### Laying Sod on the Other Side of the World in Red China

By RANDY WITT, CGCS Hong Kong Country Club



Delivering of Bermuda sod from grower.



Unloading sod.



Unloading sod.



Bundles of Bermuda sod.



Chinese ladies laying sod.



Bundled rolls of Bermuda sod.





1-800-950-4288 • 1-952-881-2256 www.teeshot.org · info@teeshot.org





# Picking the Right Meter for Troubleshooting Irrigation Control Electrical Problems

**By TIM WILSON** H<sup>2</sup>O Stewardship Solutions, LLC

Are your efforts to troubleshoot electrical problems made more confusing by the type of meter you use? Many people are unsuccessful in electrical troubleshooting because they have the wrong meter or do not know how to use the one they have. In this article I will address how to pick the right meter for the job.

To set the stage let's agree on what we are talking about when we say electrical troubleshooting. For the purpose of this article, I am talking about troubleshooting basic controller operation, field wires and solenoids. I am not talking about sophisticated controller diagnostics, two wire systems or repairing central control communication cable. We will be discussing basic troubleshooting needs. As a side note, as we look at meters I am not recommending brands as much as I am going to be recommending features; there are many different brands that will have the features you need.

The top photo at the right is a picture of some of the most common types of meters that people may see in a store.

These range from \$20 to \$600. Some of these will graph out your readings; others just give you an "idiot light." Let's look at them individually.

**First we have the analog meter**, pictured below, that perhaps many of you have seen or used or maybe you currently



own and use.

Notice the arrows that are pointing to the two holes? This is the first problem with this meter. Depending on which reading I want to do, I have to remember to move the meter leads to the correct hole. Few people remember to do that every time, and then we get bizarre readings that make no sense. The next problem is the meter display itself. You may not want to admit it publicly, but you really don't know what the needle is telling you, do you? Few people can interpret the scales and readings on this type of meter. We just look for the needle to move and then we say something like "Whoa! Yea we got power!" or maybe "uh oh, we got a problem here!" Lastly we have the range setting dial. You have to make sure that this is set to the correct range or you will blow up the meter or get an incorrect reading. Again, few people remember to change the range for the current reading they are doing.

So it is safe to say that you don't want to get this type of meter. Let's look at some digital meters.

At the right is a big fancy meter. Now this is a meter that brings out the testosterone in an irrigation tech! This is a meter



that says "I know what the heck I am doing!"

Do not succumb to the temptation to buy the biggest, fanciest, fattest meter in the display case. Do not give into meter

(Continued on Page 23)

22 July 2006 Hole Notes

The Right Meter -

(Continued from Page 22)

#### envy!

This is a hand held oscilloscope, it costs about \$600 and 90% of its features will never be needed on your standard troubleshooting jobs. Most techs that have meters like this never use any but the most basic features. Some are not sure they are using it correctly. The manuals for these are about an inch thick!

Below is another digital meter.



Now this is a nice little meter. It has the features we need. Those features are: AC Voltage and Resistance (ohms). Yes, believe it or not, those two readings will diagnose 95% of all the problems you will run into in troubleshooting your basic irri-



gation electrical problems. In over 20 years of diagnosing systems I have used those two readings more than anything else. The good thing about digital meters is that you can't cheat. You can't just look for a needle to jump and say, "yea, it works!" You are forced to look at and interpret the reading.

The arrow shows that the leads are permanently attached, which eliminates the need to try to figure out which hole to stick them in. It is auto ranging, so I do not have to move a dial or rotate a switch to make sure I am at the correct range for

> the reading I am doing. The only problem with this one is durability. It is not designed to bounce around in the back of a pick-up in the rain.

The meter, pictured below at the left, is not a bad choice. It is auto ranging if you select that feature. There is only one extra hole for the leads so that limits mistakes. The readings are limited to just a few, which is good because it is simple to use. It costs about \$45 and is fairly durable.

The yellow meter, pictured above right, is even better. Again it is digital and auto ranging. The leads are detachable but there are only two holes, so that helps. The features are limited which keeps

things simple. It is fairly durable. The only drawback is tough to really see. The fuse is difficult to get to, and when the fuse blows it only cuts out the amp reading (which you will rarely use) which is why you won't know it is blown. Other than that it is a good choice for a meter. This one costs about \$35 The trick is to keep it simple. Do not buy a big, fat expensive meter just because you can. It will only complicate your troubleshooting.

