EMERSON EXCHANGE 2025

ACCELERATING INNOVATION

ACCELERATING
INNOVATION

Emerson Exchange 2025
Asset Management:
From “I Can’t" to "I Can’t Live Without!”

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

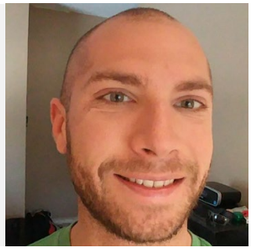
Disclaimer

The information and/or opinions expressed in this presentation are those of the authors and do not necessarily represent official policy or permission of Emerson or Emerson Exchange.

Important Reminders

Photography and audio/video recording is not permitted in any session, or in the exhibition areas, without press credentials or written permission from Emerson or Emerson Exchange.

Inquiries should be directed to:
EmersonExchange@Emerson.com



Steve Guarrasi

Reliability Specialist – NOVA Chemicals

Lorraine Driscoll

AMS Device Manager SME – Lakeside Process Controls

NOVA Chemicals

At NOVA Chemicals, we strive to be our customers' first and best choice by rethinking how plastics are designed, made, and recycled.

With a focus on **outstanding innovation and customer experience**, we develop and manufacture **ethylene, polyethylene, recycled polyethylene,** and **plastomers** for plastic products and packaging.

We treat **post-consumer plastics as a resource** by transforming them into a broad portfolio of **market-leading, lower-cost, and lower-carbon recycled polyethylene[1].**

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

NOVA Chemicals

Overview

Overview

NUMBER OF EMPLOYEES

2,600

Worldwide

ANNUAL SALES

USD 4.4 Billion

PRODUCTS

- Ethylene & Polyethylene
- Recycled Polyethylene (rPE) and resins suitable for circular packaging
- Plastomer Sealant Resins
- Chemical Co-Products

COMMUNITY GIVING

USD 1.5-2 Million

3,000 hours

* As of February 2025

Products

How Our Products Are Used

NOVA Chemicals produces a diverse portfolio of PE and rPE resins that are used in a wide range of flexible and rigid applications.

Our resins enable customers and brands to create monomaterial products and packaging that are suitable for circular packaging opportunities. Flexible applications for both PE and rPE include food packaging, heavy duty sacks, hygiene films, shrink and stretch wrap, e-commerce protective packaging, household bags and wrap, and trash and liners.

Rigid and durable uses include caps and closures, blow molded bottles, industrial drums and other containers, toys, recreational equipment, waste containers, and artificial turf.

Manufacturing East

Corunna Site

Moore Site

St. Clair River Site

Rokeby Site

- Our **Corunna Site** will have the capability to produce up to 2.8 billion pounds of ethylene and ~700 million pounds of co-products annually.
- Corunna Site provides feedstock to our **Moore** and **St. Clair River Sites** where ethylene is converted into up to 1.4 billion pounds of polyethylene.
- Once fully operational, our **Rokeby Site** will have potential capacity of ~one billion pounds of polyethylene per year, creating a second source of reliable supply for our Advanced SCLAIRTECH™ technology SCLAIR® and SURPASS® products. The site's central geographic location creates quicker transit and order lead times for many of our North American customers so we can provide access to our highest quality polyethylene packaging grades that can be blended with recycled content.

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Evolution of AMS Device Manager at NOVA Chemicals

Manufacturing East

The “Rules” System Architecture

St. Clair River Site

Mooretown

Corunna

AMS DM Setup – The “Rules” To Follow

Tagging Convention:

- Ensure that no special characters (@, $, \, &, etc) are used in device names and network connection names, this will interrupt communications.

MUX Daisy Chain Limits:

- The maximum number of MUX’s in a daisy chain network is 10. Any number over this limit, and you will experience communication issues with instruments on those outlying MUX’s.
- This applies to all MUX types

Always Design with Spare Capacity:

- Ensuring your rocketports have additional spare, ports, in the event com ports fail.
- This does happen, and in our experience, rocketports fail more often than a MUX board does
- Being able to switch to a good port without replacing the entire RP will lead to less communication downtime with your assets.
- Ensure an available tag count buffer for when adding 1 or 2 devices through change management.
- NOVA keeps 20% available tag capacity.

Network Connection Limits:

- The maximum number of network connections for a single AMS DM Station is 50 (MUXs, wireless, DeltaV, etc)
- AMS DM stations are limited to 3000 Device connections

NOVA ME AMS Timeline – St. Clair River Site

Because of the continued success with AMS at NOVA, the AMS system was further expanded to the St. Clair River polyethylene site:

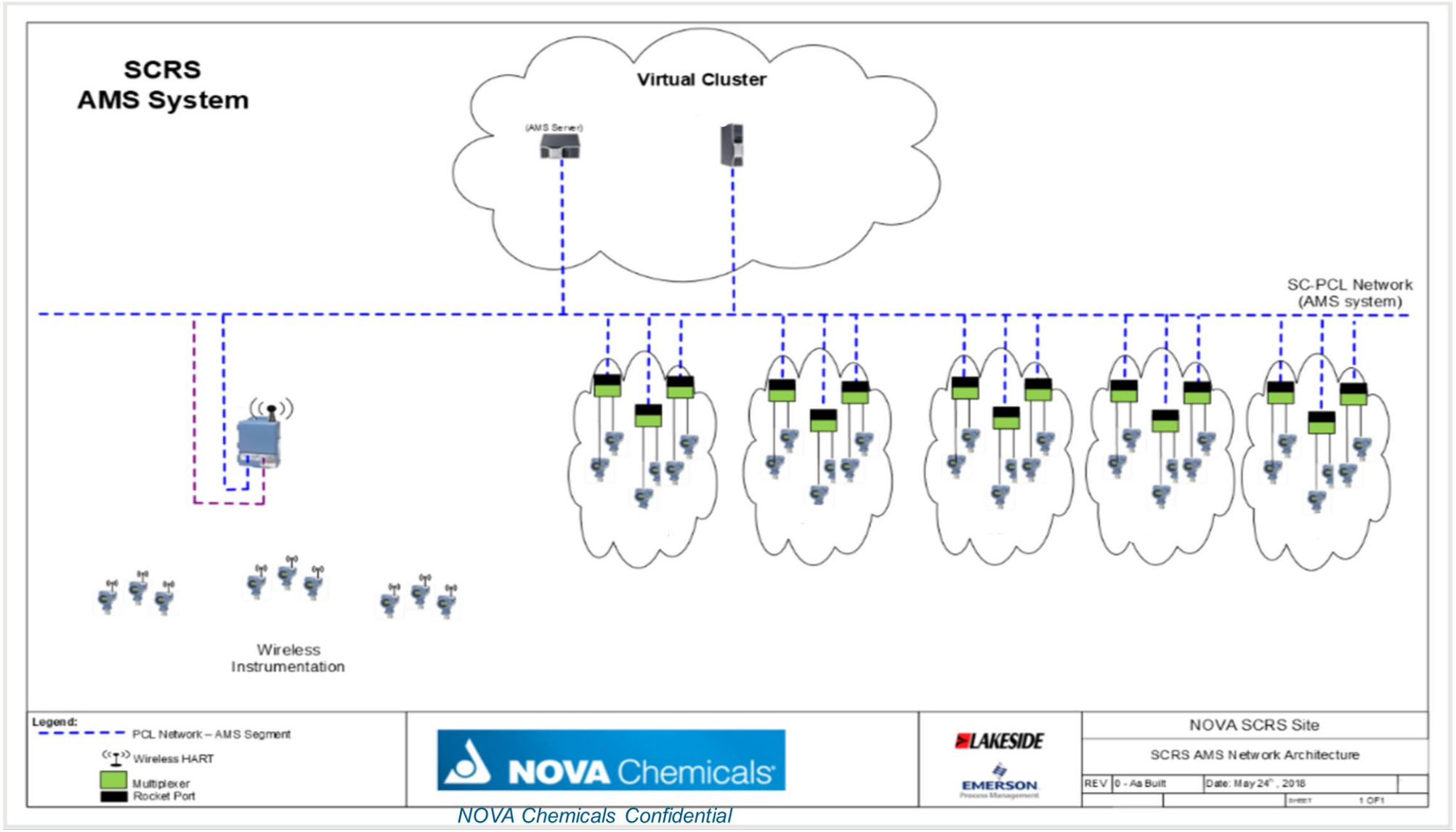
AMS Inception at SCRS
- 100 tag system

500 tag system

Current Day
- 500 tag system
- 1 ServerPlus machine
- 1 virtual ClientSC machine
- 2 wireless gateways

