

Wireless Store Monitoring and Control Case Study

Hallington Farming Company Louth, Lincolnshire



When Hallington Farming Company decided to upgrade their 4,000T grain monitoring and fan control at Home Farm, cost and risk reduction were high on the list of requirements.

In addition to delivering that the Monitor and Manage Commander Wireless Service has generated hard savings of approximately £34,000 in three years as well as numerous softer benefits that all add up to the sleep at night confidence Commander systems provide.

The firm cost savings provided by Monitor and Manage Commander Wireless systems are substantial, generating a real-life investment payback of less than 2 years.

Prior to system installation Farm Manager Chris Hales had a variety of differential controllers but felt they required too much manual intervention. “Automatic fan control is important but my original setup left fans running the majority of the time so I did not know how productive they were within the crop.



I still had to manually check and change the system” commented Chris. He continued “Time is a big problem and my old system was too time consuming to be practical”.

Hallington Farming Company have a long track record of producing good quality, consistent crops but as energy prices have risen and labour spread across increased workloads, ways to improve had to be sought. “I have always had concerns about Chris working alone when sampling and moving fans” said Heather Canter, Director. “I was seeing our energy bills rising for the grain conditioning and was keen to look at a system that was more cost effective and make Chris’s job safer. The Monitor and Manage system has achieved this”.

Power saving

The numbers are compelling for both multi-use stores as well as under floor drying and cooling using high pressure fan systems.

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An electricity consumption saving of over £19,000 over 3 years has been generated at the site since the Commander wireless monitoring and fan control service was installed.

Analysing one 800T bay of wheat with four pillar mounted 2.2kW fans shows fans ran for a total of 2,524 hours during harvest 2012 and cooled the crop down to 3.7°C.

Using an electricity rate of 8.9p/kWhr this 800T bay has cost £494.37 annually to cool in store, compared to over £2,300¹ before the Commander wireless system was installed².

In total the 3x800T bays over the three years since the system was installed has generated a saving of £17,267³.

The first year when the high pressure fan control system was installed saw a saving of over 71%⁴ (£660) or £1,759 over three years including the cost of removing heat added inadvertently. As an aside it would appear from this case study that high pressure under floor drying and cooling has been 13 times

¹ For 59 days the fans were off they would have been adding heat, requiring same period to remove

² All runtime for last 3 years verified, fans previously running continually from harvest

³ Actual data, all stores with heat/cool added back in.

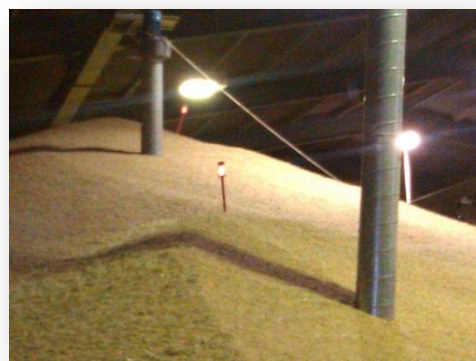
⁴ The fan ran for 54 hrs. compared to 189 hr run time previously

more efficient in energy consumption per tonne than pedestal fans with separate drying. With energy costs' spiralling upwards, this is well worth noting when considering expansion or post-harvest logistics. This generated a total energy saving of over £19,026 at the site.

Labour saving

Doing more with less is a mantra for most businesses and arable farming is no exception. "Since the system has been installed we are able to do all our own cultivation work plus contract spraying for another 1000 acre farm locally. The ability to view and manage my stores whilst I am away from the site enables me to do more, and alerts to problems like fan trips and hot spots mean time spent at the store is well used" says Chris.

Monitor and Manage Commander wireless monitoring systems have captured logged and reported 82,901 individual temperature samples at depths of up to 3 metres inside the heaps since the system was installed at Home Farm.



These wireless samples add greater insight, being captured deeper down in the heap and offering a more timely view of the heap and its issues than manual monitoring can achieve. Typical advice for manual sampling is



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sampling across the heap every 1-2 weeks which would give around 300 samples for the season.

Linking this insight to automatic fan control makes the case for wireless monitoring and fan control truly compelling.

Improved quality & quantity

Moving the right type of air through a stored crop ensures the quality of the crop when it was put into store remains. The Monitor and Manage Commander Wireless system offers numerous programmes to dry, cool and condition many different types of bulk commodity (40 programmes currently and counting⁵).

This year at Home Farm the system allowed a comparative analysis of the impact of using different types of air on eventual crop moisture. In some heaps fans were running on drying programmes while simultaneously others were running cooling only programme at the same location. For much of the time the cooling fans were not running and this allowed us to analyse the impact if we had been blowing this air on the eventual moisture level of the crop⁶.

The reduction in shrinkage that would have occurred prior to installation of the system (fans running constantly from harvest) would have been 8T⁷ for the 800T bay, or **£1,200 saving** with wheat at £150/T. Again taken across the whole site where low pressure fans previously were generally running constantly for the first three months post-harvest and

high pressure for three weeks overnight, this shrinkage alone would have cost £15,000.

Quality changes in store are usually recognised when loads are rejected from consumers on the basis of odour, mycotoxin load or bug presence and activity⁸. Correct store management and conditioning practices will help, and rapid cooling will reduce all three.

A Monitor and Manage Commander system will lead to a reduction in rejected loads which typically cost between £400 and £1000 per load depending on the home and rejection reason. Hallington have had no rejections since the Monitor and Manage Commander system was installed.

For more information or to request a free site survey for your store please contact us.

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⁵ Each bulk commodity available within the system has its own set of control programmes.

⁶ Standard MM 4°C temp diff programme for cooling vs. MM drying max 65% RH programme. Actual data, shrink of 1% (15% to 14% moisture accidental drying) assumed at price of 150/T.

⁸ Current national average mill rejections run at 4.5%, ½ are as result of grain condition, not quality