



Wireless Golf Course Soil Monitoring

Vital course management data at your fingertips including:

- Moisture
- Salt
- Temperature

**100%
WIRELESS
100%
BURIED**



Photo By: D2 Productions, Inc, Murphy/Scully

Wireless MESH networking links all greens, tees and fairways to your central control system. Real-time moisture, temperature, and salt readings are displayed in your office.

www.turfguard.net 1-888-TURF-GUARD
(888-887-3482)

Powered by JLH Labs Wireless Technology

How it works:

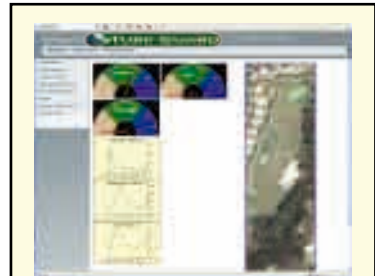
- 3-5 sensors buried in each green at critical root zone level
- Additional sensors buried in fairways, tee boxes and planters
- Above-ground relays placed on existing irrigation pedestals
- Wireless MESH networking links all golf greens to central control system. Moisture, Temperature and Salt readings displayed in your office



TG1 Wireless Moisture, Temperature and Salt Level Sensor

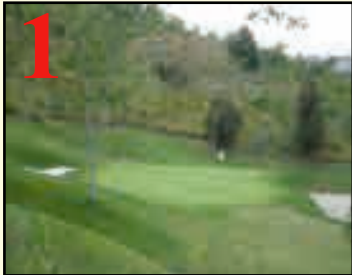


Satellite Pedestal Repeater



PC Interface

Sensor Installation:



Choose your location.



Insert the sensor.



Backfill with soil.



Remove a 4.25" plug, 8" deep.

“As quick and easy as setting a cup.”

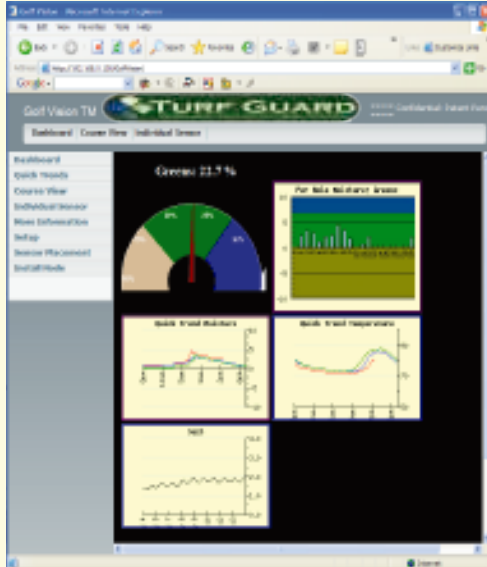


Replace plug and smooth.

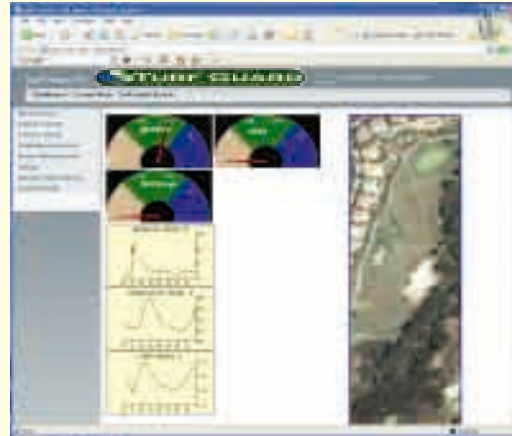
“Sensor installation couldn't be easier.”

Golf Vision

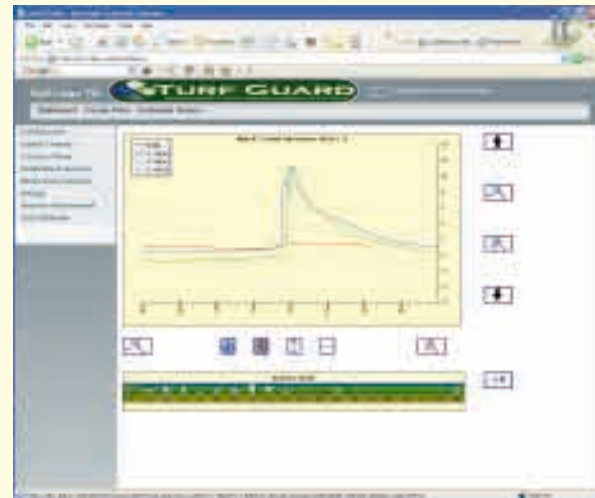
The GolfVision user interface places data at your fingertips and answers all your course management questions.



Dashboard gives quick overview of course performance. View course-wide averages and quickly zoom into detailed information.



CourseView provides hole specific information and shows individual sensor location.



QuickTrends moisture graphs show daily moisture cycle. User can easily predict future moisture levels and schedule irrigation as necessary.

Monitor moisture levels and adjust irrigation:

- Reduce water usage and improve playability without risking turf quality
- Take the guesswork out of using deep irrigation cycles
- Promote root growth by preventing over watering
- Detect dry areas before turf begins to show signs of stress
- Detect irrigation anomalies before they cause problems

Track salt build-up and schedule flushing:

- Take the guess-work out of monitoring and managing salt
- Never get caught with too much salt in your greens
- Positive confirmation that your flushing reduced salt build-up

Monitor daily temperature trends:

- Track soil temperatures and heat accumulation
- Predict peak soil temperatures early in the day to start remediation efforts before an emergency
- Schedule the application of fungicides and pesticides for optimal effectiveness
- Understand evaporation rates on a per-hole basis

Technical Specifications:

Installation:

- Wireless connectivity across your course allows for quick installation
- Sensor installation beneath your putting greens in less than 5 minutes per location
- Immediately ready for play after installation
- Total course coverage requires less than 4 hours of prep time
- Even remote canyon courses have complete coverage due to our advanced MESH routing technology
- Repeaters located with satellite pedestals for minimal intrusion
- Maintenance expected every 3-5 years
- Supports up to 500 sensors per course

Sensing:

- Collect moisture, salinity and temperature:
 - 0.1 F Temperature resolution
 - 0.1 % Volumetric soil moisture content resolution
 - 0.1 dS/m Soil conductivity resolution (Salinity)
- Sensors individually calibrated to your need accounting for soil type, rooting depth and turf variety

Communication:

- Sensor reading sent to control center every 5 minutes
- 900 MHz ISM Band FHSS Communication
- No FCC license required
- Typical Repeater Range 5000 ft (line of sight)
- Typical Buried Sensor Range 500 ft (line of sight)
- Automatic network configuration and failure recovery

User Interface:

- Graphical course overview displays sensor data for quick and easy study
- Plots trends and compares historical readings with current readings
- Quickly goes from course-wide averages to individual sensor readings

Device Size:

- Sensor body: 2 in. x 3 in. x 5 in.
- Spikes: 2.5 in. x 3/16 in.
- Installation Hole Diameter: 4.25 in.

For more information visit us on the web at:

www.turfguard.net

All wireless communication devices comply with FCC rules and regulations. Device operation does not require FCC licenses. Devices operate under FCC Part 15.247 and must accept any unexpected interference.
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JLH Labs

Turf Guard Product Group
35231 Camino Capistrano
Capistrano Beach, CA 92624

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