

## Application Note: Seed Corn Drying

**Product Range:**    **Wireless Equipment List (Per Freezer):**

- A1-13 Sensor Pod

Per wireless system:

- B1-06 Gateway

**Application:**        **Monitoring of Seed Corn Drying Silos**

Continuous Monitoring of Seed Corn Drying Silos for Time at Temperature

**Background:**

To optimize energy use and product quality, producers of agricultural products must know the time and temperature during the drying phase of producing seed.



The above corn drying silos contain the Grant Monitoring System which are housed in the black boxes on the outside of the silos. Time-temperature graphs are necessary to optimize the drying operations.

**The Problem:**

If the seed corn is not dried sufficiently the seed can then mold alternatively if the seed corn is dried too much then energy can be wasted, the requirement being to optimize the drying cycles.

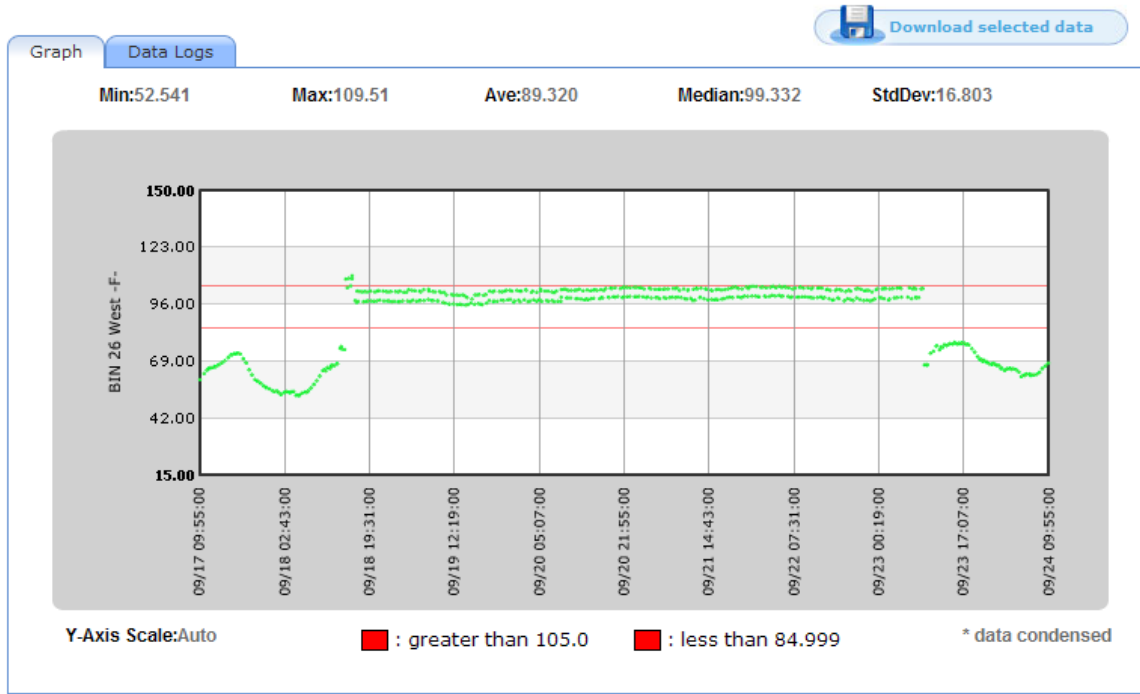


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**The Solution:**

Data for a drying cycle appear in the graph below.



Graph of 5-day drying cycle at approximately 100°F. Both upper and lower temperature limits are set. A high sample rate ensures fast response in the case of an out-of-limit temperature.

**Note:** that the time within a specified temperature range is monitored. If the temperature goes out of range during the time period, an alarm is triggered.



The A1-13 sensor pods are installed within weather-proof enclosures to avoid damage from the elements:



Installation of the Grant system required some care for outdoor use. Weather-resistant plastic enclosures were used to house the Sensor Pods. The Gateway was placed inside the office building, out of the way of weather and near to an internet connection.



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The Grant gateway is installed above the metal of the office building, allowing the signals to be received.

Should an alarm occur at any time, drying operators can log in from any web browser, even at home, to see the immediate status of the drying operation, making nights weekends much less stressful.



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Supply voltage - Battery	4.50 VOLTS			
<b>Bin 24</b>	<b>09/30/09 10:08:00 AM</b>			
BIN 24 North	53.12 F			
BIN 24 South	52.24 F			
Link Quality	100.00 %			
Supply Voltage - Battery	4.36 Volts			
<b>Bin 25</b>	<b>09/30/09 10:08:00 AM</b>			
BIN 25 North	96.96 F			
BIN 25 South	100.34 F			
Link Quality	72.43 %			
Supply Voltage - Battery	4.46 Volts			
<b>Bin 26</b>	<b>09/30/09 10:08:00 AM</b>			
BIN 26 East	95.37 F			
BIN 26 West	98.97 F			
Link Quality	100.00 %			
Supply Voltage - Battery	4.54 Volts			
<b>Bin 36</b>	<b>09/30/09 10:08:00 AM</b>			
BIN 36	52.84 F			
Link Quality	100.00 %			
Outside Air Temperature	46.72 F			
Supply Voltage	4.41 Volts			
<b>Bin 37</b>	<b>09/30/09 10:08:00 AM</b>			
BIN 37	52.06 F			
Link Quality	100.00 %			
Supply Voltage	4.35 Volts			

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The status of multiple silos can be immediately seen. Any silo out of temperature will be indicated by a red alarm clock.



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**The Benefits:**

The Grant monitoring system is used seasonally to maximize quality and minimize production cost and is perfect for the customer. Since the system is only used once per year during harvest season, the extreme ease-of-use of the Grant system is most appreciated by the customer.



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