Finally let's look at a "non-meter."

This is not a meter but a diagnostic tool. It will activate a valve and give you a light display if a valve is "good" or "bad." While this is very simple to use, it will not give you the information that you can get from a digital meter. By interpreting the readings from a digital meter you can tell if the problem is a broken wire, short bad splice, etc. With this unit you don't really know what the problem is, just that you have a problem. It is good in the hands of "non technicians" but for in-depth diagnosis you need a real meter. Even if you do not use the "idiot lights" it is good to have a valve activator in your tool box. There are many variations of these tools available.



To sum things up, you need to get a meter that is durable, digital and does at least AC voltage and resistance (ohms). Attached leads are nice, and you want to

look for auto ranging as well. Buy extra fuses for the meter at the time of purchase. Also buy lead adapters that convert the needle ends to alligator clips too. Beyond that, try to limit the bells and whistles.

I know that some technicians will argue that more



sophisticated tools are sometimes needed, maybe, but that is for advanced repairs occuring maybe 2% of the time. For most of us the above type of meter will be all we ever need.

Once you have a good, easy-to-use meter, you are in much better shape to properly diagnose your wiring problems. In the next article we will address how to take your meter and use it to troubleshoot field wiring problems.

(Editor's Note: This article was reprinted with permission from Tim Wilson. Copyright 2003 by Tim Wilson, All rights reserved.)

### UNDERSTANDING EVAPOTRANSPIRATION

# Evapotranspiration Offers Superintendents More Irrigation Control

BY ALAN CLARK RainBird Golf

### The Problem

The old way of setting irrigation system run times is outdated and inefficient, leading to increased water and electricity costs.

#### The Solution

Using evapotranspiration (ET) rates and a computerized central control system will give superintendents much more control over their water budgets.

For more than 25 years, state-of-the-art central irrigation control systems have been computerized and have simplified how superintendents set run times for sprinklers. Whether the central system is programming a field satellite, paging a superintendent or activating a decoder, it still tells that sprinkler station to run for a certain amount of time.

Today, we have the capability of setting specific run times for individual sprinkler heads depending on how we choose to water: deep watering, frequent/short run times or repetitive cycles or repeats. But despite using these precise computers, superintendents must still answer the vital question: How should we determine how long those run times should be?

Superintendents have two options to set run times for today's irrigation central-control systems. One method is to set specific run times in minutes and budget for each of those times from one day to the next depending on weather conditions. The other, more scientific option is to let a weather station calculate evapotranspiration (ET) rate and let the central-control system set the run time itself. To understand how using ET values to set your run times can help your irrigation system run more efficiently, it's important first to understand exactly what ET stands for and why it's important.

**ET rates are calculated by combining two separate plant processes -** evaporation and transpiration. Evaporation is how water moves from the soil to the air, and transpiration is how water moves from the soil through the plant to the air. When the water loss of the two processes are combined (an ET rate), superintendents have a calculation that will tell them the precise amount of water needed to replace what the turf lost because of ET that day.

Many on-site weather stations can calculate ET rates automatically after collecting data from five sensors over a 24-hour period. The sensors measure the minimum and maximum temperatures, relative humidity, wind speed, sunlight and rainfall amounts. The weather station averages the data and calculates an ET value based on a modified Penman equation. That rate is transmitted to the central-control system, which uses it, combined with the precipitation rates of the sprinklers to calculate the run time for each station, to set proper run times.

So why is using the ET method a better way to set run times

than more traditional, time-based systems? ET maximizes waterdistribution efficiency because of its precision. Superintendents avoid over- or underwatering certain areas of the golf course because they are replacing exactly the amount of water the plant lost during the day, meaning the plant can use the irrigation water immediately. That limits runoff and water waste.

It's difficult, of course, for superintendents to notice the difference between a day with .16 ET and a day of .15 on their own, but an ET-enhanced control system can save thousands of gallons of water because it does recognize the difference. This can reduce water costs and result in electrical savings because the pump station does not have to run as long.

