New generation aeration controller

CSIRO AND A WA COMPANY HAVE PARTNERED TO DEVELOP A NEW CONTROLLER. BY HENK DE GRAAF

AFTER MORE THAN seven years in development, a new grain aeration controller is available to Australian growers and others concerned about maintaining grain quality in storage. The new device controls both aeration drying, cooling and maintenance functions in up to ten separate storages. A key difference from current controllers is that it takes into account the moisture content and temperature of grain at inloading, the desired grain condition after time in storage and selects air accordingly to achieve this.

The new controller was developed by CSIRO's James Darby at the Stored Grain Research Laboratory in Canberra. After two and a half years of commercialisation by Industrial Automation of Perth, the new Adaptive Discounting Controller (ADC) is here.

Until now, no single controller has had the ability to control the diverse functions of aeration: cooling, drying and maintenance. The ADC (marketed as the 'Aeration Manager' by Industrial Automation) not only combines the ability to control all three functions, but automatically selects the correct type of aeration strategy to obtain the desired grain moisture and temperature.

Existing controllers activate fans based on combinations of time and air conditions (relative humidity and temperature). They do not take into consideration the grain moisture and temperature, how much grain is being aerated, the aeration system being controlled, or the condition of the grain during aeration. They will operate the same regardless.

By comparison, the Aeration Manager responds to all of these variables while providing predictions of the grain conditions being achieved and aeration times required.

The controller actually considers the current grain condition relative to the aeration systems capacity to change it when deciding to activate the fan(s). The result is that it only turns on the fan(s) when the grain requires airflow – leading to significant efficiencies in operation and greatly improved ability in selecting air of the right quality.

Adaptive discounting technology uses a unique feature referred to as discounting. During some weather conditions, an aeration process can dry or cool grain more than required. This grain has experienced "extra" drying or cooling.

ADC determines when this occurs and adjusts its set points to use up the extra drying or cooling, enabling faster aeration and less over-drying. In this way, air that would normally have been discarded will be put to good use.

The result means a flexible and efficient aeration system with a substantial reduction in fan run-hours and operating costs. Optional monitoring of the fan current by the controller will also ensure that an alarm will be created if the fan fails, thereby increasing the reliability of the system and protection afforded to the grain.

The Aeration Manager has a touch-screen that guides the user through controller functions. An optional CDMA link enables remote control from the operators' computer.

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For more information: Henk de Graaf, Industrial Automation, 08 9300 1844, 0421 380 480

Controlling three functions at once: the Adaptive Discounting Controller.