

Australian stock feed company implements online moisture analysis for quality control

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A large Australian stockfeed manufacturer has adopted MoistScan® technology to maximise quality control at its feed pelletizing plant in Western Australia.

The company produces 60,000 tonnes of specially formulated feed pellets each year for feedlots and for stock feed for the live cattle and sheep export business. The provision of quality feed plays an integral role in ensuring that stock are healthy before they board a vessel, and when they walk off.

Critical to quality control is moisture. The company makes a feed pellet which consists of lupins, wheat, barley, triticale and straw. The grains are milled in a hammer mill before being mixed with finely chopped straw in a horizontal spiral mixer. The raw meal is then fed to a mash tank which feeds a conditioner. In the conditioner the mixed meal is directly pre-heated with dry steam. The steam preheats the meal to the preferred temperature and moisture content for pelleting according to the formulation of the mixture. During pelleting the temperature of the meal rises. Moisture during conditioning and in the final pellet is central to quality as it ultimately affects the amount and nature of starch and protein in the raw materials and the binding qualities of the pellet. This all affects the available energy and digestibility of the feed.

By “getting the moisture right” the nutritional value of the pellet is maximized as to is the operational efficiency of the pelleting process.

The company “scoured the marketplace” to find a solution however nothing suitable was found. After discussing the project with Callidan sales division our engineering division went about designing an online moisture analyser capable of measuring the moisture in the meal as it was being transported to the conditioner by an auger at the bottom of the mash tank. This required the fabrication of special antenna and housings that fitted the curvature of the bottom of the mash tank. It also required a program logic that would “blank out” any interference from the flight of the auger on the microwave reading.

Using Callidan’s MoistScan® microwave technology, the customized antenna creates a microwave zone of analysis that measures all the material being conveyed by the auger to the conditioner. The moisture percentage is output as a 4-20mA current signal which is fed into the plants computer. Here it is used in a feed forward control loop to regulate the addition of dry steam to the conditioner such that the moisture in the pellet after it is extruded is 16%.

This is just one example of where Callidan instruments engineering division has custom designed an analyser for a client where on off-the-shelf solution could not be found. Many applications that we encounter have application-specific issues which need to be taken into consideration. First and foremost, we ensure that we understand what it is that our client wants to achieve through online moisture analysis. We seek to understand your process and the variables which may affect the performance of the instrument. With the customers end in mind, we then are in a position to develop the ideal solution.

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