Since golf courses are often made up of multiple microclimates, however, superintendents are often skeptical of how calculating ET rates off of one weather station

(Continued on Page 25)



Herfort Norby Golf Course Architects, LLC 100 East Second Street, Suite 200, Chaska, MN 55318

Phone: 952-361-0644 Fax: 952-361-0645

E-mail: golfnorby@earthlink.net Website: herfortnorby.com

Evapotranspiration-

(Continued from Page 24)

can possibly control the irrigation system for the whole course.

One option is to position multiple weather stations throughout the golf course, which allows for accurate determination of proper ET values for the different microclimates so the central-control system can calculate precise run times for the area.

Another option is to assign a

different percentage value for each sprinkler station in the central control. This percentage would adjust the run time of any sprinkler based off of one weather station. Superintendents could tweak these percentages manually, allowing for shady areas, extra dry stations, slopes or even different turf types and heights. Once these percentage values are adjusted, they will rarely need to be changed because the ratio between the ET value generated by the weather station and each sprinkler station's microclimate always remains consistent.

Another factor affecting how the user incorporates ET into his irrigation system is how rainfall is measured. Most irrigation systems only use rainfall measurements to cancel the current or next irrigation cycle because rainfall affects ET for the 24 hours when the value was calculated. Some systems, however, use the value of rainfall for up to seven days to calculate ET. This depletes from ET the amount of rainfall from one day to the next, giving a net ET value in which to set the irrigation times for that night.

"Calculating ET can ensure a golf course is more consistently playable and more efficient with its water use, saving your course money and producing a better golf course."

Another important factor in calculating ET is rainfall intensity. Occasional cloudbursts produce rain of such intensity that most of the water runs off before it can soak in. If the system counted all the rain from such an event as an aggregate, it would assume there is adequate soil moisture when there really isn't because so

much is lost to runoff. To avoid this problem, the weather station should monitor rainfall frequently (perhaps as frequently as every hour) and then disregard any rainfall over a preset limit determined by the superintendent. Only the amount of rainfall below the limit, which

should correspond to the infiltration rate of the site's soil, would be used to calculate an ET value.

Superintendents have more control of their irrigation systems at their fingertips than ever before with today's computerized central control systems. The new systems give superintendents the ability to use scientific calculations like ET rates to run times instead of using generic run times of 10, 15 and 20 minutes. In addition, today's ET-enhanced control systems operate based on climatic data derived from on-site weather stations using the system's ET calculator. With that, no single sprinkler station should overwater or underwater the turf.

Calculating ET can ensure a golf course is more consistently playable and more efficient with its water use, saving your course money and producing a better golf course for your customers.

(Editor's Note: Alan Clark is the Great Lakes region golf manager for Rain Bird Golf.)



Tiziani Golf Car of Minnesota Donates Vehicle During Scholarship Scramble at Somerby



**Tiziani Golf Cars has donated a vehicle to the University of** *Minnesota* for one year in the name of Scottie Hines, CGCS. Hines, Superintendent at Windsong Farm Golf Club in Independence and host of this year's upcoming MGCSA Championship, was closest-to-the-pin on No. 17 at Somerby Golf Club to gain the honor. Sadie is pictured with Scottie. The following companies also helped out by generously sponsoring portions of this event and future monthly meeting for the 2006 golf season: Agrotain International; BASF Corporation; Bayer Enironmental Sciences; Cycle Works of Minnesota; Dow AgroSciences; E. C. Grow, Inc.; Glenn Rehbein Companies; Hartman Companies; Hydrologic; JRK Seed and Turf Supply; Par Aide Products Co.; Plaisted Companies; Pro Source One; Reinders, Inc.; Renaissance Fertilizers, Inc.; Shemin Nurseries. Inc.; Superior Turf Services, Inc.; Syngenta Turf & Ornamental, and Turfwerks, LLC.

### Reinders Adds Two Sales Reps In Minnesota Market

Reinders, Inc. has announced that Dennis Salwei and Jerry Deziel have joined the company's Turf Division as Territory Managers and will help expand in the Minnesota market.

Dennis has 35 years of experience in the turf and ornamental industry. He has been a member of the Minnesota Golf Course Superintendents' Association since 1992. Dennis is based out of Brooklyn Center, and can be reached at 763-607-0450. His territory includes northern Minnesota, the Minneapolis metro area, North Dakota and western Wisconsin.