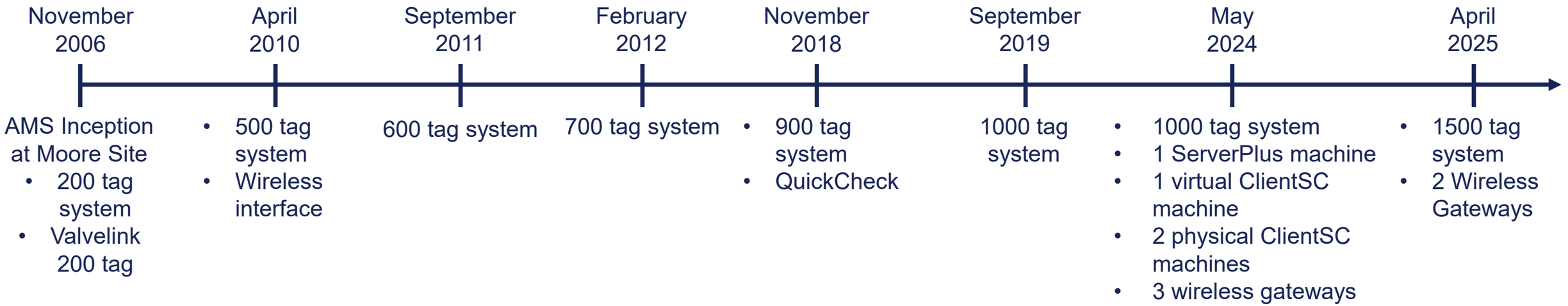
Near future plans include increasing wireless gateway coverage to the full site to increase remote instrumentation monitoring and further expansion of the AMS system as a whole.

SCRS Network Architecture



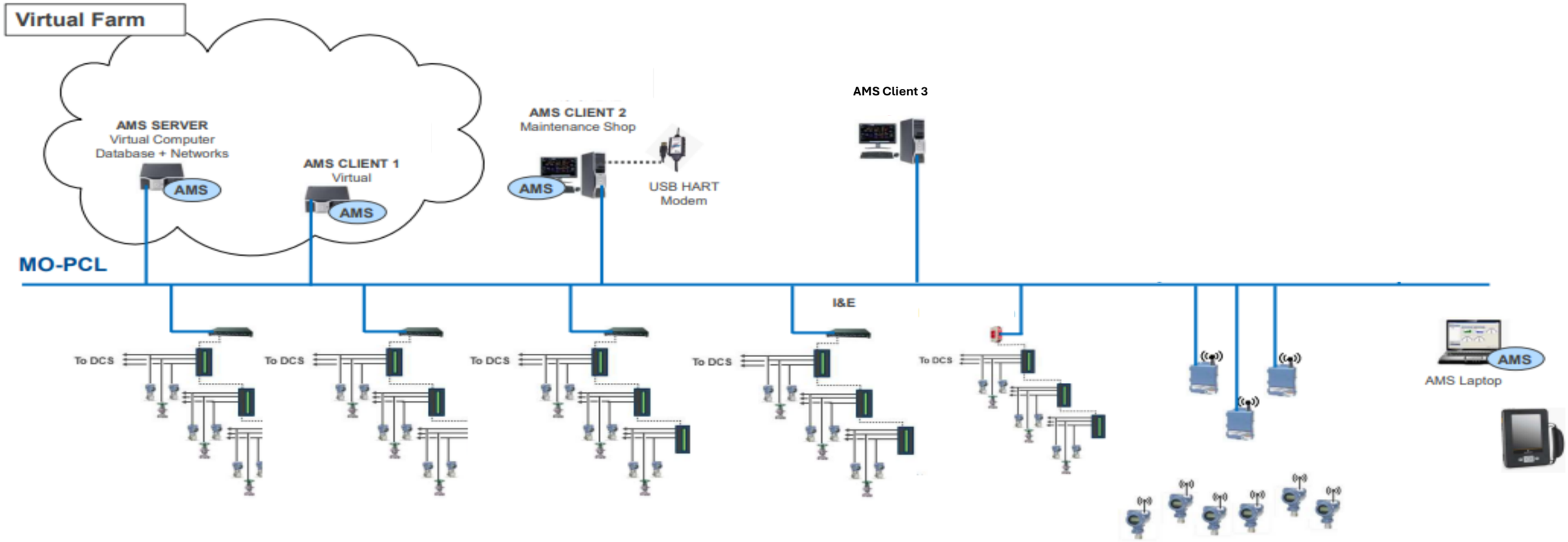
NOVA ME AMS Timeline – Mooretown Site

Success at Corunna site, which included easier instrument setup and troubleshooting, more efficient on tool time, preventative maintenance diagnostics and high instrument reliability; the AMS system was expanded to the Mooretown polyethylene site:



Near future plans include increasing wireless gateway coverage to the full site to increase remote instrumentation monitoring and further expansion of the AMS system as a whole.

Mooretown Network Architecture



NOVA ME Timeline – Corunna Site

NOVA Corunna was the first NOVA Site in Manufacturing East to adopt the AMS suite of Asset Management solutions.

February 2004
- 3000 tag system
- MUX system interface
- 2000 tag ValveLink Snap-on
- QuickCheck Snap-on

March 2005 / April 2006
- 2 ClientSC stations
- 2 ClientSC stations

May 2008
- Alert Track Snap-on

July 2011
- 4000 tag system
- Wireless Interface
- Meter Verification Snap-on
- 1 ClientSC Station

