EXTRON

GROUND PILE

Remote Monitoring System

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The Extron Ground Pile Monitoring System continuously monitors conditions in and around your pile to give you the information you need to help detect spoilage, understand trends, and confidently manage your grain. Log on to your exclusive monitoring site from the comfort of your office, home, or even the road to access your data while custom alerts can be sent via text or email to operators as desired. Giving you the ability to take a more of a proactive approach to what was previously a reactive situation.

"The Ground Pile Monitoring system gives us a convenient and cost effective means to really measure temperatures in our ground piles. And because it is wireless, we can check our pile temperatures from anywhere... anytime."
- Mike LeClair, CHS Facility Manager

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System Controller:

The controller gathers information from the nodes and delivers the data via cell modem to our secure web server. The controller is password protected and can handle up to 24 wireless nodes. Setup and configuration is very simple allowing you the flexibility to set scan times, add nodes, and establish set points. Running on 120, 240 or 480 volt power the controller can be easily mounted in a location central to the probes (within direct line of sight).

What would it mean to your bottom line if you had only 5% damage vs 20%+ at the end of the season?

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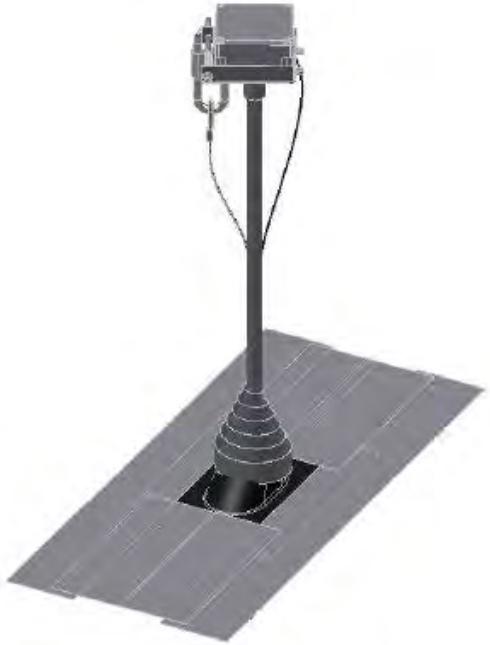

Temperature Probes: (Node)

The probes are 25’ – 30’ long and consist of a temperature cable and small radio transmitter inside a junction box. Each probe has four temperature points within the ground pile and one ambient air temperature reading. A typical application utilizes six to eight probes spaced evenly throughout the pile; although the number of probes depends on the overall coverage the end user desires. The probes wirelessly communicate collected temperature readings to the system controller, mounted in a centralized location.

- Completely Wireless
- 4 internal temperature readings
- Quick connect cable

What if you were able to comfortably carry your pile an additional 1-4 months?

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Did weather conditions affect the grain during filling?

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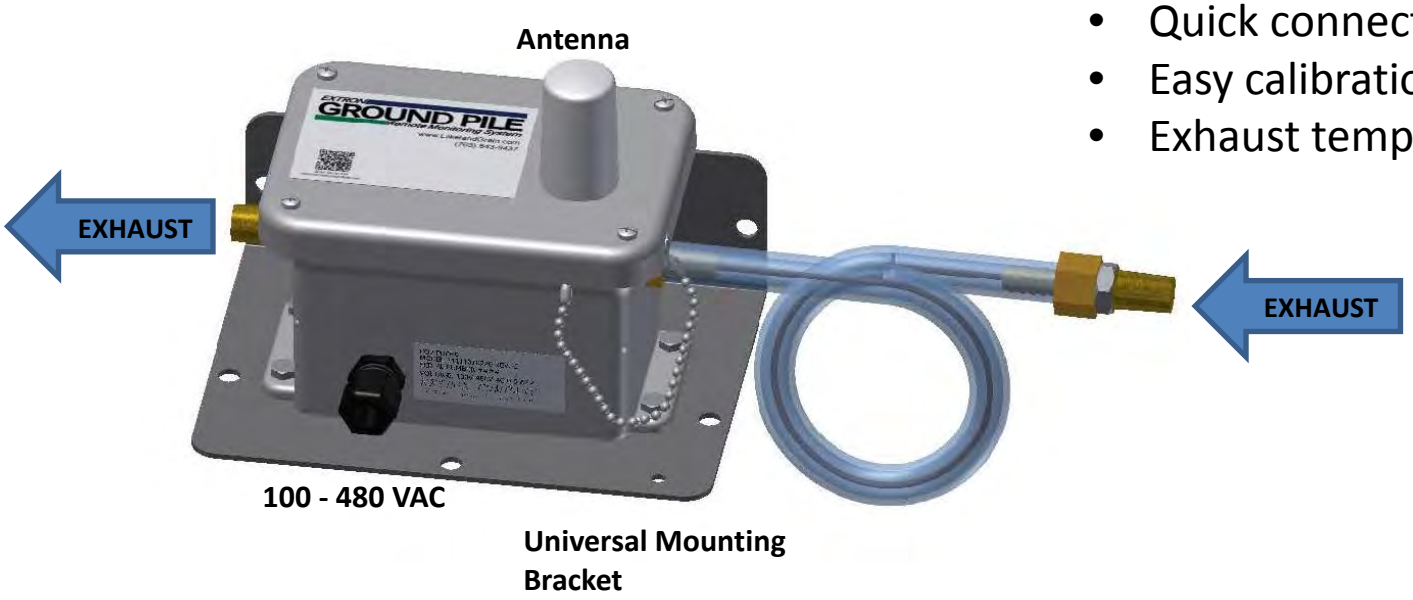
CO2 Sensor: (Node)

The sensors are mounted on the fan housing, wirelessly communicating collected PPM (Parts Per Million) readings to the system controller. Each sensor runs on 100 - 480 VAC power. CO2 acts the same as a temperature node on the system. You can mix and match both Temperature and CO2 readings on the same controller as long as you stay under the 24 node maximum. Each sensor has a recalibration button to calibrate the sensor before every season.



