

## Easier pH sensor calibration saves time and effort

### Memobase Plus transforms difficult job for Harvest Biofuels



Paul Martindale, Maintenance Manager at Harvest Biofuels' biodiesel plant.

Harvest Biofuels operates the UK's largest biodiesel plant, with a capacity of 250,000 tonnes per year, situated at the mouth of the River Tees on the Seal Sands chemical complex. Since its purchase in 2010, the plant has been re-engineered to process waste oils into alternative fuels to meet EU mandates. Harvest Biofuels is owned by Harvest Energy, which supplies over 10% of Britain's road fuels.

"We'd started trying to avoid the job... now we calibrate religiously every week because it's so easy."

Paul Martindale  
Maintenance Manager  
Harvest Biofuels

**The challenge** Being able to accurately measure pH is an important part of the biodiesel production process, as the pH value affects the viscosity of the final product. If the pH is too high the biodiesel will thicken, potentially causing blockages in the process lines that could result in costly shutdowns. It's also vital to know that any effluent that is released from the process into waterways is pH neutral in order to protect the environment and to meet strict legislative regulations. With this in mind, regular calibration of pH sensors is essential to ensure they are giving an accurate reading. Yet the maintenance engineers at Harvest Biofuels were finding calibration a difficult and time-consuming process. "The sensors on the process plant are situated at the top and bottom of a vessel and are difficult to access," explains Maintenance Manager Paul Martindale. "It's impossible to read the screen and calibrate the sensors at the same time so it means it's a two man job: one to release the probe and use the buffer solutions and the other to take the reading. We'd started trying to avoid the job because it was

so difficult. We'd only calibrate every two weeks and the sensors were starting to drift."

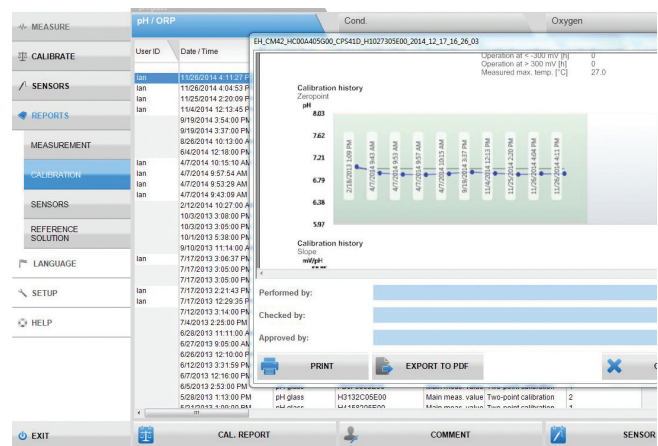
**The solution** Memobase Plus is a software program that can turn any standard computer into a measuring and calibration station. By connecting the sensors to the PC via USB, you can calibrate sensors away from the process, in a clean and convenient location under constant conditions. All associated data - calibration values, measuring values and sensor information - is stored and reports can be printed or accessed electronically at any time for full traceability. Harvest Biofuels began using Memobase Plus in 2013 and immediately began to see results. "It's really good and very easy to use: the software automatically identifies the sensors and you just follow the instructions on the screen," says Paul Martindale. "It produces a graph which makes it easy to see if a sensor is drifting. If the readings are varying wildly that's an indication the probe's coming to the end of its life." The pre-calibrated sensors are then simply replaced in the process when needed.

**The benefits** Being able to carry out the calibration in a laboratory or workshop means process interruption is kept to an absolute minimum. “Under the old system, the process was unable to detect the pH for the duration of the calibration,” expands Paul Martindale. “Now it’s much quicker just to swap the probes over and carry out the calibration elsewhere with the process still running.” The labour-saving benefits have also become apparent to the maintenance staff. Paul says: “You’d prefer to do this type of work inside because it’s cleaner and warmer and it’s quite tight in the process. One person can do the job which makes a difference because sometimes the lads are tied up with training or working on other projects. If you do suspect the sensor’s drifted you can just change it instead of having to try and fix the problem there and then. It’s transformed a job that no one really liked doing into one that no one minds! Now we calibrate religiously every week because it’s so easy and we’ve had no problems.”

Not only has the introduction of Memobase Plus reduced process interruption and made the job easier, but the accuracy of the measurement has also improved thanks to Endress+Hauser’s technical know-how. “Our account manager suggested storing the probes in KCl solution and we’re finding that they’re drifting less and sticking closer to our accepted tolerance levels. It’s been really helpful,” says Paul Martindale.



Sensors are calibrated away from the process under constant conditions.



Example calibration report using the Memobase Plus program.

**UK**

Endress+Hauser Ltd  
 Floats Road  
 Manchester  
 M23 9NF  
 Tel: 0161 286 5000  
 Fax: 0161 998 1841  
 info@uk.endress.com  
 www.uk.endress.com