

The Changing Role of an Instrument Service Engineer

The life of an instrument service engineer has changed enormously in recent years with the laptop replacing the screwdriver as the most important tool.

We followed HACH LANGE's newest service engineer James Davie, and discussed his role with the company's service manager Terry Bailey, who has worked in the instrumentation sector of the Water Industry for over 20 years.

Based just south of London, James is responsible for the provision of an after sales service on HACH LANGE's water monitoring instrumentation in an area that includes Surrey, Sussex, Kent and Hampshire.

James (age 29) started work for HACH LANGE in January 2007, he has a degree in mechanical engineering and says "Customers want three things: reliable products, friendly efficient service and fast response when required". Terry agrees, adding "Customers requirements have always been the same, except that they now rightfully expect a faster service with longer service intervals and it is technological progress that has driven this expectation. For example, for over 50 years it was necessary to service and recalibrate polarographic or galvanic dissolved oxygen sensors as often as every two weeks, however the launch of an optical sensor, the LDO™, has meant that recalibration is no longer necessary – we simply change the sensor cap every two years."

James is currently busy implementing a new service contract with Southern Water which began in May 2007 and relates to instruments at around 250 Southern Water wastewater treatment works (WwTWs).

James says that on a typical day he would aim to be out of the house by 7.30am in order to be on site at around 9am. He is authorised to access sites on his own and is therefore able to visit sites without necessitating assistance from Southern Water staff.

Most of the service contract relates to HACH LANGE's 'Solitax' turbidity monitors. These sensors are deployed at the outfall of a wastewater treatment works and provide Southern Water with a continuous indication of water quality in the effluent, flagging alarms if necessary.

The Solitax probe uses a single LED light source with three detectors, one for light intensity and two for light scatter, to monitor water quality. It incorporates an integral wiper that keeps the measurement components free from fouling. However, as a further protective measure that contributes to an even longer service interval, the Solitax probes at Southern Water have been fitted with an automatic air blower which is also serviced as part of the contract.

During his visit James will normally follow the procedure below:

- Log into HACH LANGE lone worker procedure
- Wear PPE/high visibility clothing

- Sign site log
- Service 'air blast' sensor cleaning system (replace seals etc)
- Remove and clean sensor
- Calibrate sensor (0 FTU, dark and 800 FTU) following menu driven program on laptop
- Return sensor to measurement location
- Check readings
- Sign off site log and depart

This procedure normally takes 1½ to 2 hours, which means that James is able to visit three sites every day.

The Solitax probes record the date of the last service internally. However, after each visit James logs a web-based report that is provided to Southern Water by email. This report includes a customer feedback which provides clients with the opportunity to make any requests, or comments that might be necessary.

David Manley is an ICA (Instrumentation Control & Automation) Team Leader for Southern Water in Sussex and as such he is responsible for instrumentation and telemetry at a large number of the company's sites. David Manley and ICA Manager Steve Terry have been responsible for the creation of the service contract and they believe that it will provide significant efficiency gains. For example, David says "If our own staff were to be responsible for the service and calibration of the turbidity monitors the whole process would be less efficient. James and his colleagues arrive fully trained with all of the necessary equipment and spares. They work on these instruments every day so they are able to provide a fast and effective service.

In the past we have returned sensors to HACH LANGE for service but this has meant that spare units have been necessary.

Under the terms of the service agreement we can now be confident that service and calibration work will take place at the correct intervals, ensuring that our monitors are maintained in optimum condition.

Prior to the installation of the Solitax probes we employed a number of different turbidity sensors, however, we now only use the Solitax which has improved reliability levels and enabled us to make significant savings in spares and consumables.

One of the key benefits of this new arrangement is that our service strategy has effectively moved from a reactive position to one of preventative maintenance."

Terry Bailey believes that his team of engineers is able to provide a more efficient service than any other option for two main reasons. Firstly, new service engineers undergo intensive training both here in the UK and abroad, they then accompany more experienced engineers for an appropriate period and no new appointee is allowed to visit customers on their own for at least 3 months. Secondly, as part of a large instrumentation

manufacturer, Terry's team has direct access to the people that designed every product in addition to other HACH LANGE service engineers from all over the world. As a result, Terry says "If any of my team has a problem, there is almost always someone, somewhere within the company that already has the solution and the internet has made it possible for us to access this resource quickly and easily."

The tools of a service engineer have also changed significantly; electronic circuit boards are no longer populated with potentiometers that require regular adjustment. Software now adjusts the circuits digitally and also informs users when there has been a failure so that the offending circuit can be quickly and easily replaced.

Laptops with 3G internet communications have displaced screwdrivers as the most essential piece of equipment for service and calibration. Menu driven software ensures that identical procedures are undertaken every time, no matter which engineer is following them, and remote communications mean that engineers can order spares from anywhere at any time.

Looking back over the last 20 years Terry says "The overall effect of technological developments has been to dramatically reduce the amount of labour required to produce accurate reliable data. Potential for error and cost of ownership have fallen because instruments check themselves and provide status reports remotely.

Consequently, sensors and analysers run unattended for longer periods, and all of this means that service and calibration staff do not have to revisit the same sites so frequently, and with 250 sewage treatment works to service I am sure that James is thankful for that!"

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