

THE FUTURE FOR PUMP

SEKO examines how 5G, the Internet of Things and a growing need for data on demand are influencing the development of pump technology in the water-treatment sector.

 SEKO

As the second decade of the fourth industrial revolution continues, we're witnessing a fascinating, fast-moving development that began within the consumer market and is now rapidly progressing into the manufacturing and industrial automation sectors.

This technological growth, commonly referred to as the Internet of Things (IoT), is a meeting of smart device technology and data generation, processing and accessibility. Within the consumer sector, this has resulted in the rapid creation of the smart home, where users benefit from the ability to remotely control a multitude of household appliances – from lighting and heating to kitchen appliances, security devices and entertainment systems – via computers, smartphones and tablets.

And there's no sign of this boom slowing any time soon, as Statista estimates that the worldwide installed base of internet-connected devices will increase from 10 billion today to more than 25 billion by the end of the decade.

Outside of the consumer sector, a branch of IoT has emerged within industries including manufacturing, healthcare and water treatment. Known as Industry

4.0 or the Industrial Internet of Things (IIoT), the integration of technology in physical devices can help managers make significant improvements to operational efficiency, energy consumption and environmental impact.

This cutting-edge technology is now changing what is possible in traditional motor-driven, solenoid and peristaltic pump applications, including liquid transfer and chemical dosing in processes as varied as swimming pool, wastewater and cooling water treatment.

From flocculation and coagulation to pH correction and countless other water-treatment applications, operators seeking to improve efficiency and sustainability are increasingly specifying web-enabled pump systems.

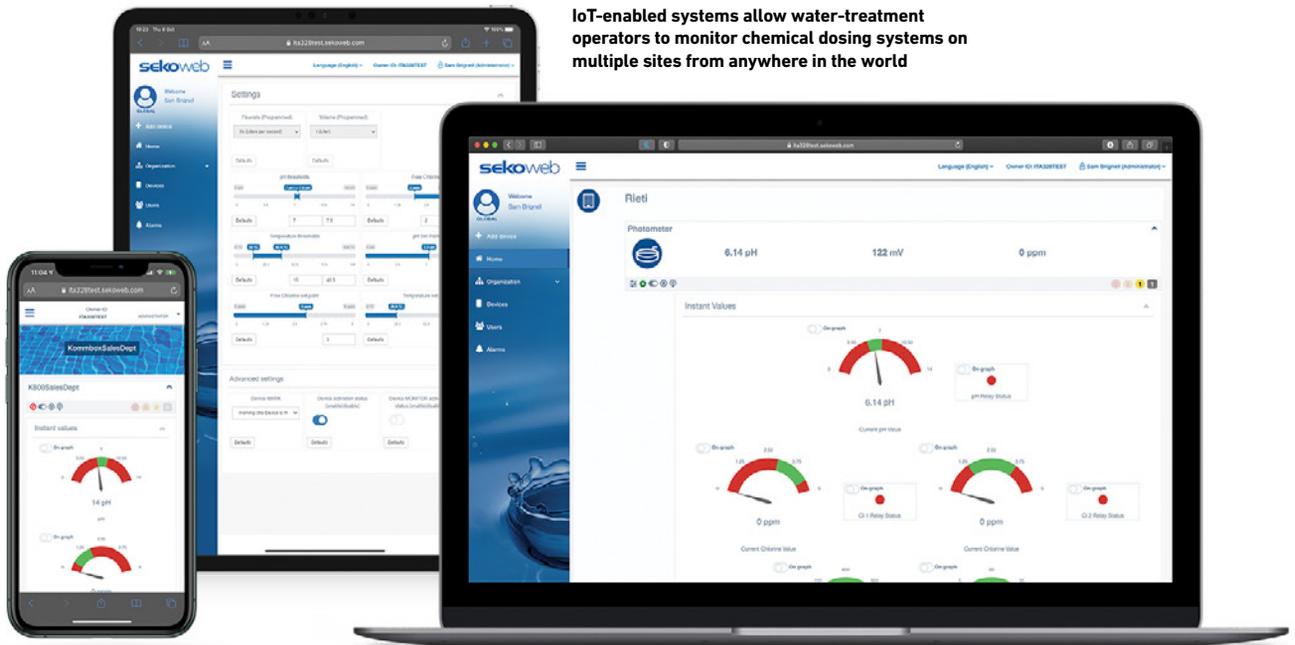
For example, the capacity for 'live' document sharing creates the potential for equipment manufacturers to update digital installation guides and operating manuals to reflect changes in design or software and immediately upload the latest revisions to the cloud.