December 2012
- 5000 tag system
- Added Handheld communicator interface

July 2013
- 1 ClientSC Station to split the system

May 2015 / Sept 2016
- 7 ClientSC Stations

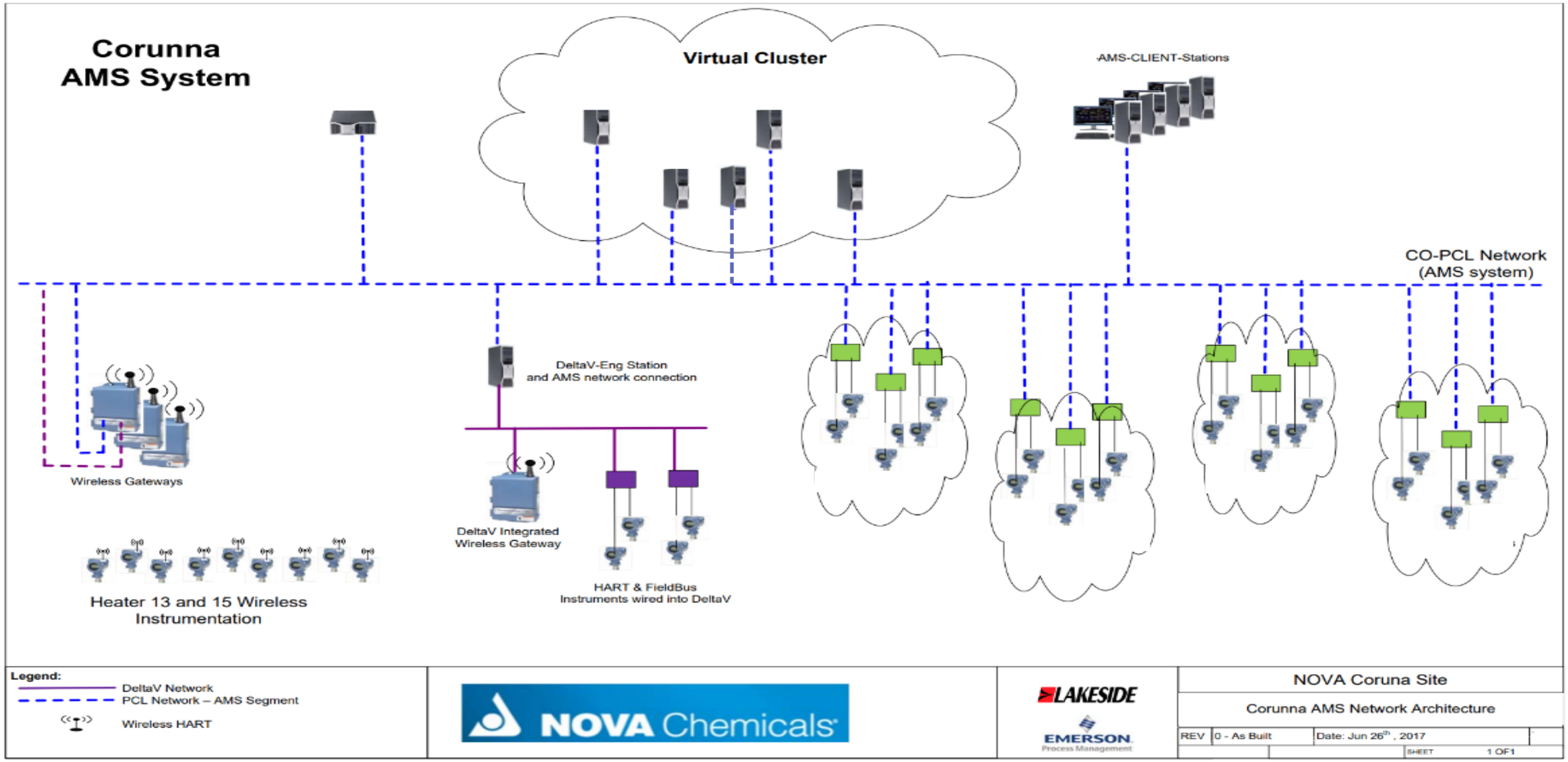
May 2022
- 6000 tag system
- Added 6th server

May 2024
- Current Day
- 7500 tag system
- 1 ServerPlus machine
- 5 virtual ClientSC machines
- 8 physical ClientSC stations
- 8 wireless gateways

December 2024
- Optics / Machine Works Integration

Near future plans include increasing wireless gateway coverage to the full site to increase remote instrumentation monitoring and further expansion of the AMS system as a whole.

Corunna Network Architecture



EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Expanding the AMS Device Manager Footprint

- *Too Big Too Fast*
- *Wireless Expansion*

Expanding the AMS DM Footprint

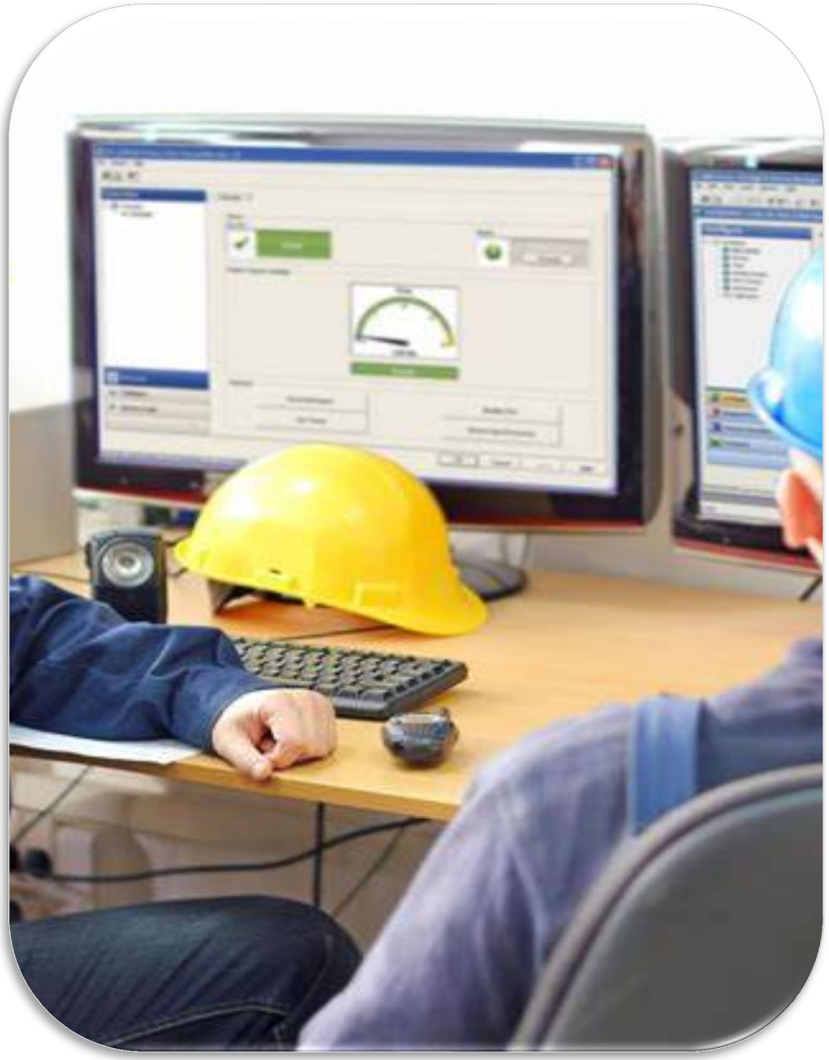
- Standardized on AMS DM use for daily tasks and turnarounds
- AMS changed the philosophy on how new instrumentation is installed
- Planning outages was changed to include AMS DM installations with all new instrumentation installed at site
- Capital projects included a review of AMS DM database and purchase scaleups as required to facilitate the addition of new instrumentation.
- Panel design and installation details have been modified to account for AMS DM wiring and infrastructure.

NOVA: Too Big Too Fast

AMS Expansion to the rest of the plant at one time…

NOVA: Too Big Too Fast - Problems

- With the success of AMS DM so far it was decided to retrofit the rest of the plant instrumentation to connect to AMS DM.
- This added additional network connections via MUX, to the single AMS DM server housing all the current network connections
- By doing this it was causing AMS DM to be almost non-functional and unusable
- Lakeside AMS DM SME, NOVA AMS Administrator and Emerson AMS DM Senior Technical Analyst spent over 3 months tirelessly troubleshooting the system.
- Eventually we had exhausted all troubleshooting abilities at site. It was decided to replicate NOVA's system in a test environment to troubleshoot further with Emerson.



NOVA: Too Big Too Fast - Solution

- Site Representatives gathered the required information about the AMS DM MUX and Rocketports at site and Emerson built a complete test system to mimic NOVA's Setup
- This testing resulted in finding the max limit of 50 network connections to a single AMS DM station
- This resulted in having to add a second server class machine (ClientSC)
- Emerson graciously provided NOVA a ClientSC license to move half of the network connections to a second server class machine
- The addition of the server classed ClientSC station allowed AMS DM to be back to the usable standard that NOVA expected.

