers that are coming out before removing them. This is critical for data validation.

Analyzer & Sample System Replacements

- Define installation – who will install what?
  - If a heated sample line is being replaced, who is doing the installation?
  - Are the analyzers the same size?
  - Are panels needed to fill holes?
  - Are support rails needed? (Occurs when old analyzers aren't as deep as the new analyzers.)
  - Do we need to move or add electrical?
- How much downtime is expected?
- What is the plant availability? Does the plant need to be in an outage for us to perform the work?
- Safety requirements – are there special requirements for your site?
- Are there tools and other items that need to be supplied?

Analyzer & Sample System Replacements

- Defining the scope of the documentation and regulatory requirements for the replacements:
  - Are Monitoring Plan updates needed and included?
  - Is a hard copy Monitoring Plan needed?
  - QA/QC Document – will this be updated? Does one already exist? Can it be provided?
  - Prepare and plan for certification requirements due to new equipment.
  - Will there be a new I/O list provided?
  - New DAHS Specification?
  - Are new drawings being supplied by CiSCO?

Analyzer & Sample System Replacements

- How will the O&M Manual be updated? (just pages? electronic?)
- Will the analyzer ranges stay the same? (Some older analyzers supported 0-250 ppm for NO_x and a new analyzer may only support 0-200 ppm; some old CO analyzers were very limited on the high range and the new analyzers can use a much more diverse range.)
- Will the calibration gasses need to be changed?
- Are all calibration gasses onsite for the new system?
- Is there an OIT? Is it still supported?
- Have you considered a computer based RealView in lieu of an OIT?

Analyzer & Sample System Replacements

- We need to define number of personnel to be onsite and for how many days.
- What assistance will the plant provide (if any)?
- Is there a plant person assigned to lead the project?
- When can equipment be shipped prior to the installation phase?
- Maintenance of other equipment is essential - equipment that has not been maintained and fails during installation is out of scope and will result in extra charges; make sure there are adequate spare parts or repair parts onsite.

PLC and OIT Replacement

- GE PLCs – the Fanuc switched to the RX3i – GE sold their PLC division to Emerson. Emerson has said they are releasing a new version of the PLC in January.
- Allen Bradley – SLC PLCs – these are obsolete and need to be replaced if they fail (or whenever you can).
- Allen Bradley – CompactLogix and ControlLogix. CiSCO recently moved to the latest version of CompactLogix, the 5000 series (5069).
- OIT Panels – Allen Bradley, Automation Direct, or others.
- RealView desktop PC as an option, or panel PCs may replace an OIT and include RealView Software.
- Replace other vendor's equipment (Datalogger).

PLC and OIT Replacement

- DCS Communication
  - Is it Serial? Will it need to stay that way? What are the options?
  - CiSCO will propose an Ethernet solution if possible.
  - Need to make sure the DCS communication is defined in the proposal stage.
  - DCS hardware and software changes are not in CiSCO's scope.
  - Site DCS person is needed to be active in all phases of the project.
  - Hardwired signals avoid a lot of these issues with DCS communication.

Testing the System Changes

- CiSCO personnel, along with plant personnel, need to ensure the new system is fully functional - calibrations run correctly, CGAs/Linearity checks are functional and accurate (even running a linearity while offline to ensure gasses are flowing correctly), alarms and buttons are all functional in OIT/RealView, communication with DCS is functioning and accurate.

- For the remaining functions that can’t be immediately tested, the site should create a list and update CiSCO weekly for the first few months (startup, shutdown, limit alarms, etc.).

- Signoff of daily field service reports from CiSCO technicians to acknowledge the status of the installation and identify any issues and delays that are happening.

Certification

- Upgrades must have certification requirements planned in. Is CiSCO helping with the certification? To what extent?
- 40CFR75 details the requirements. 40CFR60 does not.

Event: Replace Analyzer:	Time to complete
• Old Analyzer required to run linearity if operated more than 168 hours in a quarter for Part 75	Prior to removal
• New analyzers must pass Daily Cal check	Immediately, starts Clock for all tests
• New Analyzers must pass 7-day Drift Test	21 Days
• New analyzers must pass Linearity Check Hours	168 Op Hours
• New Analyzers must Pass Rata	720 Op Hours
• Submit Event Report via ECMPS	
Event: Replace Sample Line:	
• Perform Calibration Check	Immediately
• Perform Abbreviated Cycle Response Time test	720 Op Hours
• RATA	720 Op Hours
Event: Replace PLC:	
• Update ECMPS	720 Op Hours

Questions?