



# TURBINE TIPS

Turbine Tips provided by Pond and Lucier, LLC. ®

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**Subject:** Part 3- Connecting the Speedtronic Mark V Panel Ground Cable  
**Applies to:** General Electric Gas and Steam Turbines Equipped with GE Speedtronic Mark V Control Panels

### **Part 3 - Connecting the Speedtronic Mark V Panel Ground Cable**

This is the third and last tip in a three-part series explaining the bizarre world of control-system ground troubleshooting.

Remember last month we told you that if there is an incorrect ground in the Mark V cards it can give you weeks of headaches? That's nothing compared to what could happen if the computer ground is not connected correctly. You definitely do not want that to happen.

Like we said, the thick cable coming from the right side of the bar on top is the Mark V panel main ground. You may think that the Mark V is already grounded properly by the bolts that fix the frame to the floor, and you may try to connect this cable to the Mark V frame. **DON'T DO IT!!!** Unless somebody can produce a blueprint of the site grid and prove to you conclusively that the part of the grid where the Mark V panel is bolted is a perfect electrical ground, and you are in a position to understand it and agree to it, which is a thing absolutely nobody can do, do not let anyone do it.

*PAL* control engineers have worked on sites where, many years after turbine commissioning, the control processors were failing so often that plant personnel were resigned to living with the faults. These include: tripping, rebooting or doing whatever it took to keep the turbine operating. That is what an incorrect ground problem looks like. It's about the hardest thing to fix on a Speedtronic control panel.

If you're lucky, there is an uncomplicated way of assuring a proper ground to the Mark V panel. Your power plant may have a DCS or "balance-of-plant" computer, such as a Bailey or Westinghouse or the like. The DCS computer is the central controller and it is used to control the boiler and other balance-of-plant equipment, if applicable. The DCS usually has an operator console in the control room. It is normally a large-frame computer with several cabinets. All these cabinets are connected to a special ground.

Find out where that ground is located, and try connecting the Mark V to the same ground, using at least an AWG #4 cable. This way, the Mark V and the DCS will share the same ground. If the ground connection is physically too far away, try connecting the Mark V ground cable to the common ground bar inside one of the DCS cabinets.

This is not as reliable as the method before because the Mark V ground will be in series with the DCS ground, but it should work satisfactorily.

This concludes the three-part “Tip of the Month” series covering Grounds in the Mark V panel.

For more information about troubleshooting Speedtronic™ Mark V grounds, contact Pond And Lucier, LLC at 518-371-1971