Wireless Expansion

Need:

Interface all pressure and temperature measurements from 2 heaters into AMS for PV indication and diagnostics

Solution:

Added 4 wireless gateways and over 300 wireless devices in a signal bank of transmitters.

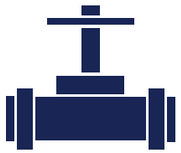
- Significant amount of savings in construction, infrastructure and execution costs (man hours, wiring, junction boxes, cable runs, cabinet space, etc)
- Wireless snap-on application used to check for pinch points, signal strength any cross talk to ensure P/T indications are robust.

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Using the Tools

Snap-On Applications

Snap-on Applications



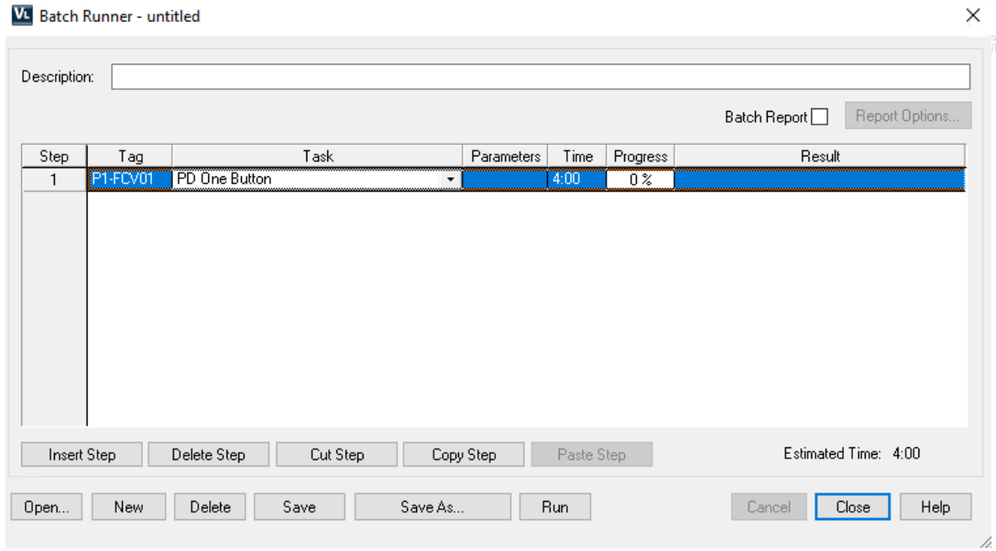
Valvelink

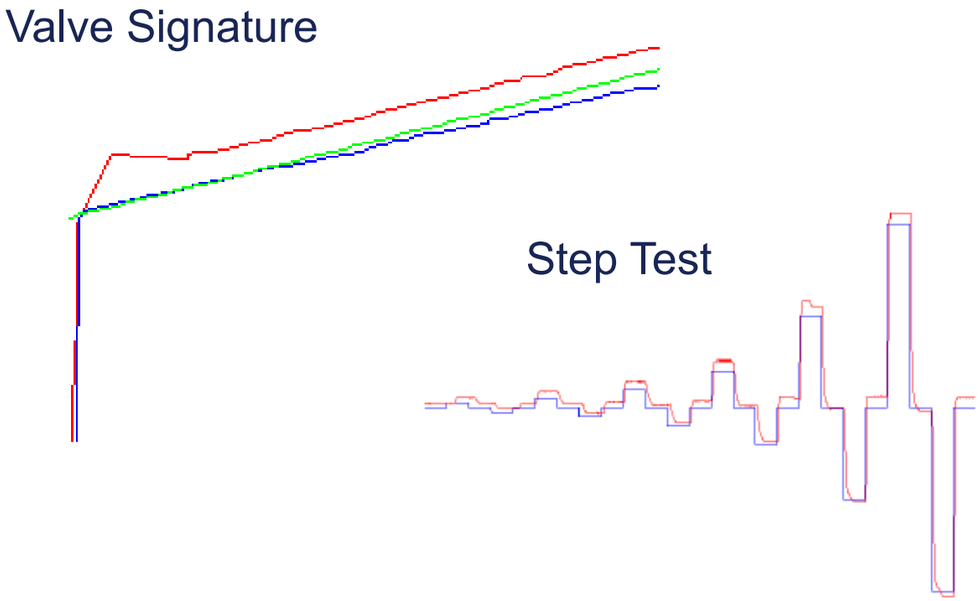
AlertTrack

QuickCheck

Valvelink

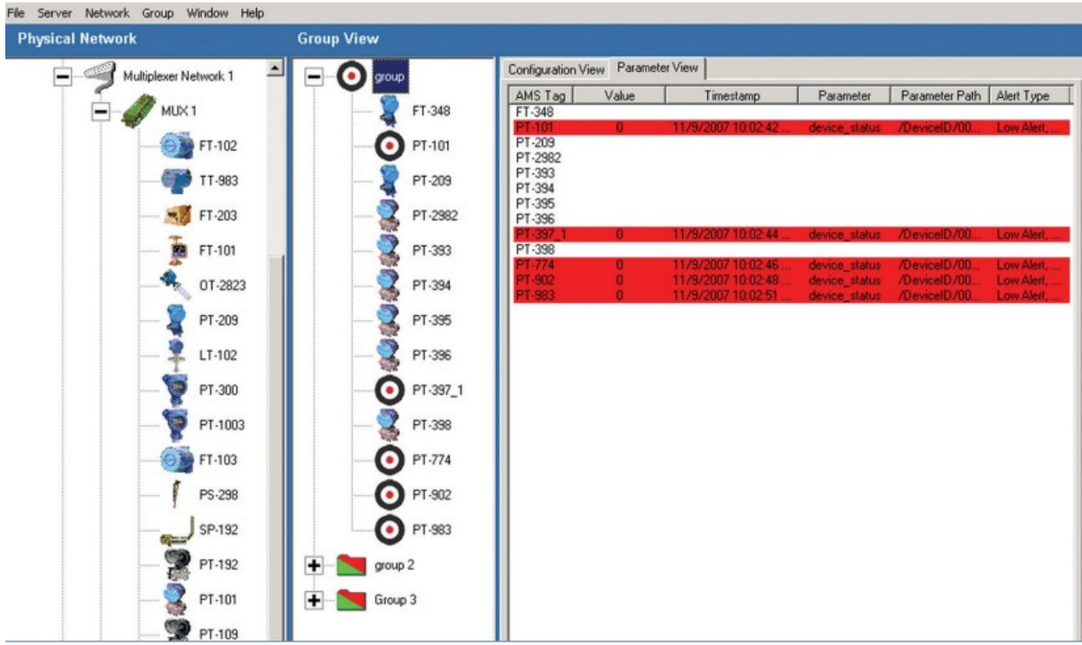
- Standardized on AD and PD DVC diagnostics levels
- Created a batch file to run, 3 point, 9 point, performance diagnostics on all Valves
- Valve Signatures are performed on every valve when installed. These are compared to the birth certificate produced at factory.
- PD One button sweeps are scheduled in Valvelink for all A and B critical valves.





