

# Improving Quality Control for Chemical Production with the Hach Lab Family

## Problem

A German chemical producer recently expanded their product line. Their central lab was restructured to cover applications related to environmental and product control. They sought to standardise on a set of lab equipment that was accurate, safe, reliable, and easy-to-use.

## Solution

The chemical producer chose Hach® and their entire platform of lab products, including instruments, reagents, and service, for quality control, environmental monitoring and boiler/cooling applications. Products include portable and laboratory instruments for photometry, turbidity, titration, e-chem, and colour scale instruments.

## Benefits

The customer determined that, after standardising on the Hach Lab Family, error prevention, cost reduction, and failsafe redundancy for operators has improved. Furthermore, the customer has saved money by utilising a Hach service package.

## Situation

One of Europe's top-ten producers of ammonia and urea specializes in agrochemical and industrial chemical products. In the field of industrial chemicals, they are a reliable supplier of ammonia, urea, and nitric acid.

This chemical producer has two central labs: R&D and analytical routine, which covers the entire water cycle and production quality control. The analytical routine lab uses a wide range of analytical methods for analysis of chemical products and effluent control.

### Water Cycle Monitoring

- Raw water from Elbe river: nitrite, nitrate, ammonium, ortho-phosphate, total phosphorus, COD, hardness, chloride, pH, conductivity, turbidity, colour scale
- Process water: iron, aluminium
- Boiler water: silicate
- Cooling water: chlorine, chlorine dioxide
- Wastewater: nitrate, ammonium, total phosphorus, COD, total nitrogen

### Quality Control

- Spectrophotometry in urea production: Biuret, Formaldehyde, Urea, Ammonia
- Colour & Turbidity in Melamin Resins (up to 80 °C):
- Colour Hazen number <10
- Turbidity <3 NTU



Recently, the chemical producer has expanded their product line and restructured their central lab. Satellite production labs merged together. They have been certified by DAkkS (Deutsche Akkreditierungsstelle, the national German accreditation body) for three years by applying high quality and competency standards for operators and shift workers. This certification attests that all operators – including shift workers – are capable of using the instrumentation and methods correctly. Maintaining these quality standards requires a clear strategy.

### Customer Needs

At this chemical plant accuracy, safety, and routine are the keys to success after a significant expansion of products and facilities. With multiple facilities, they understand the importance of consistency and repeatability across labs and employees. For this reason, they took the opportunity to standardise on a set of lab equipment.

The lab manager strives to provide his team with the best package that's safe and easy-to-use, day or night. As such, their central labs required a wide range of analytical technologies, field instruments, automatic samplers and laboratory instruments. Analytical methods required by their central lab include spectrophotometry, colour scale, turbidity, titration, pH, and conductivity.

### Strategic Partnership

With so much variety, the lab manager needed to identify a long-term, strategic partnership with an analytics provider that would help them meet the demands of their scaling business.

This chemical producer adopted the Hach Lab Family for three reasons:

- Hach is an expert for "Optical Technologies" and covers several key applications in the environmental sector but also in the quality control lab. Color, turbidity and UV-VIS spectrometry are crucial for their daily business.
- Hach redesigned their entire lab family and applied the same user interface to make handling and measurement much easier for any operator.
- Hach provides an unparalleled service package to guarantee short response times to avoid breakdowns.

### Outcomes

Standardising on the Hach Lab Family allowed the chemical producer to:

- Compare results between lab shifts, which is essential for quality control.
- Validate and standardise operating procedures, which made it easier to transfer knowledge between labs.
- Have an internal backup of equipment in cases where instruments need servicing.
- Reduce stock, because instruments cross the lab family utilise the same accessories.
- Save money and ensure quick response times with Hach Service Packages.

### The Hach Lab Family



The **DR6000 UV-VIS Spectrophotometer** (successor of DR5000) delivers top performance for both routine laboratory tasks and demanding spectrophotometric applications.

It is easy to program for customised methods in quality control and run spectrums over a wider wavelength range.



The **DR1900 Spectrophotometer** provides light and most compact portable spectrophotometry, built with field use in mind.



**SL1000** is a portable meter that can handle up to six parameters simultaneously, making testing faster. An excellent solution for boiler water applications. The SL1000 is 75% faster than tests that require powder pillows. There is no competitive alternative to the SL1000.



The LCK Cuvette Test System for safe COD: a package that includes the **DR3900 VIS Laboratory Spectrophotometer**, **HT200S Thermostat**, and **LCK cuvette vials\***. By incorporating an internal fan, the HT200S completes COD results in just 30 minutes. During digestion, the HT200S is locked, which prevents accidental burns. In addition to safe digestion, the COD solution includes safety features for handling reagents that prevent contact with chemicals. Reagents are predosed within the LCK cuvettes and cuvette openings prevent spills, even when the cuvette is tilted.

*\*The US equivalent to LCK cuvettes is TNTplus*

### Conclusion

Utilising the Hach Lab Family allowed the chemical producer to take advantage of Hach's industry expertise, such as optical technologies, spectrophotometry, colour measurement, and turbidity, while also preventing errors, saving money and providing failsafe redundancy for lab operators.

The Hach Lab Family allowed the chemical producer to standardise lab equipment, utilise a unified user interface and improve lab processes across environmental and quality control applications.

The **TL23 Laboratory Turbidimeter** provides accurate, stable readings using ratio optical system with self-diagnostic alerts. It continues the successful history of the 2100 Series keeping the same optical properties.



The **Lico 690 Colorimeter** (successor of Lico 500) for colour measurements of liquids carries out exact colorimetric evaluations in conformity with several ISO/ASTM standards in just one single

measurement. A wide range of disposable cuvettes can be inserted which is the ideal solution for toxic and malodorous reagents.



Portable and laboratory **HQD Meters** determine pH, conductivity, dissolved oxygen and ORP. They are connected to smart interchangeable Intellical probes for quick, simple, and reliable measurements.



The **Ganimede P** Automatic Laboratory Analyser for serial laboratory analysis of ortho and total phosphate features a compact analysis unit with integrated digestion.