- Quick connect CO2 sensor
- Easy calibration
- Exhaust temperature

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Supplied Parts

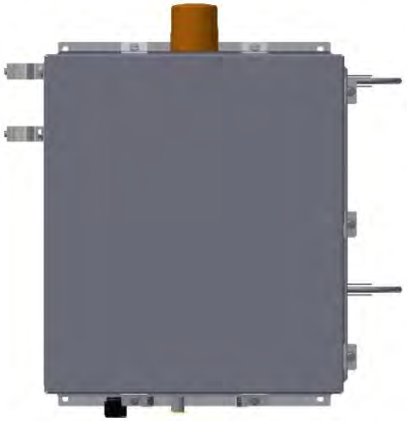
Probe Assembly

- Probe cable assembly
- Plate with box
- 3.33 Ft. pipe
- Flashing Material
- Tape

Driver Kit

- (1) Bottom Rod with driving tooth
- (4) Extension Rods with threaded ends
- (1) Steel Hammer Cap

Pile Monitor



Cell Antenna Cable

CO2 Sensor

Radio Antenna

Cell Antenna

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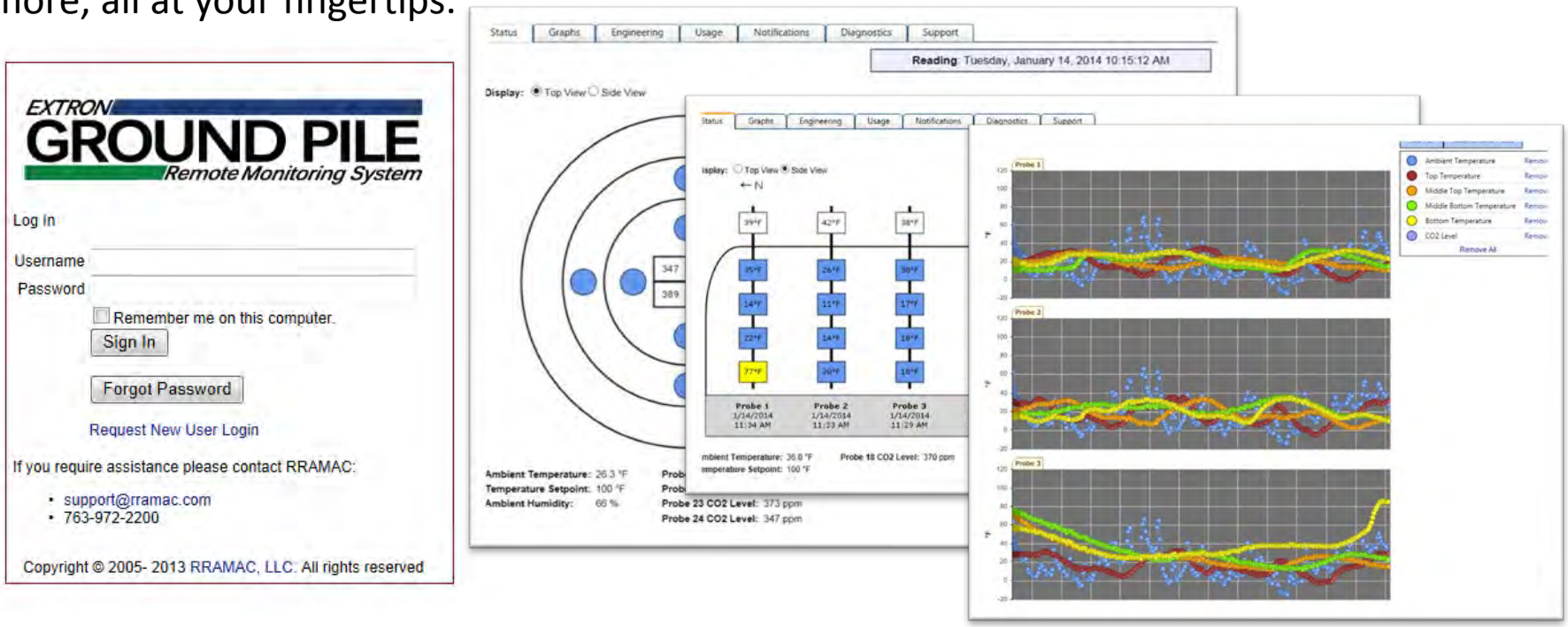
Website:

Data is sent from the controller to the Lakeland Companies secure server and is viewable via a secure website. No special software or operating system needed to access your data, all you need is a computer or smart device with internet access. Log on to http://monitor.groundpile.com and have all the data you need to view current conditions, analyze trends, set up alarm notifications, add additional users, and much more, all at your fingertips.