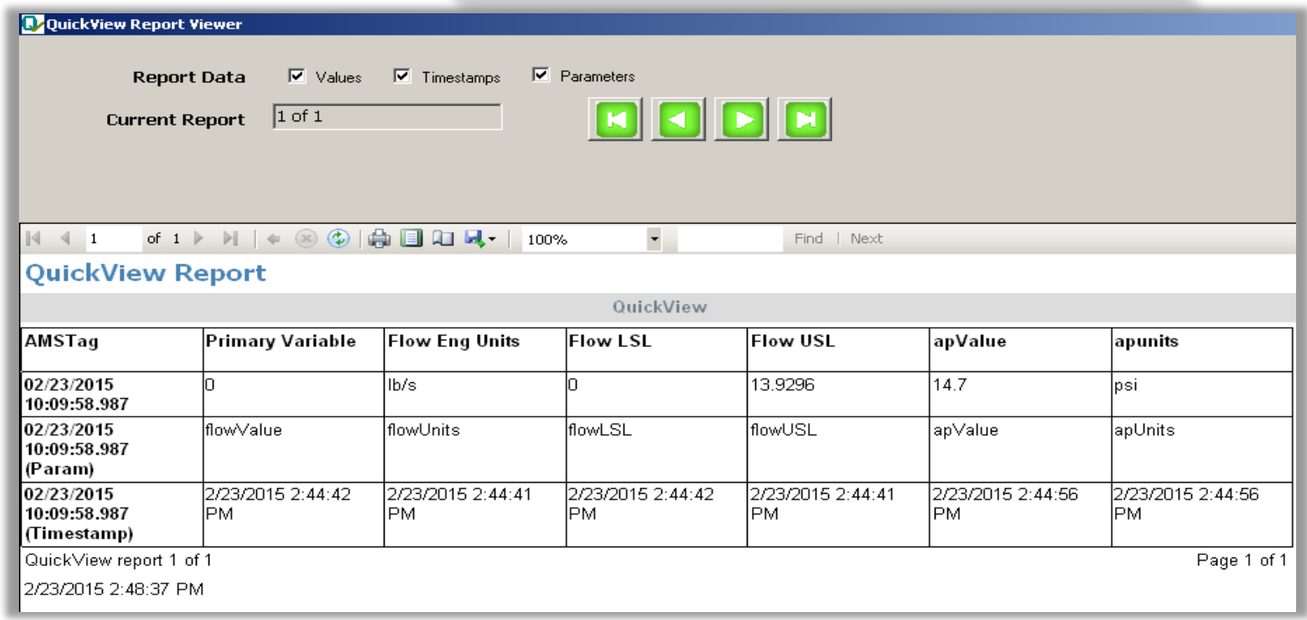
AlertTrack

- Body Temperature to confirm heat tracing is operational for water and benzene freeze prevention.
- Signal Quality is used to determine probe health (coating etc) as this directly affects measurement quality
- These alerts are sent directly to Alert Monitoring and are captured in the audit trail



QuickCheck - QuickView

- QuickView Reports
- Used to confirm settings on devices
- Valves
  - Tier Level, Type, Rev etc.
- Instruments
  - Temperature alert settings, hot backup enabled, dual element type, etc



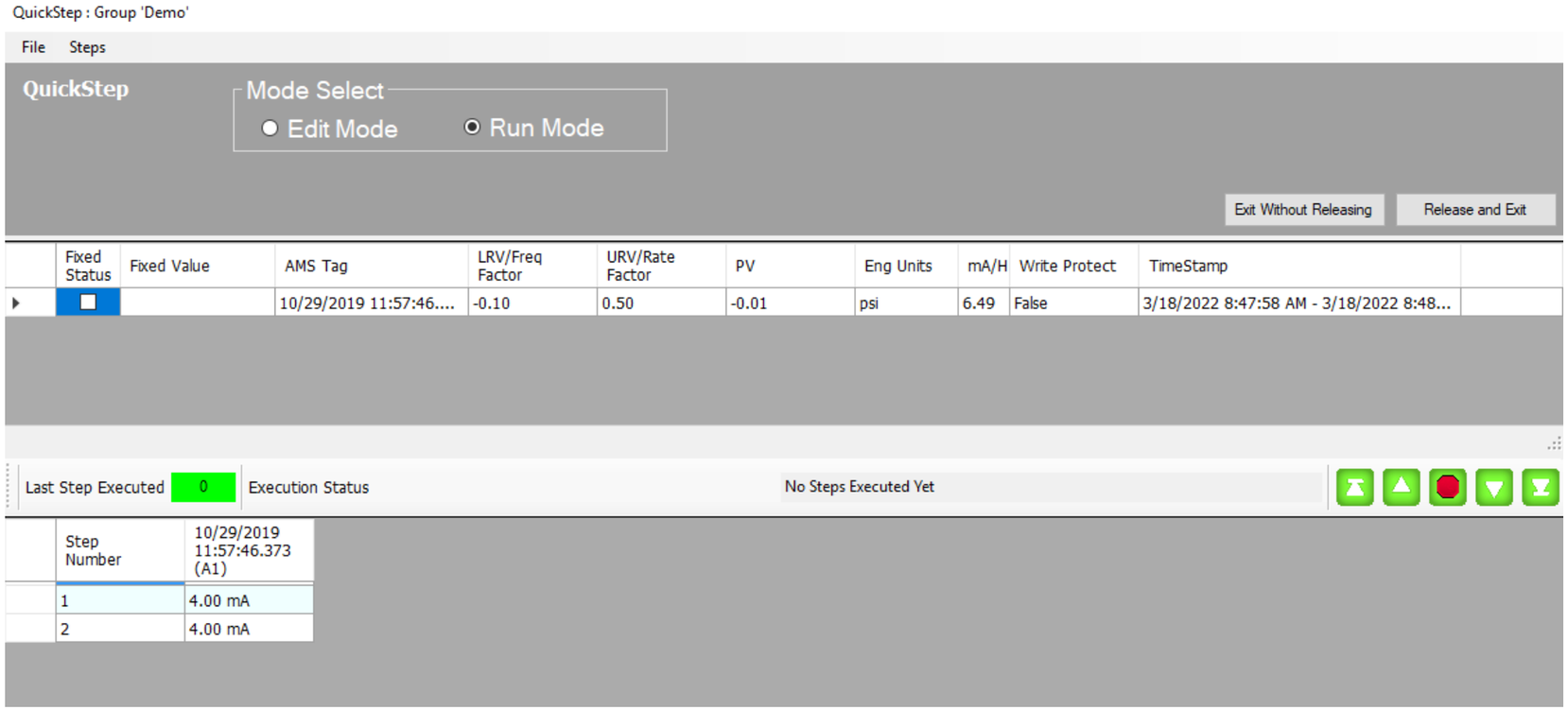
AMSTag	Primary Variable	Flow Eng Units	Flow LSL	Flow USL	apValue	apunits
02/23/2015 10:09:58.987	0	lb/s	0	13.9296	14.7	psi
02/23/2015 10:09:58.987 (Param)	flowValue	flowUnits	flowLSL	flowUSL	apValue	apUnits
02/23/2015 10:09:58.987 (Timestamp)	2/23/2015 2:44:42 PM	2/23/2015 2:44:41 PM	2/23/2015 2:44:42 PM	2/23/2015 2:44:41 PM	2/23/2015 2:44:56 PM	2/23/2015 2:44:56 PM

QuickView report 1 of 1 Page 1 of 1

2/23/2015 2:48:37 PM

QuickCheck - QuickStep

- QuickStep
  - Used extensively for commissioning of new systems as well as for PM work on large/complicated systems (ie. BMS trip checks)
  - Used extensively for Turnaround activities due to limited availability of resources and time.



