

## A grain dryer which is both energy and time efficient

**Autumn in Finland is rainy and wet and grain needs to be dried so that it can be stored and used throughout the winter. An Operational Group in Finland is building a pilot dryer which uses an IT-based monitoring system. The dryer can produce high-quality dried grain with less effort from the farmer and uses less energy than conventional dryers.**



Drying grain ready for the winter can be a time and energy consuming process, particularly in a country such as Finland where Autumn tends to be very wet. Conventional drying methods can also have a negative effect on the quality of the grain. These methods are often unable to cope with the variations of the plant and the environmental conditions, which can mean that the measurements are inaccurate. Teemu Tulkki from dryer company Antti-Teollisuus (SME) tells us "The measuring technology currently available is not precise enough in all conditions and because of this, farmers sometimes dry grains longer than necessary, which increases energy consumption and can be detrimental to the quality of the grain."

Brothers Juha and Jussi Sippola from Isokyrö (Western Finland) and Antti-Teollisuus decided to set up an Operational Group (OG) to deal with this issue. This Finnish OG is piloting a new 'smart' dryer accompanied by a specific guide lines which improves grain quality and saves energy, time and money for the farmer. It has the following main aims:

### REFINING THE DRYING PROCESS

Reliable measurements taken at each stage lead to a more precise control of the drying process.

The dryer has integrated moisture measuring equipment which means that the impact of the particular plant properties and the environment on the measurement information can be minimised. The system allows for measurements to be taken during the drying process and adjustments to be made accordingly. The farmer can therefore avoid over-drying, which can lead to lower quality grain, and under-drying, which can mean that the drying process needs to be started again. The refined process enables the farmer to produce high quality dried grain that can be stored and used efficiently throughout the winter.



### REDUCING ENERGY CONSUMPTION

The precision of the dryer as described above means that it saves energy compared to conventional dryers. But what is more, it is powered using woodchips produced on-farm and so reduces cost for the farmer and contributes to a circular economy.



### SAVING TIME FOR THE FARMER

The improved accuracy of the dryer also enables reliable automation of the system which saves times for farmers; they do not constantly need to be checking moisture levels. The dryer is also 'smart', it is connected to a remote monitoring system which sends information from the drying process to a cloud so that farmers can check the situation wherever they are.

Both Juha and Jussi have a scientific background and have worked both in the field and in other sectors. "Because of the knowledge gathered in

other sectors, we find it easier to see new opportunities in agriculture; innovations are usually new combinations of already existing things and knowledge" says Juha.

The project has already installed the pilot equipment, and is currently calibrating and testing. The project will continue with two years of piloting field tests, collecting and analysing the results. The technology will be finalised and then commercialised.

### Further information

<https://ec.europa.eu/eip/agriculture/en/find-connect/projects/viljankuivaamon-kosteudenpoistoprosessin>

<http://www.netikka.net/mtysippola/EIP.php>

**Photos – Operational Group Development of moisture removal process, energy consumption and control of a grain dryer.**