

profit from mooij

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profit from mooij is our new email newsletter about storing potatoes and onions. You receive a free copy of this every month. As storage technology is currently making huge advances, there is a great deal to write about and to learn.

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PPO study: Frequency-controlled fans

In 2007, 2008 and 2009, we commissioned PPO WUR (part of the University of Wageningen) to carry out research into the advantages and disadvantages of frequency-controlled fans. The purpose of this was to have an independent institute disprove all the tall stories, such as 'the air goes back' and 'it damages the fan'. These tests were carried out on De Eest test farm in Nagele.

After 3 storage seasons, it was shown time and again that the air volume for internal ventilation can be reduced to 50%. No loss of quality or weight loss was detected in this context. Energy use was reduced by 35%, however.

When fitting out a new storage facility, the additional costs for frequency-controlled fans are negligible. For this reason, 90% of new storage facilities are currently fitted out with frequency-controlled fans.

There was recently an article in the German magazine Kartoffelbau (issue 9&10/2010) about tests using air regulation in crate storage. As there was no good measurement and control equipment fitted for this test, only one RPM could be set for both ventilation with outside air and internal air. One of the cells had to make do with half the air volume, during ventilation with both outside and internal air.

As can be expected, this did not result in any energy benefit. KTBL also measured a poorer air quality. This is logical – rapid drying at full capacity is essential.

De Rusthoeve study: the drying and storage of onions

There are various strategies available for drying and storing onions. In the past, a great deal of attention has been given to this, through cooperation between ATO (formerly IBVL) and the former Dutch Onion Federation (SNUIF). However, the most recent studies date from the end of the 1980s.

Partly because onions these days have died back more when they are put into storage, and partly because storage technology is undergoing constant development, year in year out, we have set up a test, in cooperation with De Rusthoeve test farm, to have another good look at the drying and storage of onions. Three 12-tonne storage cells were set up fitted out with frequency control for the fans and modulating heaters. The cells were controlled by the Orion storage computer.

Each minute, the Orion registers all the temperatures, air humidity, CO₂ levels, positions of the hatches, speed of the fans and the position of the mixer valve of the gas heaters. The following strategies are implemented:

- Cell 3: Reference cell, according to practice
- Cell 4: Heat to 20°C
- Cell 5: Heat to 28 °C



Last week, the onions were placed into storage. Net sacks of onions, the gross weight of which is known, were placed at various levels. During and after the storage season, quality measurements are carried out and weighed up against the different energy costs.

We will keep you informed regarding progress on this test.

Drying onions with RH measurement sensor

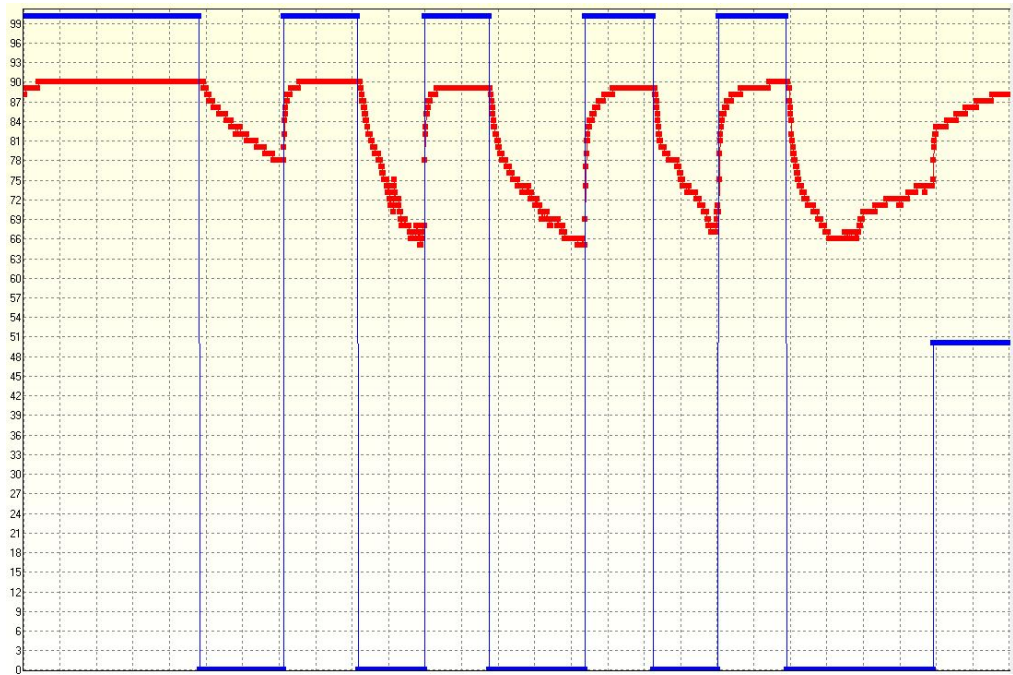
An RH measurement sensor is being used a great deal in an onion storage facility.

We advise running the fan continuously during drying, in order to be able to measure a good RH.

Select the lowest RPM on the frequency controller. The power consumed is negligible.



The red line on the graph below shows the product RH on a scale of 0-100%. The blue line indicates when the fan was switched on, and at what RPM. It is clear that whenever the fan is not operating, the RH drops. When the fan then switches on again, the RH increases to the same level. In other words, if the fan is not operating continuously, a lower absolute relative humidity is calculated by the Orion storage computer, and the outside air appears less suitable for drying. Drying then starts later, and this means a loss of drying capacity.



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Look at www.mooij-agro.nl under News.

If you have any questions, additional information or different experiences, please let me know.

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