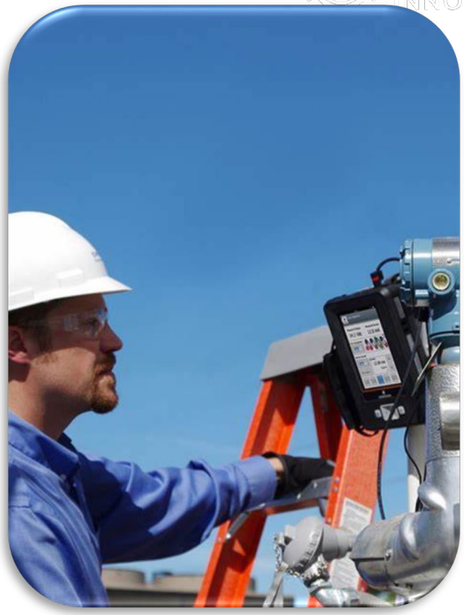
Trip Checks

Heater Trip Checks 2008

VS

Heater Trip Checks 2022

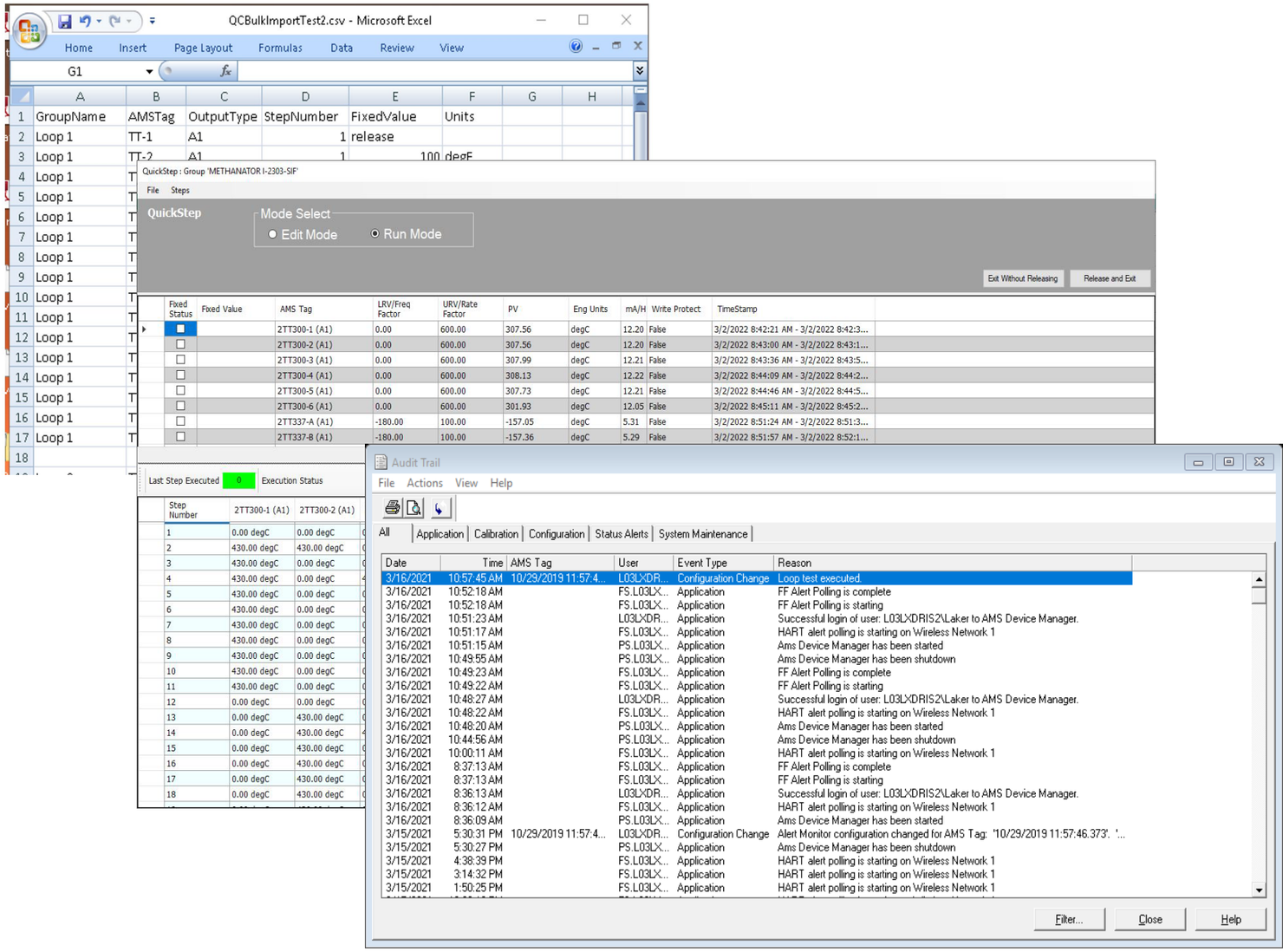
Heater Trip Checks 2008



- Technicians were required in the field with handheld communicators to set the outputs of devices and make changes as required
- Process control personnel was required to confirm trips
- Handwritten documentation showing completed trip checks
- TSSA was required to come onsite and witness all checkouts with the technicians.
- **To complete a full heater SIF/Trip and Functionality Check prior to AMS being used took 34 hours and 3 instrument technicians.**

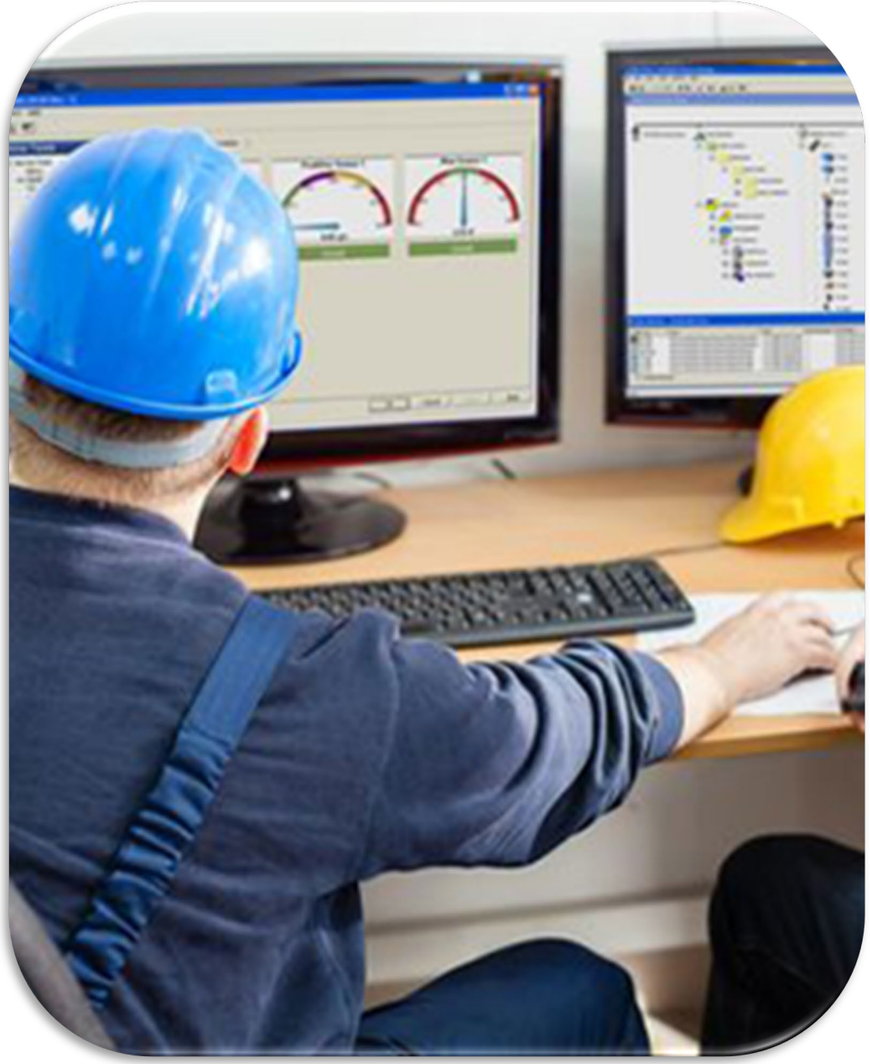
Heater Trip Checks 2022

- Trip checks were completed using QuickCheck.
- A QuickCheck QuickStep was built using bulk import in advance of instrumentation being installed
- QuickCheck writes all fixed outputs to AMS DM Audit Trail.
- **To complete a full heater SIF/Trip and Functionality Check now takes 16 hours and 2 instrument technicians.**