Jerry has been involved in the turf industry for 39 years. He grew up on the family golf course, Hollydale Golf in Plymouth, and is a former golf course superintendent. Throughout his career he has held sales positions with several companies in the green industry. Jerry received his Bachelor's degree in Soil Science from the University of Minnesota and has served as a committee member for the Minnesota Turf Foundation. He is based out of Brooklyn Center and can be reached at 763-607-0445. His territory includes southern Minnesota and northern Iowa.

Jerry and Dennis join Pat Walton, Fred Anderson and Tony Baxter to help provide "Solutions and Supplies" to golf courses across the region. Reinders is a member and supporter of the MGCSA. The company recently opened a distribution center and contractor store in the Shingle Creek Business Center in Brooklyn Center. Reinders is Wisconsin's largest full service distributor of commercial turf equipment, fertilizer, grass seed, irrigation products, landscape supplies, and ice melt products. The company also has six locations across Wisconsin and one in Illinois. They are the official supplier of turf equipment to the Milwaukee Brewers and Green Bay Packers.

## SERVING THE GOLF INDUSTRY



### GLENN REHBEIN COMPANIES,

with over 45 years of experience, provides building, design and renovation services for Minnesota's elite golf courses. We focus on the details and pride ourselves on growing only top quality sod. Our comprehensive lines of Bluegrass, Blue-Fescue, Bentgrass and specialized Netlon Turf Systems will keep your course looking great all season long.

### **PROVIDING UNIQUE PRODUCTS & SERVICES**

EXCAVATING | UNDERGROUND UTILITIES | ENGINEERING | SURVEYING ENVIRONMENTAL REMEDIATION | TURF PRODUCTION | GOLF COURSES ATHLETIC FIELDS | STORM WATER MANAGEMENT



8651 Naples Street N.E., Blaine, MN 55449 office: 763.784.0657 • www.rehbein.com Your career is too important to rely on products that are "good enough." You need **better**. And BASF delivers. Our comprehensive portfolio of products offers control of hundreds of turf diseases, weeds and insects. Control you can trust. **Better** control.

### BetterSolutions.

### BetterResults.

In the last five years alone, BASF has invested more than \$1.5 billion in agricultural products research and development as well as several hundred million dollars in plant biotechnology. And it shows. Test after test proves we push our products to perform **better**. That's the commitment you can count on from the world's leading chemical company.

That's the bottom line, isn't it? And that's what you'll get with BASF. **Better** turf with maximum efficiency of labor and resources. Put us in your rotation and let us prove it. You'll be **better** off.

PENDO

26

BetterTurf.<sup>™</sup>

For more information, please contact Dave Oberle at **651-681-8050**.

Insignia

C

Emeral

C

Pro

(Mantheta Pro

We Don't Make The Turf. We Make It Better.<sup>™</sup>



Basagran, Curalan, Drive, Emerald, Insignia, Pendulum and Sahara are registered trademarks and AquaCap, Better Solutions. Better Results. Better Turf. and We Don't Make The Turf. We Make It Better. are trademarks of BASF. Amdro is a registered trademark of Central Garden and Pet Company. ©2005 BASF Corporation. All rights reserved. APN 05-14-002-0105

# Do you want beautiful bunkers to appear?

# Bunker sands for all your applications:

**Plaisted Natural Tan:** created especially for bunker use at an economical price.

Best Signature 50/50 Blend: off-white bunker sand - firm playability.

**Best Signature Crushed:** white bunker sand - firmest playability.

### Plaisted Companies - a reputation for results.

Plaisted

mpar

INCORPORATED



P.O. Box 332 • 11555 205th Ave N.W. Elk River, MN 55330 (763) 441-1100 • Fax (763) 441-7782 Toll-free (877) 564-8013 www.plaistedcompanies.com

Construction Material • Top Dressing Blends • Bunker Sand • Cartpath Aggregate • Draintile & Decorative Rock

### **Classified** Ads

#### FOR SALE

JD 2653A 2440hrs. \$5500 or Best Offer (2) Jacobsen Greens King IV Best Offer Turf Aerway Pull Type Contact: Ryan Hamers Stone Creek GC 320-968-6017