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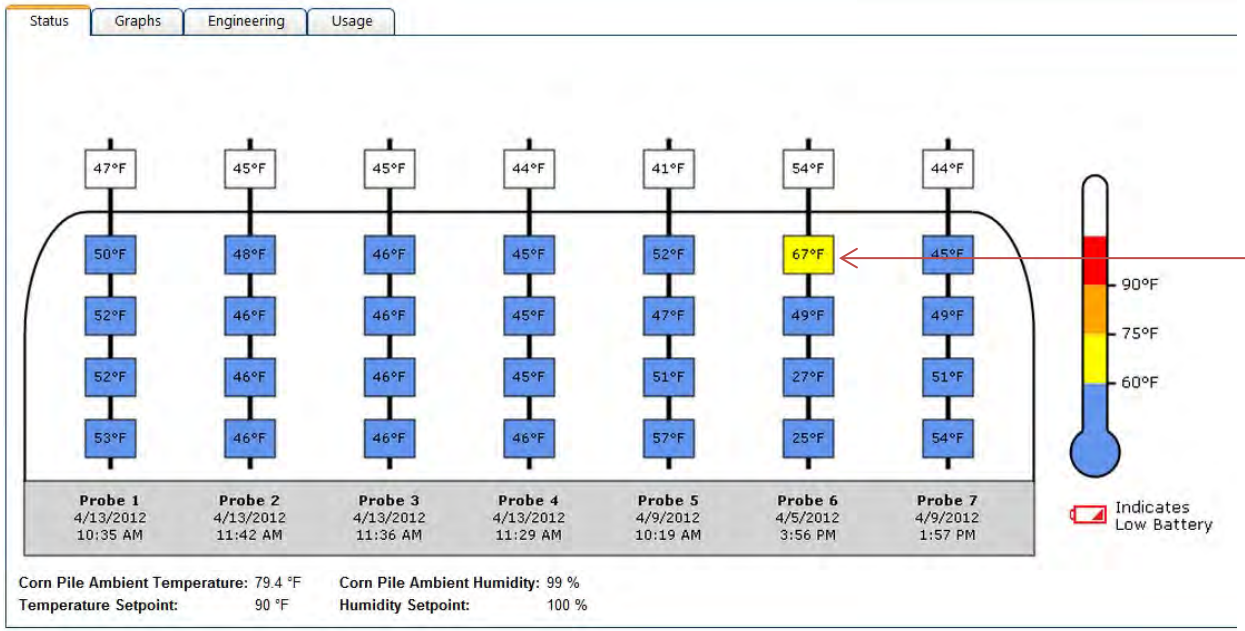
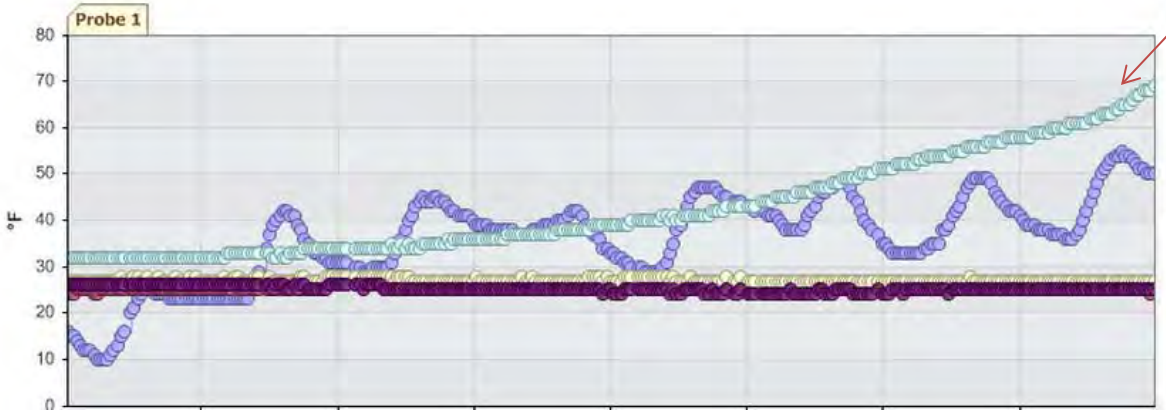
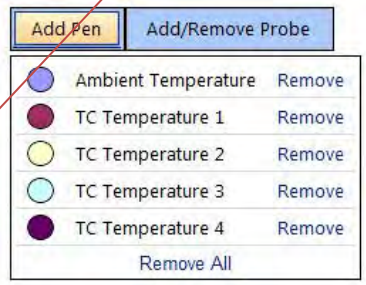


Temperature and trend line





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Snow Avalanche – Plugged Exhaust Fans

