

DELPHIN SYSTEM STREAMLINES DETERGENT QUALITY TEST AT HENKEL

MEASUREMENT DATA ACQUISITION USED IN DEVELOPING NEW LAUNDRY DETERGENT



In 1907 German manufacturer [Henkel](#) developed Persil, the first automatic washing powder, which made clothes washing much easier. Clothes washing went on to become even simpler and environmentally friendlier. Households began to wash with machines rather than by hand, and enzymes and tensides became common ingredients in modern washing powders. In this app's note learn how a Delphin system streamlines their detergent quality test that ensures product quality.

Henkel continues to develop its detergents, with brands including Persil, Spee, Weißer Riese, Perwoll, Sil, Dato and Terra. Every new product that Henkel develops requires extensive testing, whether for powder or liquid detergent. To perform these tests and ensure product quality, the company has now replaced its old data recorders with Delphin measurement data acquisition systems. These systems continuously record water temperatures and washing machine consumption.

QUALITY ASSURANCE TRIALS

Henkel uses two different types of trials to test new detergents: Greying trials and Wear & Wash trials. In fact, Henkel's own employees are actively involved in the wear & wash trials: they take home socks, shirts and towels to wear around the house and then bring them back to work to be washed. Finally, they complete a short questionnaire to document the type of stains the clothing contains. Trials

generally run for a period of 15 to 25 weeks. Henkel values this type of trial because it shows how clothes become stained and soiled in the household.



To compare these trials, Henkel's product development teams perform washing procedures under conditions held constant with minimal deviations. Using this data they can then produce meaningful and precise statistical analyses. To maintain these consistent washing conditions, Henkel has equipped its machines with water meters and

PT100 temperature sensors. This sensor array enables the team to monitor and record both temperature and water consumption. Water levels in the machines can also be adjusted when required.

FROM BASIC RECORDERS TO FULLY-FUNCTIONING SYSTEMS

Before April 2011, Henkel had relied on simple multi-channel recorders to acquire data and monitor its detergent quality test. However, these often failed and proved to be highly unreliable. The company therefore decided to look at alternatives. Henkel was already using Delphin products to test dishwasher detergents and had been entirely satisfied with the way they performed. At the time, Wolfgang Wick and Mario Zeibig, technicians at Henkel, were attending a training course at Delphin--a specialist in the field of measurement technology. It occurred to them that their tests could benefit from a compact computer system to digitally acquire and store test data.

Henkel decided that the ideal device for this was the [Delphin Expert Key Data Acquisition System](#). This model seemed perfect for Henkel's needs – it was flexible and could be implemented very quickly. The benefits of a PC-supported acquisition system include continuous data recording and the ability to both visualize and analyze the data. Previously, technicians and developers had to use paper recordings of temperature and consumption--now they have a system giving them an immediate overview of the data.

CONTINUAL TEST MONITORING

In the test area, seven washing machines are placed in a row, with another seven backing onto them. The 14 machines are then taken as one unit and referred to as a bridge. Each bridge uses 2 Expert Key devices which share a pivoting monitor. This test application uses the [200 L version of the Delphin Expert Key](#). L-model systems are ideal for laboratory applications because of their universal design. The Type 200 has 28 universal inputs and is intended primarily for analog data acquisition. The Type 100 has a combination of analog and digital inputs and outputs.

For the washing detergent trials, the Delphin devices are equipped with Pt100 RTD sensors and water meters that monitor consumption via a voltage signal. Each washing machine requires one temperature sensor and one water meter, i.e. each Expert Key device is connected to 14 sensors. If required, the devices can also accommodate mA and mV signals or thermocouples as input signals. The signals are easily attached to the sides of the device via plug-in screw terminals that have space for up to 2.5 mm, 2- diameter signal cables. The devices also have full potential isolation.

DATA ACQUISITION SOFTWARE

Since lab workers load the machines and start the tests, they first needed to become familiar with the new system. Henkel needed to have a device that is easy to operate, with a clear and simple layout that employees could quickly learn to use themselves. All these requirements were met by Delphin ProfiSignal measurement and automation software. Delphin Expert Key devices are delivered with the ProfiSignal Go version of the software which enables channels to be configured, analysis of measurement data and the production of offline trends. However, Henkel opted for an upgraded version of the software: ProfiSignal Klicks, which also enables users to input test parameters. Delphin programmed the entire test system. Björn Kassner, Sales Manager at Delphin, designed the code to be easily adaptable to the other bridges.

The first detergent quality test runs revealed the benefits of a PC-supported data acquisition system using ProfiSignal Klicks. Tests can now be performed on individual machines, and up to four tests can run in parallel. Water temperatures and consumption rates are continuously monitored and recorded. When the lab carries out rotational tests (i.e. first washing with Persil Gold, then with Persil Sensitive, and so on), a single trend report can be generated even when the same washing has been washed in different machines. Test results are stored locally and can be exported if required.

Lab personnel quickly saw the functionality and flexibility of the new system for themselves. For example, they wanted color coding and they quickly got it: in ProfiSignal, machines in operation are now colored red, green, blue or yellow depending on the type of test run, while machines currently not in operation are colored gray.

SUCCESSFUL IMPLEMENTATION

To date, Henkel has installed ten Delphin Expert Key systems in its development department. Lab personnel and developers alike are impressed with the software's user-friendly interface, and the software is easily adaptable to other bridge systems. Test evaluation is carried out with digitalized data in report form. With this test setup, Henkel can now concentrate on the ongoing development of their detergents, which include products with Re-New effects to regenerate clothing fibers.

For more information on the [Delphin Expert Key System](#), monitoring a detergent quality test or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.