

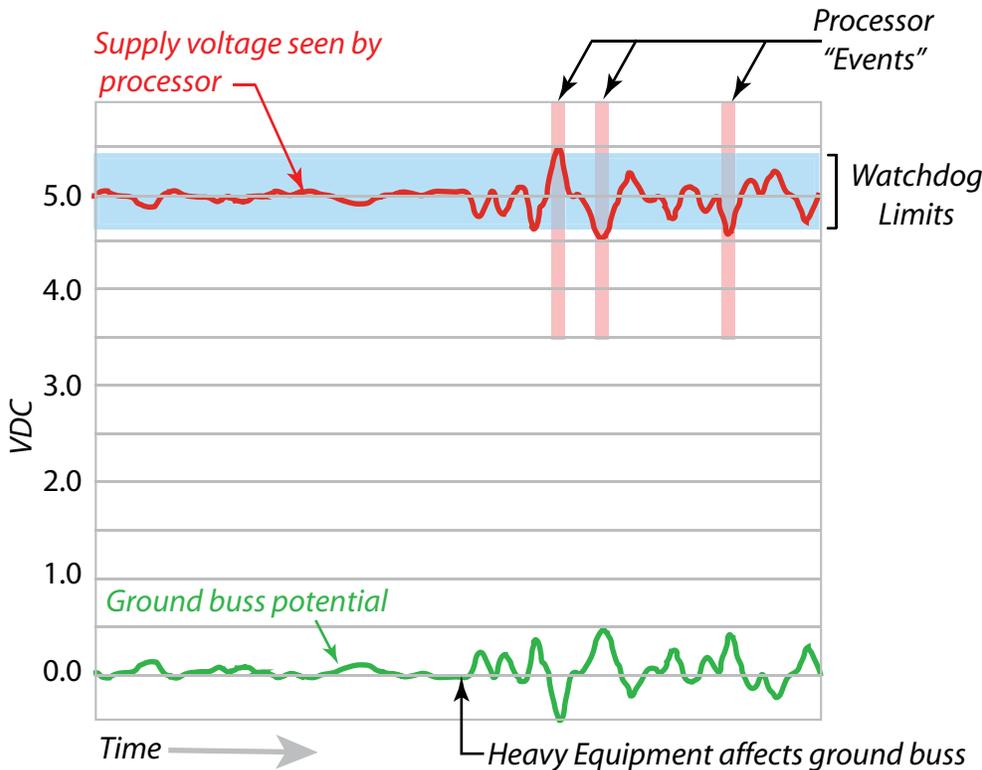
## Grounding Issues with Coiltek's Ultrasonic Controls

Over the past 5 years, our service technicians have often heard the following complaint. "The Coiltek control seems intermittent. It just goes kaput for no good reason. Power it up and it works just fine for a while, then goes crazy again."

As you know, intermittent failures are the serviceman's nightmare. We have found that most all of these problems are caused by the reaction of the Coiltek control's processor to noise on the ground line. In many plants, the ground lines stretch a long way from where they are actually tied to earth ground. They become long-wire antennas and can pick up lots of electro-magnetic hash. Tied to a Coiltek control, a noisy ground line can cause

- Loss of program set-up
- Erratic operation
- Straightener or decoiler 'creep'
- Outright failure of the control

Like most processor-based controls, the 5 VDC processor supply in the Coiltek control references ground. The system employs an element called a Watchdog Timer that functions to protect the processor by putting it to sleep temporarily if something goes amiss. One of the things the watchdog monitors is supply voltage. If it falls below 4.6 VDC the watchdog rests the processor.



The voltage/time chart shows the effect of a noisy ground. The internal power supply is very stable, but when referenced to ground the voltage seen by the processor is the inverse of any potential riding on the ground buss. The chart shows a fairly common situation where heavy electrical equipment in the plant turns on and creates trash on the ground lines. The processor supply becomes ragged and when the ground potential is large, the processor supply can fall outside of the watchdog limits and the watchdog rests the processor. These "events" can cause the problems listed above. In extreme cases, very high potentials floating on the ground line can damage components and cause complete failure.

A simple procedure often corrects the noise problem. Instead of wiring the 120 VAC main ground to the CS-5000 terminal strip, connect it to the enclosure sub-panel. Use a wire nut to connect the main ground to the short green ground strap that's furnished with the control. The system is still grounded as the ranging card is tied to the metal frame. The ground path now runs through the metal mass of the stand. The frame serves to filter out much of the ground noise giving the processor a more stable 5 VDC supply.

If ground buss noise is severe and the above "fix" does not work, it will be essential to find a solid earth ground connection closer to the control. Solid grounding points can be:

- a grounding clamp on a cold water pipe.
- a ground stake driven at least 4 feet in earth.
- the metal body of a machine that has been locally grounded.