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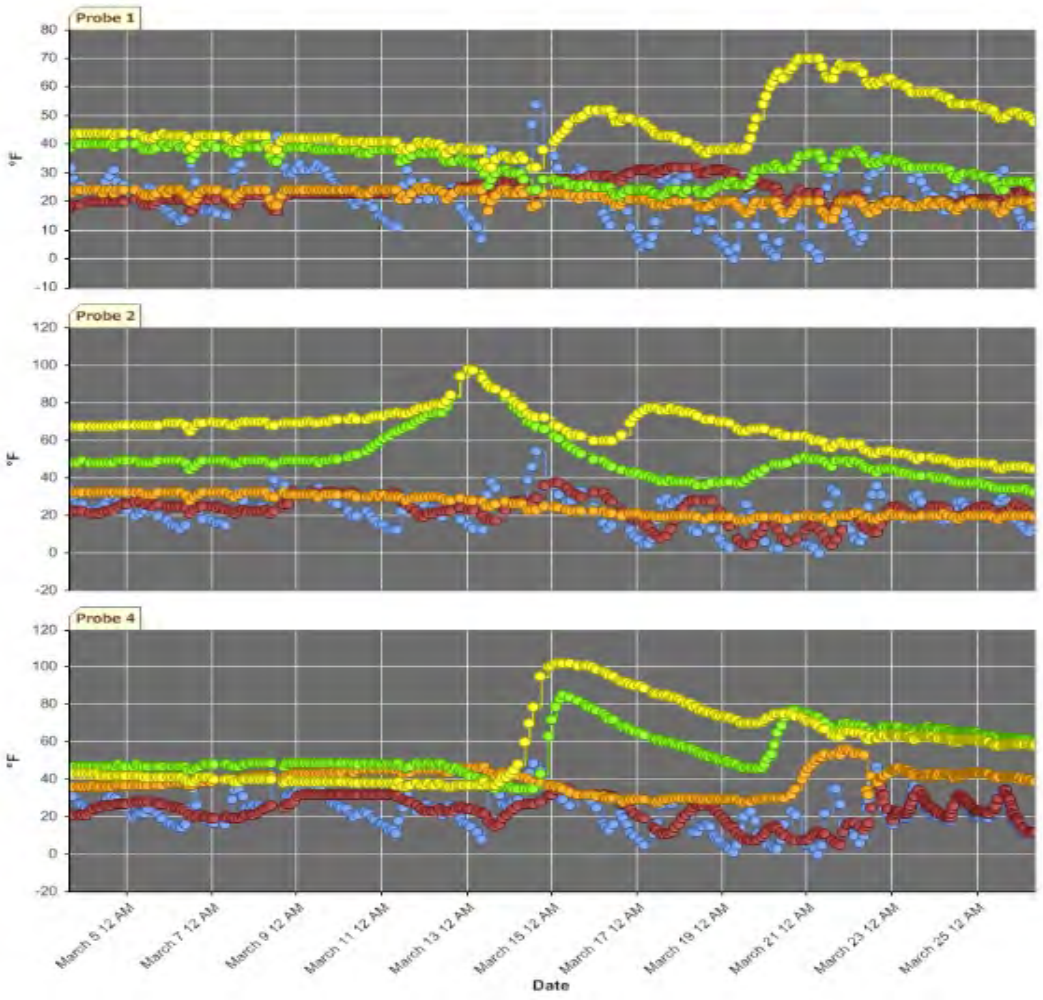
Status | Graphs | Engineering | Usage | Notifications | Diagnostics

Start Date: 3/3/2013 End Date: 3/26/2013 Update Graph Zoom Out



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Hot Spot – Opened Tarp

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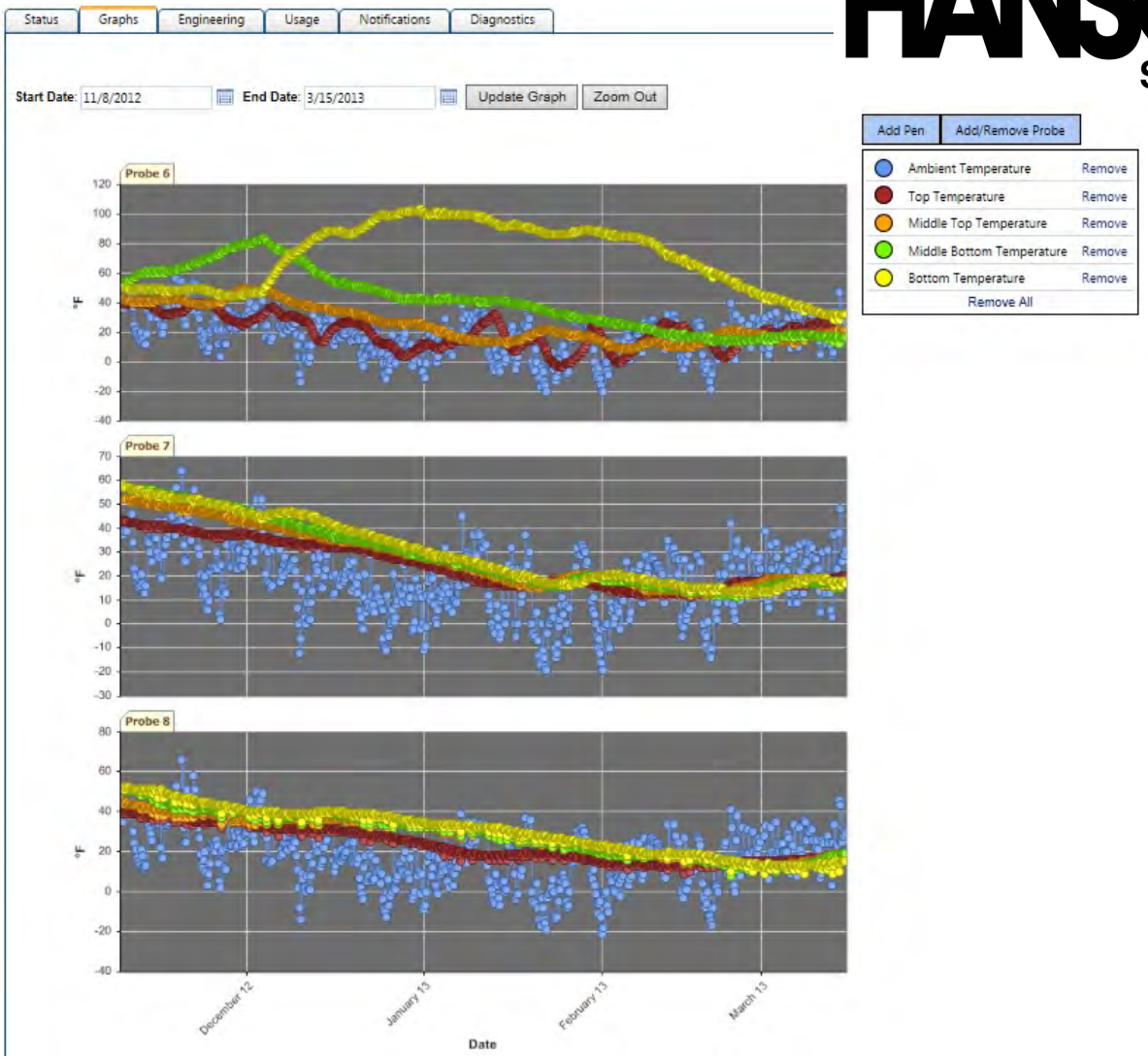