Proving Safety

- AMS DM with QuickCheck used for SIF/Trip checkouts
- QuickCheck writes lines to the Audit Trail detailing device tag and output fixed
- Proven over time to regulatory bodies that AMS DM, QuickCheck and DCS logs showed that trip checks were completed successfully
- Auditors during pandemic accepted Audit Trail and DCS logs electronically for comparison without site visit, as proof of SIF / Trip check completion



Changing the Mindset

Changing the Mindset

Yesterday

Today

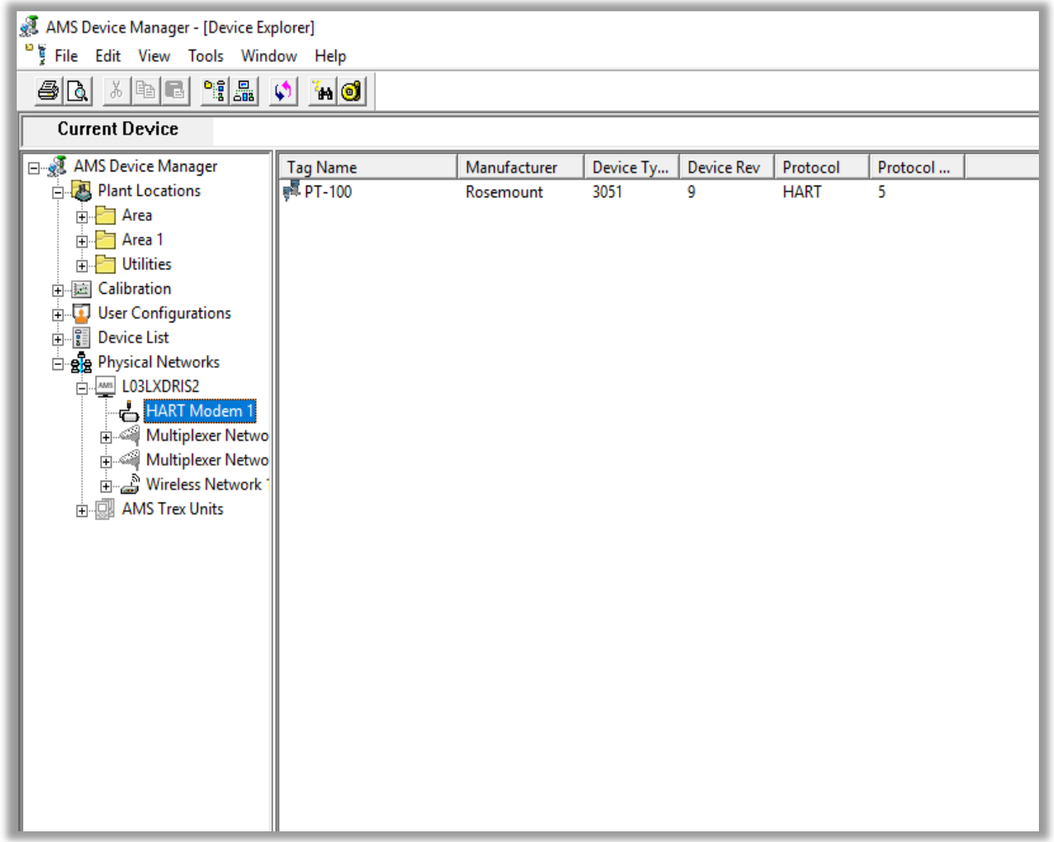
Yesterday

- Prior to AMS, I/E techs were accustomed to completing all the instrument checkouts using handhelds or process simulators (hot bath, Druck, etc)
- During the initial phase of introducing AMS DM, there was a lot of hesitancy in using a new system, with a new way of thinking.
- During the first training session for AMS DM for I&E techs, the attitude in the class was

"We Will Never Use This"

Today

- After successful implementation of the AMS system, some targeted training by the Lakeside SME and some soak time with new system, the IE group hasn't been the same.
- Techs **CAN'T WORK** without AMS DM now. It's the first tool they reach for when any troubleshooting is needed.
- It is also the first tool they utilize when they need to perform any instrument checkouts, either transmitter or valve.
- Preventative Maintenance days for AMS DM must be scheduled in advance and advance notice is required so work scheduled that day doesn't include any AMS activities.
- I/E technicians want AMS DM back as soon as possible during upgrades and PM activities



"We Can't Live Without"

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Administrative Tasks

Administrative Tasks

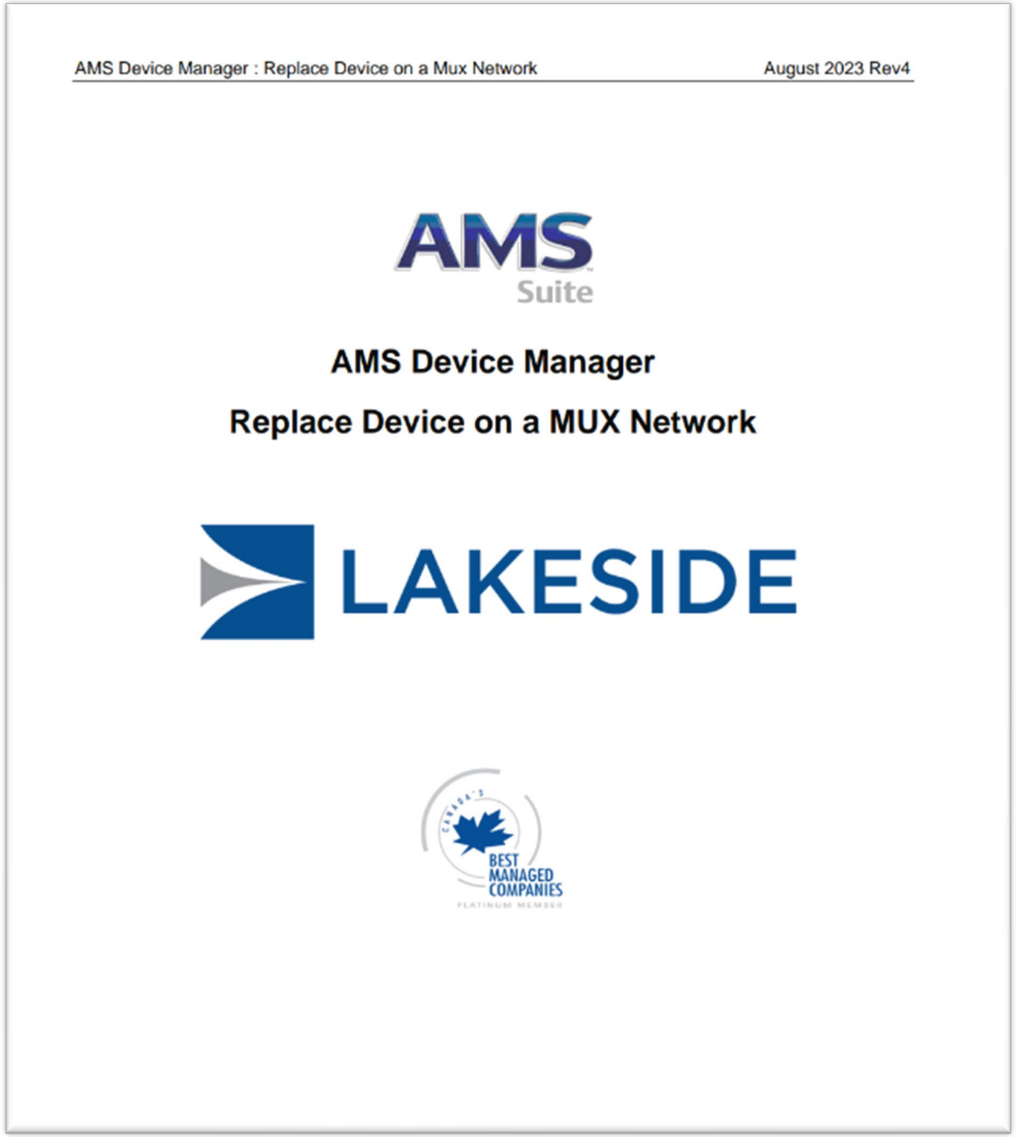
Documentation

Optimize Alerts

System PM

Documentation is Key

- AMS Topology - document which MUX are attached to which rocketports – helps to ensure following standard of no more than 10 mux per daisy chain
- SOP – created specifically to be used across all 3 sites – consistency is important
- Switch drawings (Network switches ie. Cisco)
- Network Architecture
- Internal practices and procedures that allow every tech from any site to perform the same tasks in the same way and with the same positive results.



