CYBERTECH
AUTOMATION

TROUBLESHOOTING A SPECIAL CYBERTECH SERIES

PART III: OTHER METHODS

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 III: Alternative problem-solving methods.

COGNITIVE WALKTHROUGH

MENTALLY GO THROUGH THE SYSTEM STEP-BY-STEP

VISUALIZE WHAT NEEDS TO HAPPEN NEXT

**REVIEW PROCEDURES AND DOCUMENTATION ON DEVICE/SYSTEM/PROCESS**

EVALUATE WHAT MAY NOT BE REGISTERING

ASK/ANSWER AND THEN DO IT 4 MORE TIMES (THE 5 WHYS)
For example, apply this technique to a car that won't start. Why? The battery is dead. Why? The alternator is not functioning. Why? The alternator belt is broken. Why? The alternator belt was beyond its service life and not replaced. Why? The vehicle was not maintained according to the recommended service schedule.

The fifth why usually arrives at the root cause.

HALF-SPLITTING: DIVIDE AND CONQUER
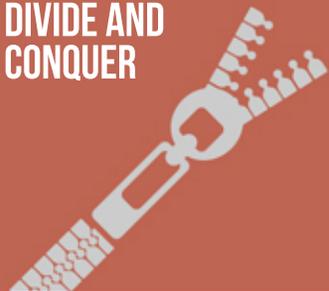
COMPLEX SYSTEMS WITH MANY COMPONENTS CAN BE DIFFICULT TO DIAGNOSE EFFICIENTLY

NARROW THE SEARCH BY ISOLATING THE PROBLEM

SPLIT THE SYSTEM IN HALF AND CHECK BOTH
If one half works, continue checking the other and repeat. When checking instrumentation or communication loops, is there current/voltage at a certain point? Can you communicate from a certain place in the network chain but not from another?

REFER TO DOCUMENTATION (RTFM)

ELECTRICAL DIAGRAMS

LOOP DIAGRAMS

CONTROL NARRATIVES

SHUTDOWN KEY CAUSE AND EFFECT

COMMERCIAL PRODUCTS OFTEN HAVE A TROUBLESHOOTING GUIDE
Common issues and their fixes are listed. These guides often include exactly what combinations of fault lights/error codes mean - saving serious head scratching.

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