This allows unlimited changes to be made, saves significantly on printing costs and means engineers and operators always have access to up-to-date literature. As well as accelerating installation, setup and commissioning, man-



Integrating technology in physical devices can help improve operational efficiency, energy consumption and environmental impact

S, IOT AND INDUSTRY 4.0



IoT-enabled systems allow water-treatment operators to monitor chemical dosing systems on multiple sites from anywhere in the world

SEKO's Elektra digital dosing pump controller brings data on demand to the operator's smartphone



agers can reduce associated time and costs while helping to ensure a smoother user experience.

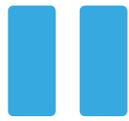
During equipment operation, IoT systems receive information from pump sensors which are constantly harvesting data on multiple values – including cycle status, chemical consumption and vibration monitoring. With both historical and real-time data at their fingertips 24/7, users can make informed decisions relating to system performance and perform immediate adjustments to formulas, flow rate, unit of measure and other parameters as well as altering pump operating modes such as manual, batch and timed.

As well as making instant efficiency improvements, operators are able to budget with greater accuracy and confidence while streamlining stored chemical volume – especially useful on small sites where space is at a premium.

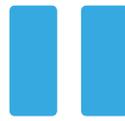
Additionally, many web-connected pump systems have the capacity to convert chemical consumption volume into the equivalent financial value, which allows projected savings to be precisely calculated when considering dosing adjustments. These figures may also be presented to senior management in order to justify programme changes or to demonstrate performance improvement in monetary terms.

Many pre-Industry 4.0 dosing pump systems incorporate some form of

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fault-logging system, with the significant drawback that these are not always checked regularly, let alone actioned. This is often a consequence of the reactive “if it isn’t broke, don’t fix it” philosophy where apart from minimal maintenance, equipment may be left to run if there are no visible issues and processes are operational.

Now, IoT-based systems enable users to receive smartphone notifications as soon as faults occur, meaning defects can be immediately identified and remedial action planned to take place outside normal operating hours when disruption can be minimized. This yields a vast improvement in the efficiency of equipment maintenance, repair and upgrade planning while avoiding costly and inconvenient unplanned downtime.

As well as overall system health, IoT technology even allows the performance

and status of specific pump components such as bearings, couplings and belts to be assessed. This means that the operator can be alerted immediately should a part be due for replacement, facilitating maintenance while also driving aftermarket sales for suppliers.

Meanwhile, this component and system data allows manufacturers themselves to benefit from IoT by monitoring trends, user preferences and common problems in order to refine equipment and continuously improve their product offering.

It’s not only the efficiency of equipment and utilities that can be improved. For businesses running across multiple sites in different countries or even continents, IoT and the leveraging of real-time data means operations management can be anywhere in the world and still be as effective as they would be whilst stood in front of the machine’s controller.

The ability for one operator to remotely manage pump systems across multiple sites may also be useful for addressing the water-treatment sector’s well-reported lack of skilled technical personnel, caused by retirements in an ageing workforce.

This is especially true in water-treatment systems within smaller commu-



Elektra features a built-in Wi-Fi hub to allow access to data and programmes from even the most remote sites

nities, where lone, long-serving operators may possess extensive knowledge of idiosyncratic systems that may not be recorded or documented. In this situation, a sudden retirement, illness, or period of extended leave has the potential to significantly impair system operations.

Plus, wasted journeys by technicians – who may travel a considerable distance to assess a pump’s condition as part of routine maintenance only to find it in perfect working order – can be eliminated, as engineers need only be deployed when required.

This is particularly timely post-coronavirus when the remote-working trend established during the pandemic has seen many operators continue to work at least partially from home and

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Online access to pump data can help operators identify faults and schedule maintenance before they cause costly unplanned downtime.



the integration of IoT has begun to be seen as an expectation rather than a bonus.

We can see that the influence of IoT on the pump industry is almost overwhelmingly positive and as technology advances will only make life easier for operators. However, as with most devices, connecting pump systems to the internet immediately makes them vulnerable to cyber-attacks, where just one breach of security can have a potentially devastating impact on safety, cost and reputation.

It's therefore vital that equipment manufacturers employ robust processes in the design of secure products and back them up with world-class training and ongoing support for operatives.

At a time when 5G is opening yet more possibilities for high-speed, ultra-reliable IoT, the global pump industry is primed to see where technology will take Industry 4.0 in 2022 and beyond.

SEKO is a global manufacturer of chemical dosing systems for multiple industry sectors and has great experience in the design, production and supply of equipment for processes as varied as potable water, swimming pool water and cooling tower water treatment.

These include Elektra, an IoT-enabled digital controller that allows operators of water-treatment processes to programme their equipment and access live and historic dosing pump data on demand from any location via smartphone.

This allows managers working remotely to analyse pump performance and make instant programming adjustments to save energy, water and chemicals while reducing the environmental impact of their application.

Elektra is currently available for use with Spring series of motor-driven dosing pumps, with compatibility planned for devices across the SEKO range going forward.

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