#### FOR SALE 1995 LF 100

Runs, Hydro motors good, Reels need to be sharpened. Any reasonable price! Contact: Travis Kiel Milaca Golf Club 763-412-5201

#### WANTED

Rainbird maxi interface module working unit. Contact: Robert Steele Hickory Hills Golf Eau Claire, WI 715-878-4543

#### WANTED

Toro Groundsmaster 455D Peugeot-XUD9-A1 engine or replacement. Contact: Roy Smith Meadowbrook Golf Course 937-603-1234 WANTED

Small Range Ball Picker. Contact: Mike Burke Heart of the Valley Golf Club, Ada 218-784-8330

#### FOR SALE

1987 Cushman Truckster, 22hp engine, approximately 1,000 hrs -- \$1,500 1996 Toro Hydroject 3000 only 120 hrs -- \$6,000 Bush Hog Rock Picker/Landscape Rake Used Once -- \$500 Contact: Rick LaPorte Tartan Park Golf Course 651-736-8797

#### FOR SALE

1997 Toro 5300D Reelmaster 2700 hours-excellent shape, ready to cut - all records \$6,300 OBO Contact: Harley Exsted Fiddlestix G.C. 612-390-6862

#### FOR SALE

Cushman Core Harvester with workman kit -- \$2,175 ...Like brand new. Toro 3020 Sand Pro with blade and box scraper -- \$3,875.00 1,300 hrs., very good shape. Contact: Scott Wersal Ridges at Sand Creek 952-492-2644 ext. 24

### Membership Report June 2006 - New Members and Reclassifications

New Members

Rochel Kuske Class C - GCSAA Bristol Ridge Golf Course Somerset, WI W: (715) 247-5778

Michael Copley Class D - GCSAA (pending) North Oaks Golf Club North Oaks, MN W: (651) 484-0528

Charles J. Fischer Student The Minikahda Club Minneapolis, MN W: (612) 926-0602

Hannah Orr Class D - GCSAA (pending) Oak Ridge Country Club Hopkins, MN W: (952) 938-6900

Mark Christianson Affiliate Tiziani Golf Car Corp. Bloomington, MN W: (612) 963-5331

Joe Edberg Affiliate Tiziani Golf Car Corp. Bloomington, MN W: (952) 445-0943

Drew Ekstrom Affiliate Tiziani Golf Car Corp. Bloomington, MN W: (612) 853-9836 Ross Pudenz Affiliate Pudenz Irrigation, LLC Durand, WI W: (715) 672-3364

**Jim Stoller** Affiliate Greenjacket Genoa City, WI W: (888) 786-2683

Doug Suttor Affiliate Quali-Pro / a division of Makhteshim-Agan Ind. Seattle, WA W: (616) 403-3983

Reclassifications

**Jason M. Ruhoff Koronis Hills Golf Course** Paynesville, MN SM to A

Michael Tusa Brooktree Golf Course Owatonna, MN C to D

Dale Hiebert Rush Creek Golf Club Maple Grove, MN SM to A

**Guy Lohman** A to Retired H: (715) 259-7825

- Respectfully submitted Jeff Vinkemeier MGCSA Membership Chair

### **PENNCROSS SOD** from Country Club Turf

### GROWN BY GOLF COURSE PROFESSIONALS

FOR GOLF COURSE PROFESSIONALS

CountryClub

### Supplying over 200 Golf Courses Since 1987

24317 Durant St. N.E. East Bethel, MN 55005

(763) 444-6753

"A Quality Grown Reputation"



In Bounds: 'Piece' of Mind

By JOHN "JACK" MACKENZIE, CGCS North Oaks Golf Club

A few years back I had on my team a young man by the name of Jimmy, Jimmy Chitwood. Great kid, friendly, dedicated and born to work. However, Jimmy had been born with a speech impediment, a physical deformity that prevented him from speech until the year prior to coming to work at North Oaks.

Just twelve months before we met, Jimmy had had major surgery to split his

palate and unlock a fused jaw. Imagine after 16 years of muteness, having to learn to speak. With slurs and guttural enunciations he made himself understood to those who listened carefully. Yes, he did drool on occasion as he physically adjusted to a new jaw. And yes, I had to listen intently to catch every word when we talked. But it was possible, and Jimmy was a true joy to have on the staff as he always gave 200 per-

cent of himself each and every day. Imagine my surprise that summer when approached by a member/friend of mine on the golf course...

