

INSTRUMENTATION ENGINEERS AND CONTRACTORS

Inside This Issue:

- ▶ Network Design, Troubleshooting & Repair
- ▶ From The Panel Shop
- ▶ Ten Tips: Choosing an Instrumentation Contractor



NETWORK DESIGN, TROUBLESHOOTING & REPAIR:

Helping Our Customers Succeed

Your network is the most important part of process control. If it is not designed, installed and certified properly, you are leaving yourself open to a wide range of problems. Many of these problems may be elusive or intermittent and can stop or interrupt your process and business, costing precious time, resources, money and, perhaps, product. Here is a simple list of steps you can follow to guide you through a new network installation or to help identify problems you may be experiencing with your current system.

COMMON PROBLEMS FOUND IN THE FIELD:

1. Trunk or Spur lines exceed the maximum allowable distance based on specs.
2. Shields are not grounds and should not be tied to the same ground bus as the power grounds. Shields should only be grounded at one location to avoid ground loops. Multi-point grounds can be done in certain situations, but must be done correctly. It is common practice to heat-shrink any bare shield wires to avoid accidentally grounding the shield of one segment to another.
3. Proper separations should be maintained between network cables and high voltage cables.
4. Loose connections can cause intermittent issues. A loose wire at a terminal block or connector can cause sporadic communication issues with a single instrument or entire segments.
5. Segments must be designed to handle the voltage and current loads for all of the instruments on the segment. Overloading a segment with too many devices can cause devices to drop off a segment, or pull down an entire segment.
6. Instruments should be certified and designed for the type of network they are being installed on.
7. Trunk and spur cables should be checked for damage, and cables should have proper bend radius. Damaged cables and connectors can lead to short circuits and cause loss of instruments or entire segments. Exceeding the bend radius can stress cables and shorten their life. *continued on pg. 2*

Omni

316 Dalziel Road
Linden, NJ 07036
PH - 908-523-0800
FX - 908-523-0801
www.omniinst.com



OMNI
INSTRUMENTATION
SERVICES, INC.

INSTRUMENTATION ENGINEERS AND CONTRACTORS

NETWORK DESIGN, TROUBLESHOOTING & REPAIR: *continued*

Helping Our Customers Succeed

SYMPTOMS TO LOOK FOR:

1. Loss of communication to the entire network segment or individual devices.
2. Intermittent loss of segments or devices.
3. Bad or "frozen" values in the control room from instruments.
4. Excessive LF (low frequency) or AC noise present on a network segment.
5. Devices sending error messages, retransmits or bad quality status.

LESSONS LEARNED FROM EXPERIENCE:

1. Verifying you have avoided the problems listed in the common problems listed above is a good start.
2. Testing a network segment before you go "live" will save both time and money. Pre-testing a network segment before instruments are connected can save precious time on trouble shooting. If you know your trunk and backbone hardware are installed properly before connecting your instruments, you can usually eliminate the trunk and its hardware as sources if you have issues once you begin connecting your instruments.
3. Certifying a network segment once you have powered up will give you the peace of mind of knowing your network segment is installed properly. Also, you will have documentation and a baseline in case you experience a problem or fault in the future. Always certify a network after ALL OF YOUR DEVICES are installed, powered up and commissioned. Certifying a network or segment before every device is connected and commissioned will NOT give you a true status of the health of your network.
4. Always get documentation! If it is not documented, it never happened. Make sure you get hard copies of ALL tests performed on your networks. You can then use this documentation as a reference should a problem arise in the future.
5. Train plant and maintenance personnel. Having plant personnel that can perform basic troubleshooting tasks can be extremely valuable. A little knowledge can go a long way. If you have or think you are having problems with your network or installations and need advice, please feel free to contact our Network Engineer Chris at (908) 523-0800 .



The OMNI Safety Corner

Omni Instrumentation boasts one of the best safety records in our industry, with 8+ years of no lost time. Omni has participated in numerous OSHA VPP projects and we are ISNetworld approved.



SAFETY TIP

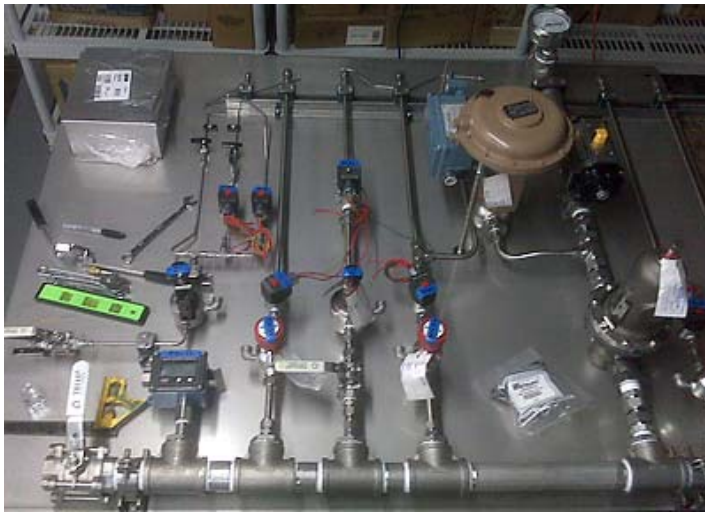
I guess someone didn't get the memo about the required PPE.

INSTRUMENTATION ENGINEERS AND CONTRACTORS

FROM THE PANEL SHOP

RIGHT: These panels were designed and fabricated based solely on our client's P&IDs. The system consists of a flow panel, a reactor panel, an analyzer panel, and a PLC panel. The flow panel takes various gases via bulkheads from cylinders located outside the panel and mixes them based on the engineer's input via the PLC panel. These mixtures are sent to the interconnected reactor panel to create a reaction whose output gases simulate gasoline or diesel engine exhaust via an analyzer panel.

BELOW: Pictured here is a custom nitrogen manifold panel with solenoids requested by a client for a specific part of their process. The junction box in the upper left will house a terminal block to terminate all solenoids.



TEN TIPS: What Makes a Good Instrumentation Engineering Contractor?

1. First and foremost, the ideal contractor should possess the highest level of technical expertise.
2. A good contractor can fill in design gaps and make quality recommendations to enhance or improve a design.
3. Always choose a contractor who will work hand in hand with your systems integrator.
4. Choose a contractor who is ready, willing, and able to work as a team with third-party commissioning agents.
5. A good contractor is capable of reaching across other disciplines to help systems function properly.
6. The best contractors can readily provide plenty of stellar references. And don't just ask for them – check them!
7. Is your contractor financially sound? Money problems can hinder progress or bring projects to a grinding halt.
8. Good instrumentation contractors must have the technical capability to not only identify problems, but to fix them.
9. The best contractors have the ability to see through the eyes of the operator and make a facility user-friendly.
10. Look for a contractor geared toward working as your partner and looking out for your best interests.