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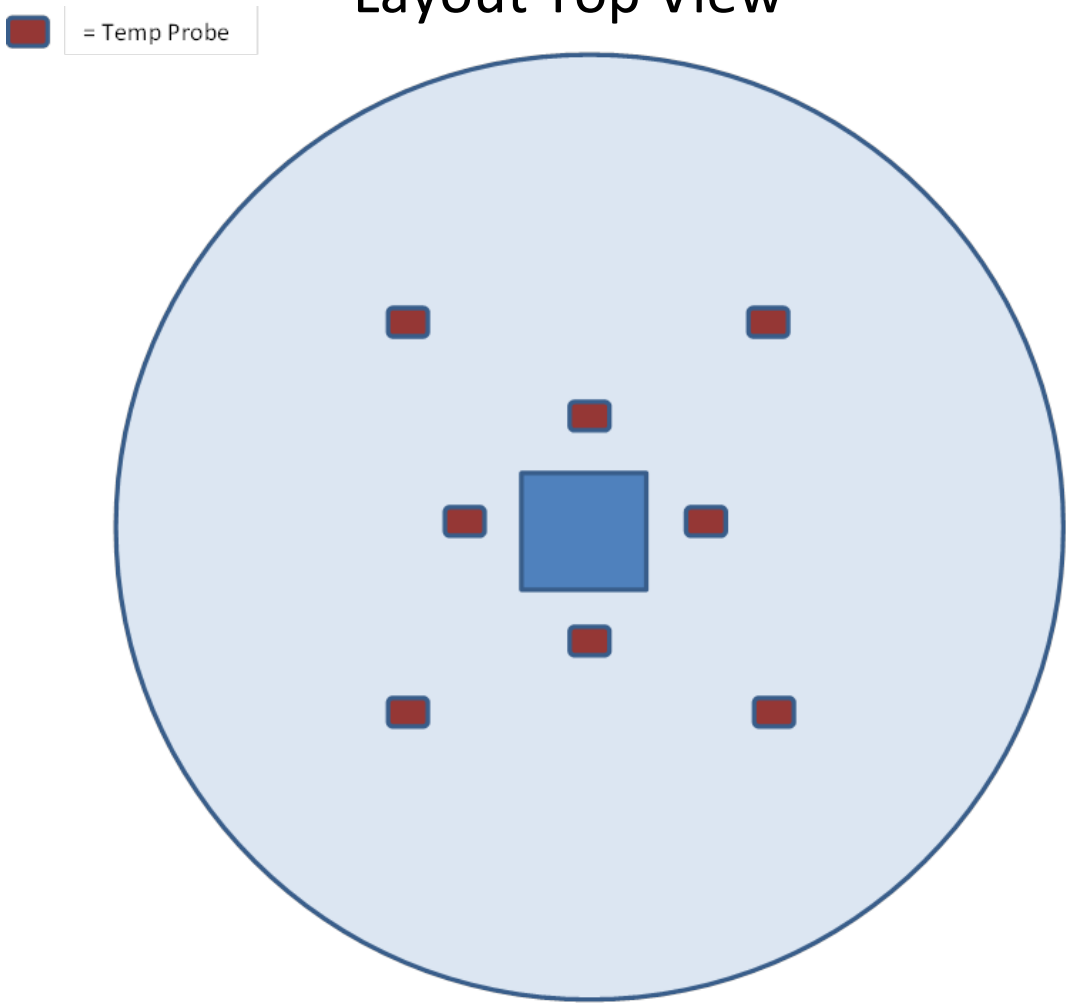
Typical Center Tower Bunker Layout Top View



