

Analysis and control of do-it-yourself wine



Custom control

With over 2500 individual barrels to manage and 700 one-ton fermenting bins to monitor during harvest, Cindy Cosco, Lab Manager at custom winemakers Crushpad Wines, has a lot of different wine and grapes to keep an eye on. A rapid, multiparameter analysis instrument gives her the information she needs, while internet-based communication technology even promises the ability to monitor harvest and winemaking operations in locations as far away as Bordeaux, France.



Lab Manager Cindy Cosco.

'I did it my way'

Do-it-yourself winemaking has become a popular option for anyone who dreams of seeing their name on the label of a quality bottle of wine, but lacks a vineyard and state-of-the-art winery to fulfil their ambitions. One company offering the required services is California-based Crushpad Wines – a winery where anyone can be the winemaker.

Using grapes from top vineyards, the industry-acclaimed Crushpad wine-making team makes wine in small lots according to customer specifications. The service includes education and support and takes care of the time-consuming parts, allowing clients to participate in the magic of winemaking without having to give up their day jobs.

Rapid analysis for quick decisions

While the winemakers get to work, someone needs to keep control of all the indi-

vidual wines being made. Tasks such as controlling the quality of grapes used, monitoring fermentation and deciding when to bottle require support in the form of rapid information from the Crushpad laboratory run by Lab Manager Cindy Cosco.

With over 2500 individual barrels to watch and more than 700 one-ton fermenting bins to monitor, Cosco was quick to see the advantage of a rapid analysis solution provided by FOSS.

The easy-to-use instrument helps her cope with the massive analysis workload by delivering rapid, reliable results. These are used in support of several key tasks such as vineyard sampling, determining picking dates and monitoring fermentation. The technology is based on a technique called Fourier Transform Infrared (FTIR) which offers a powerful and effective way of measuring multiple parameters simultaneously from must and wine samples.

The instrument used by Crushpad measures up to six parameters from a single sample, and information flow is greatly improved compared to traditional chemical analysis. "When you think of the six different analyses that you get in two minutes versus running them individually in the lab, it's mind boggling," says Cosco. "We run approximately 120 samples per day, which would be 720 individual analyses. Over the course of the year, that would be over 34,000 individual analyses."

Handling thousands of wines

The speed of analysis is crucial in handling the individual wines. Cosco describes how the rapid analysis helps to make the analysis process more efficient and has great repeatability of results in that it avoids the slight differences that can occur when multiple tests are made by different lab technicians.

Timely and reliable results support crucial wine-making decisions, especially when problems arise. "We need real time analysis and that's what the FOSS gives us," says Cosco. "It minimises the amount of time spent on running wet chemistry, enzymatics, titrations and so on especially when monitoring Malic acid and Glucose/Fructose and this helps to maintain the quality and style the client wants in their wines."

In contrast to the traditional concept of winemaking based on limited varieties of locally grown grapes, the Crushpad operation uses grapes from all over California

and from Washington and Oregon. This places exacting demands on the analysis instrument, but minor adjustments to the provided global calibration according to existing reference analysis of the different sources allows it to handle the variety. "With so many different vineyards and varieties, we were comfortable with the cali-

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bration from our own in-house reference analyses," says Cosco.

The calibration adjustment work was made straightforward by the fact that the out-of-the-box calibrations supplied were already in good shape. These standard calibrations are made using so called 'global' calculations based on a vast amount of data drawn from literally thousands of samples. The calibrations are based on data drawn from all corners of the winemaking world. So when testing alcohol, for instance, users can be sure that the measurement is based on a representative set of data.

The usability of the instrument also plays a part in handling the high throughput of tests. "It's easy to use and easy to clean," says Cosco who goes on to report that the analyser is a nice, compact, convenient size and that no reagents are involved – a plus for any lab. Only a small sample size is required which is important

when dealing with small lots.

Summing up the experience of using the instrument, Cosco says: "The FOSS has allowed our lab to run over 100 samples per day and has allowed us to closely monitor thousands of individual wine lots on a regular basis."

Shrinking the wine-making world with networking software

In addition to its California facility, Crushpad also has a winery at St Emilion in Bordeaux, where grapes sourced from renowned parcels prime Bordeaux

terroir including Margaux, Haut-Médoc, Saint Emilion, Canon, Fronsac and Côtes de Castillon are used.

The Crushpad laboratory in San Francisco does not analyse grapes that are sourced from Bordeaux, but new networking software available with the analyser offers exciting possibilities for future operations. "If we needed to monitor the grapes and wine in Bordeaux, we could connect to another instrument using the new remote networking to monitor the grapes and wine from our lab here in California," says Cosco.

From the Napa valley to Haut-Médoc – whatever the source of wines, the laboratory at Crushpad will be able to support and control the thousands of individual wines being made by the growing ranks of do-it-yourself winemakers.

by Richard Mills, FOSS (rim@foss.dk)

CrushPad Wines

Crushpad is a custom winemaking service with locations in San Francisco, Napa Valley and Bordeaux.

With over 5000 clients, including wine enthusiasts, professional winemakers, fine-wine retailers and restaurants, Crushpad specialises in small-lot, luxury wine production from world-class vineyards in California and Bordeaux.

The company was founded in 2004 by wine industry veterans and technology industry refugees determined to liberate winemaking from its exclusive image. At Crushpad, anyone can be a winemaker. Learn more at www.crushpadwine.com

FTIR analysis and network software support

Rapid routine analysis instruments using FTIR technology provide winemakers with key information on the spot, helping them with decisions such as when to pick grapes, how to control fermentation and when to bottle.

Traditional analysis involves various items of analysis equipment and can take around 20 minutes to measure a single quality parameter. In contrast, FTIR analysis measures main quality parameters of grape must, must under fermentation and wine, within two minutes. Typical parameters measured include: sugar, pH, total acid, glucose/fructose, malic acid, ethanol, volatile acid and colour.

The networking software available for use with FOSS wine solutions allows instruments to be monitored and managed by an expert from a remote control centre. The option is aimed particularly at winemakers who are unfamiliar with the calibration of FTIR analysis instruments and who will be pleased to allow an expert to fine tune and monitor their instrument.

For more information about FOSS wine solutions visit www.foss.dk/wine