



Applying innovative engineering to industrial challenges

Jeffress Engineering Pty Ltd designs and manufactures laboratory and production testing devices for the sugarcane and wine industries. They have developed and maintained a worldwide reputation for quality mechanical engineering and innovative design since their origins over 60 years ago.

BevScan® and CAMO Software

In the late 1990s Jeffress Engineering realised they needed to move into high technology products to remain relevant and viable. The chosen strategy was to combine the best of the old and the new – modern technology applied to the enhancement of fundamentally sound engineering products. The company began investing heavily in R&D, the result of which was a focus on near infrared spectroscopy (NIR) as a clean, fast and accurate adjunct to standard laboratory measurements.

One of their NIR development projects was the JEFFCO BevScan®. This was done in collaboration with the Australian Wine Research Institute (AWRI), who needed a device that could analyse wine through the bottle without opening and destroying the wine. Its development called for a combination of precision mechanical and optical engineering skills, new spectroscopy techniques and innovative software using data analysis.

Managing Director, Colin Jeffress explains “We knew what we wanted to achieve conceptually for the new device but did not have the resources or mathematical and statistical skills in-house to develop the software to accomplish our vision. We needed to turn spectroscopy into a fast ‘black box’ technique for users who did not have the necessary understanding of statistical maths.”

Sophisticated analytics made easy

“We needed the support of a well-known and widely available data analysis package but one that would allow us to reduce our new similarity detection concept to a core module. The core module would need to process live data from the spectrometer and then, unseen by the end user, work silently and quickly in the background to give commonsense and easily interpreted answers from complex mathematical formulae.”

This was where CAMO Software came to the rescue. Detailed discussions with the CAMO team convinced Jeffress Engineering that the concept was sound and could be accomplished by using two innovative products from CAMO, the Unscrambler Classification Engine and the Unscrambler Prediction Engine. Thus was born the process which has been named SimCal®.

Industry:

- ▶ Laboratory & Production testing devices for agricultural industry

Product:

- ▶ Unscrambler® Prediction & Classification Engines

Executive Summary:

- ▶ Developed the JEFFCO BevScan® through-the-bottle wine analyzer device in collaboration with the Australian Wine Research Institute
- ▶ Small, easy to use instrument with a simple touch screen interface allowing users to exploit the power of CAMO’s sophisticated analytical engines
- ▶ Enables the detection of counterfeit or fraudulent wines, oxidation damage, vintage differences and production variations without destroying the wine

At a Glance: Jeffress Engineering

- ▶ Established in Queensland, Australia, over 60 years ago
- ▶ Today headquartered in Adelaide in the heart of the South Australian wine region
- ▶ Offer solutions primarily for the sugar cane and wine industries
- ▶ Used in over 30 countries by regulatory authorities, lab staff, mill owners/ winemakers & growers
- ▶ Focus on high quality products with long lifetimes, excellent post-sales support and fast service



“The analytical engines from CAMO have the capacity to move complex mathematical statistical processing into the background of industrial applications, giving real world results in real time without the end user needing to know about high level statistical data analysis. Brilliant!”

Colin Jeffress, Managing Director, Jeffress Engineering Pty Ltd

“By using a unique development in NIR spectroscopy combined with a special optical lens system, we were able to record robust and reliable spectral data through unopened wine bottles, both for red and white wines. Using the readings from a small number of known good bottles of wine, we needed to construct a sound mathematical model ‘on the fly’ with which we could compare against ‘unknown’ bottles. We then needed to give the user a simple way of interpreting the ‘similarity factor’ between the known good wines and the unknown bottles to be measured. The outcome was the SimCal[®] concept – a simple go/no-go determination using an easily understood number score.”

Immediate benefits for the end-user

Colin continues “BevScan allows the detection of counterfeit or fraudulent wines, oxidation damage, vintage differences and production variations. Additionally, it permits wine ‘fingerprinting’ and 100% screening of premium wines and spirits possible for the first time.”

Jeffress Engineering worked with CAMO to integrate complex statistical processing which provides instantaneous results using a small robust instrument with a simple touch screen interface. Without any knowledge of calibration techniques or complex data analysis, the end user can harness the power of CAMO’s Unscrambler technology to detect and differentiate the characteristics of bottled wine without opening the bottle, saving the user significant costs and wastage.



For more information about Jeffress Engineering and BevScan[®] please visit www.bevscan.com

For more information about CAMO Software products and services please contact your regional CAMO office or email sales@camo.com

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