CYBERTECH AUTOMATION

TROUBLESHOOTING A SPECIAL CYBERTECH SERIES

PART II: COMMON CHALLENGES

Cybertech Automation helps industry build, configure, and commission instrumentation, electrical, and control system equipment. We fix problems for customers, and we find solutions systematically, thoughtfully and efficiently. That means following a problem-solving framework that consistently saves customers time, money and frustration.

In this three-part series, Cybertech shares some best practices we follow and have developed over our 25 years of project experience. We apply this thinking to systems integration, automation, instrumentation and electrical design/engineering projects for customers in a wide variety of industries.
Part II: Common challenges.

REPRODUCING THE PROBLEM

IS THE PROBLEM REPEATABLE?
Was it an intermittent cause like a loose connection, heat/cold, water, dust/debris or vibration?

WAS THERE A MISUNDERSTANDING?
Was a sequence of events out of order? How it should function? Was there a training or documentation issue?

LOOK FOR A POSSIBLE CAUSE
Look for loose connections.

INTRODUCING A NEW ISSUE

NEW EQUIPMENT
Fresh out-of-the-box components may have issues if untested.

AVOID CHANGING DEVICE CONFIGURATIONS
Avoid moving connections in a logic system and making changes to older programs.

OVERTHINKING THE ISSUE

START WITH THE SIMPLEST FIXES
Begin with the basic connections like power/network cable tightness, system reboots and breakers/switches.

THE SIMPLEST PROBLEM IS OFTEN THE CAUSE
Itemize problems in a hierarchy to save time.

CORRELATION IS NOT CAUSATION

COINCIDENCES DO HAPPEN
A system may run with one fault but fail on the second.

DOUBLE-CHECK THE FIX
An intermittent cause may have been momentarily removed, fixing the issue temporarily. Check one issue at a time so you know how the issue was fixed and what caused the issue in the first place.

FALSE INFORMATION FROM EQUIPMENT

ASSESS IF THE SYSTEM IS PROPERLY REPRESENTING CONDITIONS
Are transmitters reading a condition that should be isolated, shutdown, depressured or cooled down? Is equipment feedback correct to what is observed? Does a local gauge or other reading match?

THE TRIALS OF TRIAL AND ERROR

CHECK ISSUES SYSTEMATICALLY
Organize by likelihood of cause and simplicity of the check.

START WITH SIMPLE COMPONENTS
Starting with complicated components may waste time when something simple is the cause.

AGAIN, AVOID INTRODUCING NEW ISSUES (SEE ABOVE)

EQUIPMENT FAILURE

EQUIPMENT FAILURE IS MOST LIKELY AT THE START OR END OF SERVICE LIFE
Proper equipment burn-in can help mitigate an early life failure. Preventative maintenance, scheduled replacement or testing helps prevent late life failures.

USING TOOLS PROPERLY

PROPER METER USAGE
Measure current on a known source (the fuse may be blown). Use the proper meter connections.

SCREWDRIVERS
Do not over-tighten terminals. Be aware of live terminals and the risk of shorting.

WHEN IN DOUBT, HAVE AN ELECTRICIAN HELP OUT

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