ROCKETPORT NAME	MANUFACTURER	MODEL	MAC ADDRESS	STATION	SOFTWARE VERSION	IP ADDRESS	PCL CONNECTION	PORT VISION BACKUP FILE	COM PORT	AMS NETWORK CONNECTION	RS485 ADDRESS 1	RS485 ADDRESS 2	RS485 ADDRESS 3	RS485 ADDRESS 4	RS485 ADDRESS 5	RS485 ADDRESS 6	RS485 ADDRESS 7	RS485 ADDRESS 8	RS485 ADDRESS 9	RS485 ADDRESS 10	RS485 ADDRESS 11	RS485 ADDRESS 21	COMMENTS

Alert Monitoring Optimization

- Original Alert Monitoring philosophy was to turn on every available alert. This led to floods of alerts which was unmanageable.
- Due to the constant flooding of nuisance alerts in Alert Monitoring, Alert Templates were developed.
- Device Alerts were reviewed to determine which alerts were meaningful and actionable. This review was used to create the Alert Monitoring templates.
- Each time a new device type or revision is added to the system, a review of available alerts is completed and a template is developed.
- Alert Monitoring is reviewed weekly by maintenance technicians and alerts are addressed and rectified. This could include entering notifications to fix in the future.

Rosemount 3051 Rev 9		
Alert Monitor Categories	**Alert Description**	**Enabled**
Maintenance	Primary Variable Out of Limits	Disabled
	Non-Critical User Data Warning	Enabled
	Pressure Out of Limits	Enabled
	Electronics Temperature Beyond Limits	Enabled
	Simulation Active	Enabled
	Non-Primary Variable Out of Limits	Disabled
	No pressure updates	Enabled
	Sensor Parameter Warning	Enabled
	Pressure Alert	Enabled
	Loop Current Saturated	Disabled
	No temperature updates	Enabled
	Critical Electronics Data Error	Enabled
Advisory	Temperature Alert	Enabled
	LCD Display Update Failure	Enabled
	Loop Current Fixed	Enabled
	Critical Sensor Data Error	Enabled
	Sensor Temperature Beyond Limits	Enabled
	Electronics Board Parameter Error	Enabled
	More Status Available	Disabled
	Electronics Board Failure	Enabled
	Configuration Buttons Operator Error	Enabled
	Cold Start	Disabled
	Configuration Changed	Disabled
	Sensor Failure	Enabled
	Power Advisory Diagnostic	Enabled

Keep the System Updated

Partnering with Lakeside to maintain the AMS DM system is part of our reliability program

- Scheduled Quarterly PM services
- Keeping updated on Hotfixes
- Running Utilities to clean the database
- Scanning All devices including QuickCheck
- Database backups
- Documentation updates

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

AMS Reliability Portfolio

AMS Optics/Machine Works

AMS Optics

- Used to view the health of all assets connected to AMS from the comfort of your computer
- Ability to view health, alerts and diagnostic information for all connected instruments
- Review recommended actions to assist in troubleshooting
- Utilize trending capabilities of all HART variables, and instrument health, to assist in troubleshooting and maintenance strategies.
- Proxy servers setup for future integration of other NOVA sites

Machine Works

- Proxy servers setup for future integration of other NOVA sites
- MachineWorks information will be fed into AMS Optics
- Vibration monitoring using Emerson 9530s
- Machine health information which provides the ability to perform analysis quickly without field inspection or manual data collection.

Live Data – The Key to Reliable Maintenance

- Device specific alerts are all collected for viewing and are actionable. Gives you the history of alerts to build the maintenance strategy to resolve.
- Ability to trend devices to utilize live values as another troubleshooting tool. Gives us the ability to monitor variables over a period of time to determine failure mode
- Provides an insight into other factors contributing to failures. Trending multiple devices on one system can provide understanding as to which instrument is the underlying bad actor, contributing to issues within that system.
- Optics will also provide alerting with regards to system architecture. Meaning, if a network server is offline, rebooted, etc, alerts are generated and communicated through Optics. This proactively identifies diagnostics data loss on devices associated with that server/system/computer.

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

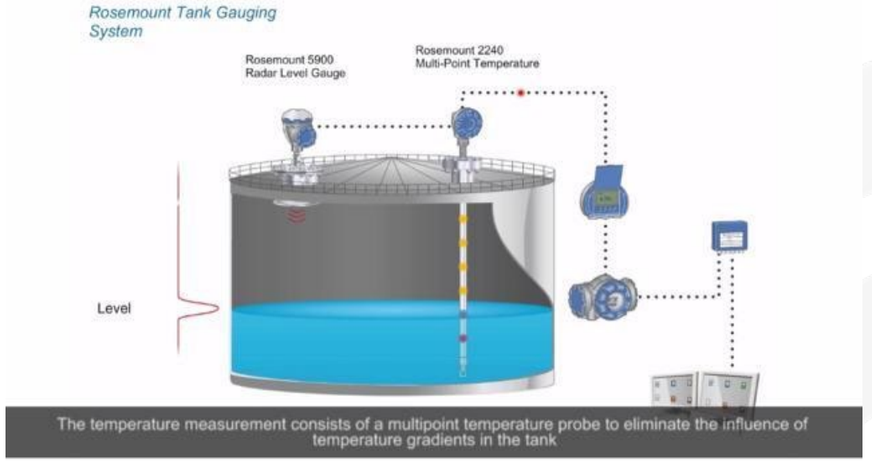
Future of AMS Device Manager at NOVA

Such development is never a leap forward, but rather a smooth, gradual, and complex process that takes place over a relatively long period.

Future of AMS Suite at NOVA

- Expanding on the use of AMS Optics suite of programs/tools across other NOVA sites
- Integration of other condition monitoring assets for a wholistic Asset management Program (MachineWorks)
- Automatic notification entry/work order creation via CMMS

- All sites are in the process of increasing wireless network coverage to expand the condition monitoring and cost savings initiatives.
- Wireless tank gauging, perimeter noise monitoring, seal pot and vibration monitoring being added
- Remote valve monitoring using Thums and other wireless instrumentation across many sites



EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

4-1490

Find More Information

Contacts

Steve Guarrasi – Steve.Guarrasi@novachem.com

Lorraine Driscoll – Lorraine.Driscoll@lakesidecontrols.com

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Want More Info?

SPEAKERS
Bios & LinkedIn Profiles

DOWNLOADS
Presentations Slides

SESSIONS
Abstracts & Topics

CONNECT
Stay In Touch With Our Team

SCAN HERE

Everything you need, one scan away!

EMERSON EXCHANGE 2025
ACCELERATING INNOVATION

Thank You