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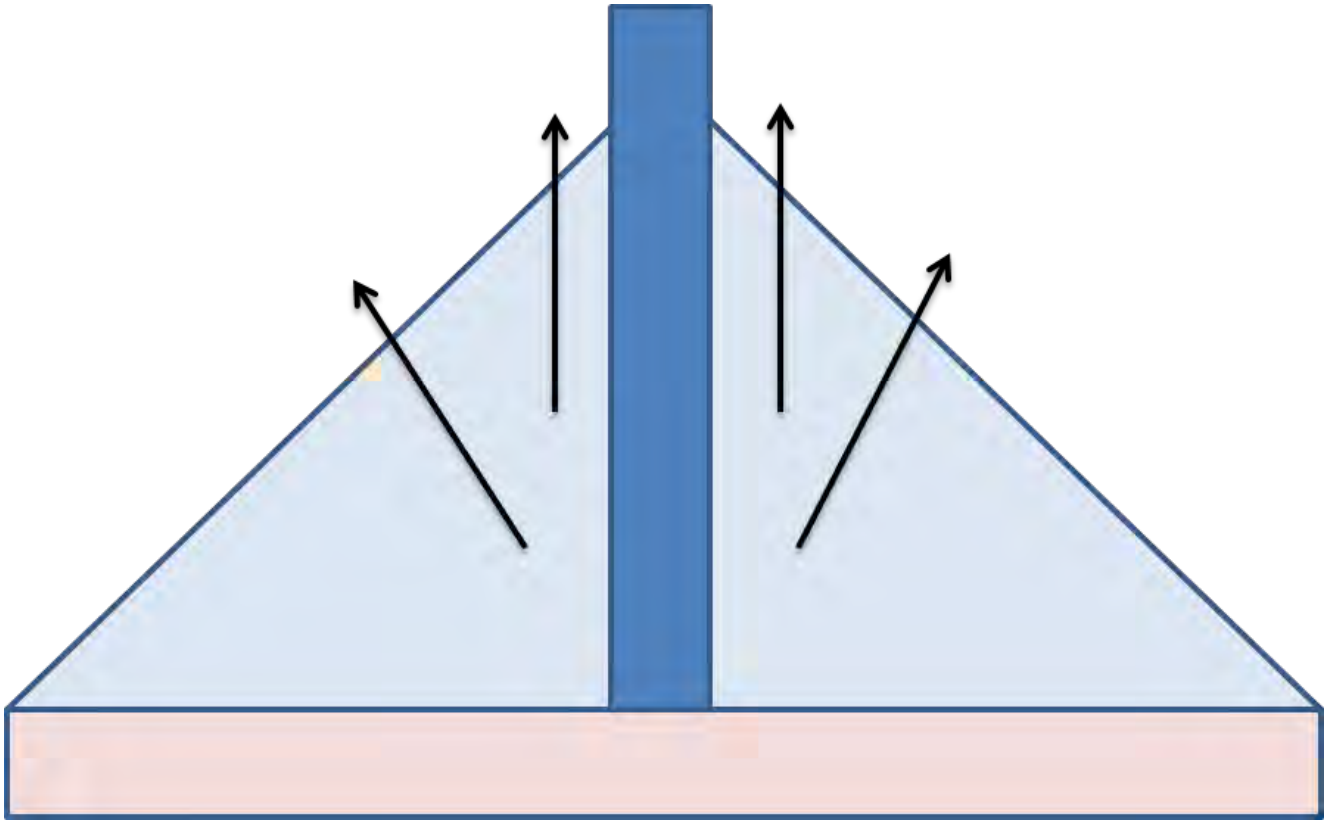
Center Tower
Round Bunker
Side View



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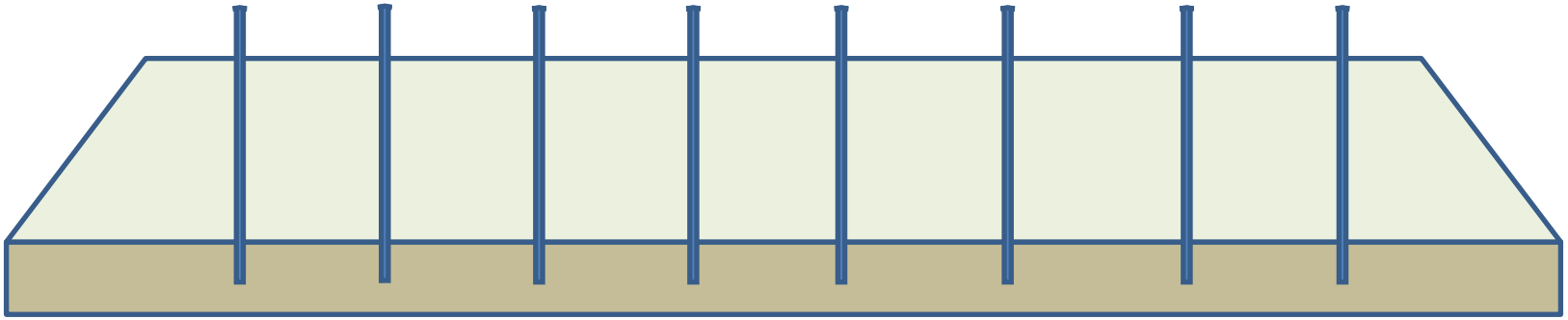
Rectangle & Oval Bunker Layout



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Fan Control

Energy:
Each fan is controlled wirelessly from the controller using VFD technology. In the past, maybe energy consumption was just a bi-product and/or a predetermined expense for having ground storage and maybe even spoilage was a part of that. Well now you can start to recoup those costs.