"Jack", Mr. Thompson said with concern in his voice, "I think I hit one of your employees in the melon with my drive off the first tee. He was weed whipping by the pond and couldn't have heard my cries of "FORE", so wasn't aware of my close shot. I did see him jump in surprise when the ball landed next to him, but I swear to God I beaned him in the head."

With nervous apprehension I waited for him to continue.

"I drove down up to him as fast as I could and asked if he was okay. His response was 'I o ay. OO eh unt it ne. Ont ell ack, I uposed oo ee on ole histeen.' My gosh Jack, he was drooling and I could tell that I had hit him in the mouth just by the way he was speaking. And he kept saying 'I o ay, I o ay'. Shouldn't your guys be wearing hard hats or something? Holy smokes, I could have killed him."

After a brief explanation of the challenges my key employee had been overcoming, Mr. Thompson and I parted ways each counting our blessings and laughing at his misperception. He continued his round. I on the other hand sighed again with relief and went back to the shop to order some hard hats, two dozen in fact, one for everyone.

That was a while ago and the hats have seen their off and on wear and tear. Typically dependent upon the assertive-

"Well, the hard hat issue has reared its ugly head again. And this time it is I who is prodding the topic. In fact, and straight to the point, our new policy is hard hats on at all time when play is present, from any direction. Why you ask? Well, I'll give you a pretty good reason. Recently a green staff member at a course in Minnesota WAS hit in the head by a golf ball, on the fly."

> ness of the particular year's annual Green Committee or an adamant member. I could always explain away the use of hard hats as imaginary protection that only gave confidence to players to "hit away". Indeed OSHA suggests that hardhat use is dependent upon the environment in which they are worn. Does this mean that everyone including players would need to wear them on a course where the potential is always present for injury from any direction?

Well, the hard hat issue has reared its ugly head again. And this time it is I who is prodding the topic. In fact, and straight to the point, our new policy is hard hats on at all time when play is present, from any direction. Why you ask? Well, I'll give you a pretty good reason.

Recently a green staff member at a course in Minnesota WAS hit in the head by a golf ball, on the fly.

I am not going to name names, or the course, as it is not relevant, but believe me, it did happen. As I understand it the hitee, I'll call him Kenny Jay Sodbuster to protect the innocent, was just finishing up a bit of irrigation repair work upon the driving range at the Happy Knoll Golf Club. Although well aware of the club's suggested hard hat policy and in possession of a fine hard hat, which was unfortunately hanging in his locker, Kenny thought it critical to complete his fix even though the range had just opened and practice had begun.

Almost everyone warming up that day appreciated that there was a lad roughly 175 yards from the tee doing something very important and were hitting pitching wedges and other short irons. Everyone that is except for one individual who felt he should try a shot with his new Sasquatch driver by Nike. ('After all,' I'm sure he thought, 'my shot will go way, way, way beyond 175 yards and anyhow, what are the chances of hitting a kid out

there?')

I don't have to tell you what happened, the poorly hit line drive blasted Kenny smack in the back of his head. And I don't have to tell you what came first, the concussion or the egg. It is also my understanding that after he got up several minutes later he complained of a splitting headache. Go figure!

Kenny was rushed to the Rapid Care Center just down the road where, after a brief observation,

he was sent to the emergency hospital for an MRI and CT Scan because the doctors couldn't locate the skull bone under Kenny's new disfiguration. At the time everyone involved was very concerned, everyone except Kenny that is, he was flying high on a new medication meant to suppress his awareness about the predicament.

To make a long story short, Kenny is okay. Insurance covered his time off and the emergency room visit. And the club he works at has implemented a new, stricter hard hat policy. I have followed suit.

My team now sports either a sombrero bump cap or a baseball bump cap insert. I appreciate that a ball rarely hits an individual's head, much less an individual at all, but better safe than sorry. Both my son and daughter work with me daily and I can only imagine the lifelong guilt I would bear if either were hit in the head by an errant shot.

Perhaps it is time for you to review your policy, too. - JM