



Why You Need Protection For Your Irrigation Control System

By Joe Becker

Editor's Note: A couple of years ago a lightning strike outside our shop burned a circuit on the SNC board of the IBM computer that operates our Network 8000 irrigation control system. Fortunately, Reinders had a backup board and Tom Emmerich installed it in our machine and sent the damaged board to Toro for repairs or replacement. It was repairable, thank goodness. A new board would have cost in the neighborhood of \$14,000. Since that time, if we see lightning as near as Dubuque or Galena or the Rapids, we unplug the computer and worry about the watering consequences when the storm passes. It is a miserable way to have to do business, so I have been looking for some new technology that would eliminate the need for worry about damage from the skies.

That led to our newest GRASS ROOTS advertiser, Joe Becker. He is the owner of D & B Sales Associates in Geneva, Illinois. He has developed a system that better protects field and central control units, among other things, from electrical damage. He agreed to write an article for us on the subject. Winter is a good time to do some reading on it; there is ample time for consideration before the next golf season begins.

Becker is a member of the Lightning Protection Institute, and his company specializes in power protection equipment.

Devastating lightning strikes and power surges are all too common occurrences on today's golf courses. The sensitive nature of the critical computer based irrigation systems requires special coordinated protection to prevent catastrophic damage to expensive control equipment.

Complete and total protection requires that every possible path for lightning or power surges be considered. However, damage to irrigation systems is not always related to a specific storm or lightning strike. It is a well known fact that many failures of sensitive equipment are a result of component stress due to constant bombardment by common power line voltage transients. So if you have suffered triac failures, constant fuse replacement, power supply board damage, modem and computer failure due to lightning or power line transients, there is a solution to these expensive problems.

It is called coordinated power protection. It involves applying the proper surge protection devices in all the right places.

It begins with proper grounding of all elements of the irrigation control system. Good grounding is the backbone of any power protection system because all protection devices require a solid earth ground to enable it to suppress lightning and power related transients. Merely driving an eight foot copper rod next to the controller will not necessarily provide a good ground. The type of soil and available moisture will have a direct bearing on ground potential. All grounds should be tested with a proper resistance meter and tightened annually.

Coordinated protection for most irrigation systems can be summed up in just four critical areas:

1. Main panel protection for your maintenance building and pump house to prevent lightning strikes and power surges from entering the facility.
2. Satellite equipment protection for the AC loop power feed to remote satellite controllers which are vulnerable to ground induced lightning surges.
3. Signal Data Line protection for controllers to prevent transient damage to control circuits.
4. Central computer and peripheral hardware protection to prevent costly catastrophic damage to sensitive computer systems.

Complete and total protection of irrigation control systems requires that every possible source for lightning transients be provided with correct protection devices. Any wire or cable to or from any part of the system is vulnerable. While many of the new control systems have some level of protection built in, it has been proven that damage still occurs because the protection was inadequate or nonexistent on certain critical elements of the overall system.

For example, none of the 45 golf courses recently surveyed provided protection on the main power panel in the maintenance building or pump house. These can be the primary paths for lightning damage from utility power lines. A lightning strike on or near a power line, miles from your golf course, can still do considerable damage to your expensive equipment.

Since golf course superintendents are not required to be experts in lightning protection, how does one go about providing this necessary protection? Consulting engineers and electrical contractors are possible sources, but most do not have the special expertise required to recommend devices for each specific application. The source in the Wisconsin area is Reinders, the Toro irrigation distributor who has been trained and equipped to provide a complete protection package. They will make a site survey of the facility and recommend the exact equipment to provide complete protection for your irrigation control system. 🏌️

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