Grain Quality:
What might be just as important is the condition of your grain. Maintaining grain quality and minimizing spoilage is where you will really see your ROI.

Utilizing the data we collect like internal and external temperatures, local and NOAA wind speeds, motor RPM, vacuum pressure, will help you truly manage your ground storage.

- Energy Savings
  - VFD Technology
- Grain Quality
  - Manage shrink loss
- 3 modes of operation
  - Cool down
  - Maintain
  - Warm up
- Monitoring Data
  - Wind speed
    - Local anemometer and nearest NOAA station
  - RPM
  - Exhaust Temperature
  - Motor Temperature
    - Preventative Maintenance
  - Vacuum Pressure

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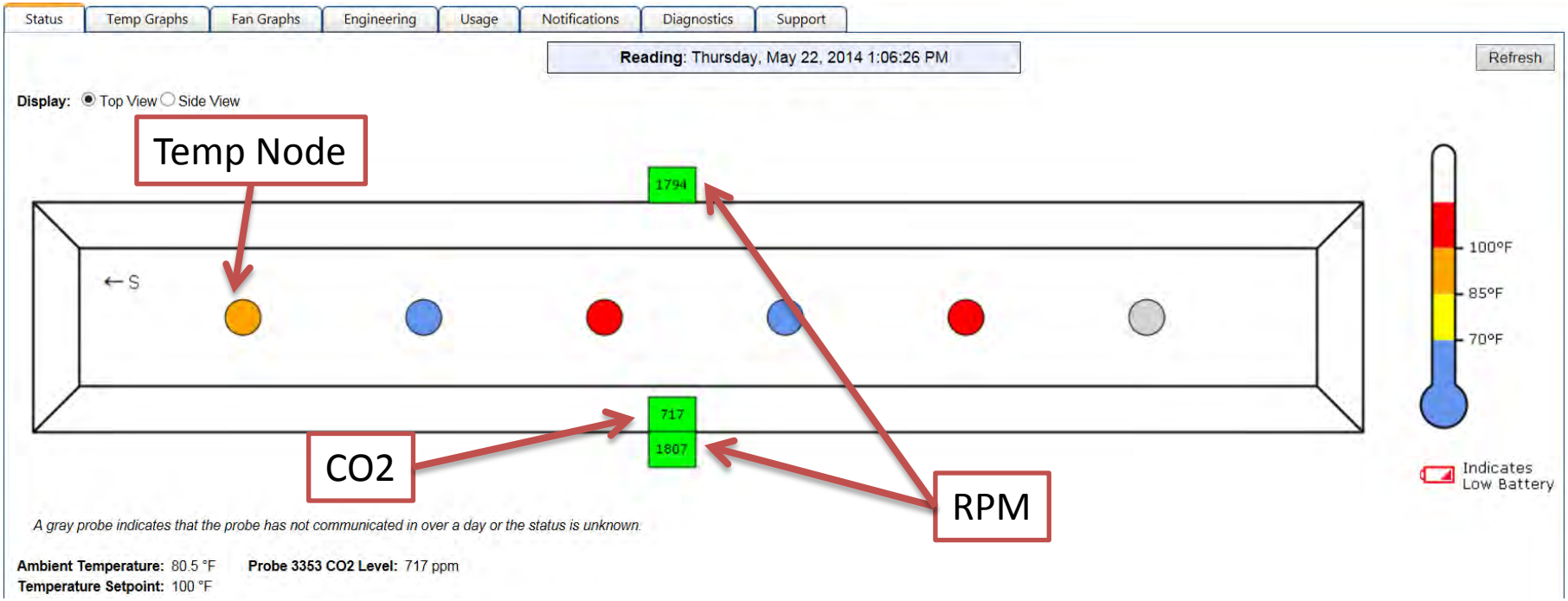
Fan Control



