Censar Technologies **Case Study**

ClearCense Colour Monitoring System

09/04

ClearCense provides In-Cask Colour Management System at William Grant & Sons Distillers Ltd.

Challenge

Whisky colour is a good indicator of performance of the barrels in the ageing process. Consequently colour can be used as a quality control indicator for this expensive resource prior to blending.

The whisky disgorging line permits a period of 10 seconds between removing the bung and the barrel beginning to roll. A process instrument would need to carry out its measurement within this period if it were to be used as part of the rejection process. Suspended particles (char) in the whisky can also affect the measurement. The system would need to measure this effect and either compensate for it or alert the operator.

To measure the whisky colour in the barrel requires the probe diameter to be less than 37mm. The probe should also extract a sample of the spirit for analysis.

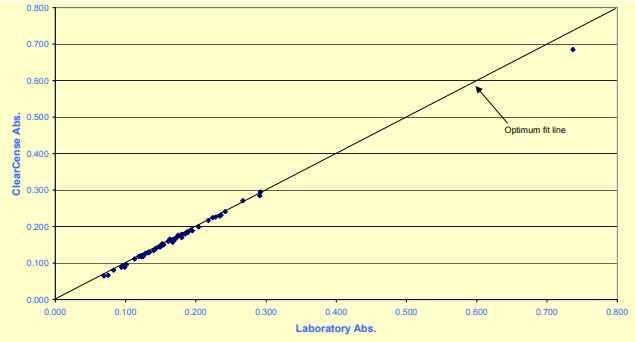
Solution

A variant of the water industry proven ClearCense Colour and Turbidity probe has been installed at William Grant & Sons Distillers Ltd as part of a process monitoring system. The system consists of an operator interface and a PC containing a database of all measurements. In total two fixed systems and one mobile system have been supplied to the Grants distillery at Girvan, with another fixed system supplied to the Glenfidddich Distillery at Dufftown.

To measure colour, the system uses direct absorption over the spectral range of 400-460nm.

Before the system was selected by Grants, ClearCense measurements were made within the casks and compared to reference analyses carried out in the site laboratory, using a dual beam spectrometer measuring absorbance at 450nm. Results demonstrated excellent linearity over the range 0 to 0.4 absorbance units at 450nm.

ClearCense verses Laboratory Absorbance Determinations



The effects of particulate interference on the colour measurement were carried out by comparing the colour values obtained from settled and well-mixed samples, solids typically contributed 0.005 abs units (1Eel) to the settled colour.

The ClearCense system takes many readings during the sample period and provides stable readings within 6 seconds.

As the ClearCense probe makes a measurement of absorbance (a ratiometric determination), calibration is only required at a single point and this is only required once each day.

Benefits

The system has proved to be very accurate, easy to use, rugged and reliable.

The database has proved invaluable as a distillery tool making 78,000 measurements to date (Sept 2004).

The system helps the distilleries manage the condition of the casks; a very light coloured whisky indicates that the cask is exhausted.

The distilleries can segregate casks to ensure exhausted casks are not refilled with new spirit.

The system is certified for Zone 1 areas.

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