

By being able to receive faster test results during plant commissioning, companies are able to save both time and expense

Quality time: when does it equal more than money?

by **Tony Collins**

Time, as they say, is money. And there is no better example of that than in the final commissioning of a plant – the time period between start-up and plant validation.

Commissioning is one of the most resource-intensive stages of building a biodiesel plant. Most of the construction capital has been deployed and the return on that capital has yet to be realised. Further, high-cost engineers and technicians are on site working to calibrate, test and validate plant processes. Quite literally, it is a period where time actually does equal money: the longer the commissioning stage takes, the more the expenses of these high-cost engineers accrue and the longer investors have to wait for a return on their money. Clearly, faster is better.

Constantine Triculis, biodiesel manager for Westfalia Separator, an international process technology provider headquartered in Germany, explains why the commissioning phase typically is demanding. 'There are a numerous pieces of equipment and process steps that must be orchestrated to get a new plant up and running and successfully producing

in-specification B100 quickly. While we are using familiar plant components, each installation is unique with its own set of new process and product parameters.'

The commissioning process begins with water testing of individual unit operations and then the process line in total. With successful completion of the water testing, the all important product commissioning phase begins. The entire process line is initially operated at a reduced capacity and ramped up to nameplate capacity while the operating parameters (i.e. dosing rates, control loop tuning, temperatures, etc.) are adjusted to maximise product quality and line performance. The product is continuously tested (for glycerin, moisture, acid number, etc.) to ensure it meets ASTM and EN requirements during the entire commissioning.

It is very important to have accurate, reliable product analysis during commissioning. When the company first started working in this field, Westfalia Separator would use the onsite lab at the plant and/or send biodiesel samples to an outside laboratory. Either way, a great deal of time was lost. 'We were either waiting around for the test results or making



A drop of unprepared biodiesel is placed on a near infrared instrument to capture the quality traits for analysis

process adjustments based on our experience. In either case, it always felt like we did not have all the information we needed,' states Triculis.

Various technologies are now available which can speed up this process. One such example is the QTA system from Cognis, which can turn around biodiesel test results in two minutes.

At the heart of the

QTA system is a central database located at Cognis that contains a proprietary set of complex mathematical equations or calibration algorithms that use a technology called Chingometrics that are able to translate the infrared light spectra from a single drop of biodiesel sample into a standard set of quality measures.

At the production site end of the QTA System is a near infrared instrument – a standard piece of equipment used for years in a food and agrochemical control industry – that captures and sends, via the internet, the light spectra of a single drop of biodiesel to the central Chingometric database.

The calculations are made and the on-site personnel receive real numerical results, rather than chromatograms that must be interpreted, and a pass/fail determination can be provided.

Measuring quality as a training tool

Another benefit of such a fast feedback testing loop is how new plant operators can quickly get the feel for how a plant reacts to various process adjustments. This ability is becoming increasingly important as existing plants have started experimenting with other feedstocks in order to deal with the increasing prices of feedstock sources.

Triculis points out that an operator of a new plant

can quickly learn cause and effect of changing operating parameters: ‘Because of the fast turnaround of the testing results, a plant operator can learn how the plant reacts to a process adjustment in one day that might have otherwise taken a week or longer.’

Better, faster information makes savings add up

Having the best, most timely quality information creates a host of trickle down benefits that can make a plant more cost-effective and efficient, including faster plant start ups, quicker changes to better-priced feedstock sources and better trained operators. The key is having easily accessible information in enough time to make it actionable.

Triculis takes this further, ‘One of the unintended benefits of having better, more timely information is that the operators become more judicious with their use of chemicals – both during commissioning and afterwards during normal plant operation. In the past,



Quality measures can be viewed by plant personnel on a standard PC two minutes after the sample is taken

operators went for a larger margin of safety on dosing rates because they did not have the right information in a timely manner. Because of the fast feedback loop, now we can logically work up to the optimum level of chemicals and not add more than is necessary. All these savings really start to add up in terms of time and chemical costs.

‘Information is everything in my business. Better and faster quality testing has given me the ability to improve the way we help our clients get their plants up and running in a cost effective manner.’ ●

For more information
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margaret@biofuels-news.com (+44 20 8687 4126)