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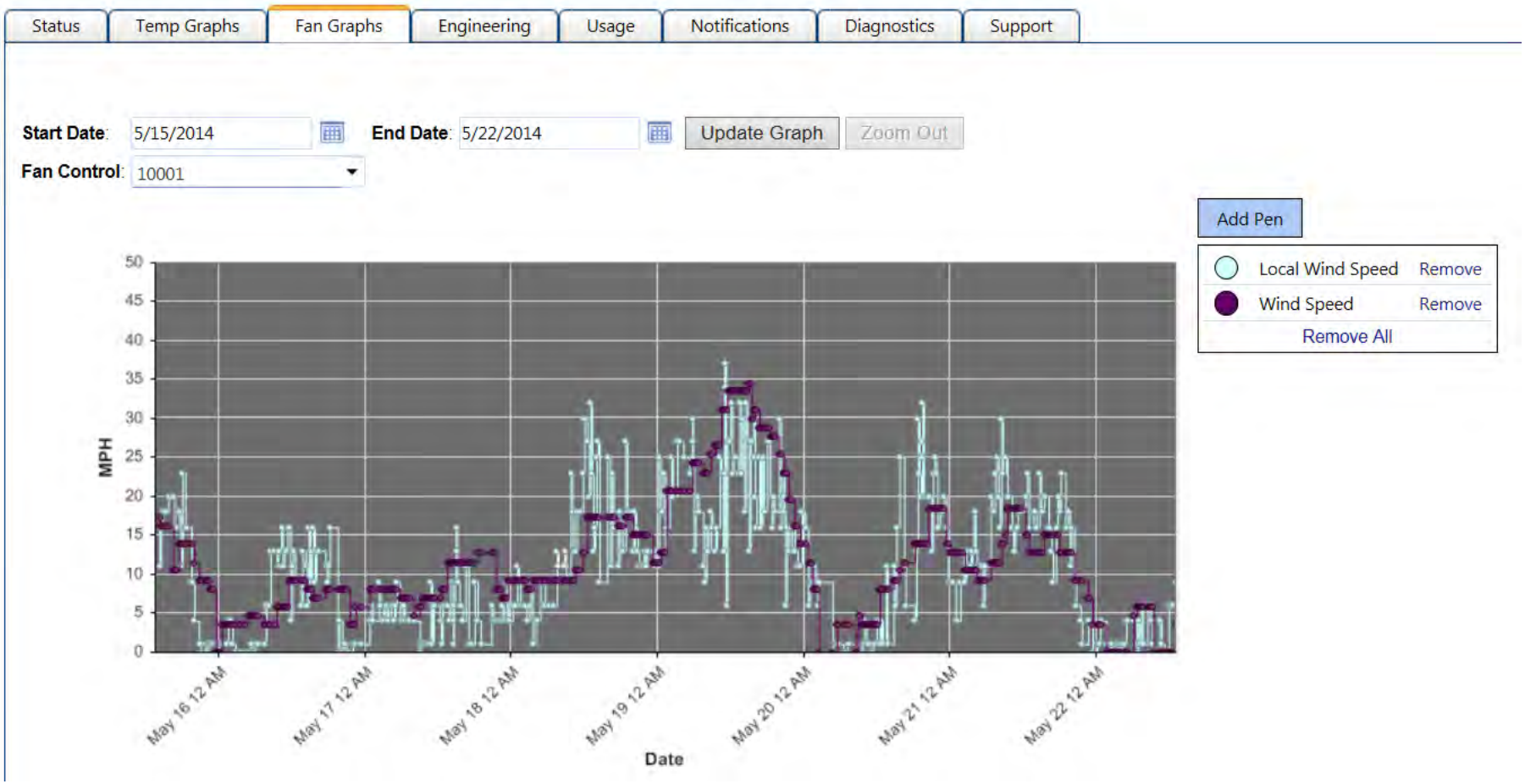
Local Anemometer and NOAA Weather Stations (Redundancy)



FAQ:

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Q: How many temperature nodes do I need for my pile?
A: Depends on what coverage you would like. Standard bunker is anywhere from 6-8 probes (10-20 yards apart). Stadium style is around 8-12 probes. Again depends on what coverage you would like.

Q: What do I do when I notice a hot spot?
A: Couple of options, 1) Evaluate the steepness of the temperature curve to see the severity. 2) Open up the tarp in that area or apply more air flow. 3) Start planning a removal process. 4) If you can extract grain from a particular area of the bunker, you can start at the spoilage point.

Q: How many nodes can be monitored by one controller?
A: 24 nodes total. Any combination of temperature and/or CO2

Q: Does fan control count as a node?
A: No, fans do not play a role in the 24 node count total.

Q: How is the temperature probe powered and how long does it last?
A: The temperature probes are powered by 3 – AA Lithium Ion Batteries and last for about 3 years. We suggest you replace them every year as part of maintenance. There is a low battery indicator if that condition occurs.

Q: How far do the probes communicate?
A: Appx 1000 feet direct line of site

FAQ: Continued

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Q: How many temperature points per probe?
A: You have 4 internal temperatures, every 6 feet and 1 ambient temperature in the probe head

Q: How long are the temp cables?
A: 25 feet long. We do have a 30ft option as well.

Q: How often do you record temperatures?
A: Factory default is every 2 hours. The system can be configured from 5 minutes to once a day.

Q: Can I monitor multiple piles with one controller?
A: Absolutely! That is where you really build value in the system. You can monitor up to 4 separate piles using one controller as long as you don't exceed the 24 node limit.

Q: Is CO2 available?
A: Yes. It acts like another temperature node. You could have 12 temperature nodes and 12 CO2 nodes giving you the 24 maximum.

Q: Is this an insurance policy?
A: NO….. Just gives a snap shot of what is happening in your pile. If you apply both temperature and CO2 monitoring, you decrease that gap from snap shot to insurance, but still not an insurance policy.

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When every bushel counts and every day matters, the Extron Ground Pile Monitoring System is your peace of mind.