AQUACHEM meets IIoT

Fully automated filter presses - Detect machine failures before they occur. Roxia Malibu™ makes it possible

by Dominique Weidle, Marketing Specialist, AQUACHEM GmbH Separationstechnik, Senden

Unplanned breakdowns or production downtimes are now a thing of the past. Via remote access, owners of fully automatic filter presses from AQUACHEM can now easily view their processes from anywhere and measure and evaluate their process data. The cloud-based solution „Roxia Malibu™„ is a combination of online process monitoring, maintenance, reporting and analysis tool with which production processes can be optimised and operational disruptions can be reduced.

Image 1: Roxia Malibu™ is a combination of online process monitoring, maintenance, reporting and analysis tool (source: Roxia Oy)

Process monitoring with Roxia Malibu™

Energy management, process optimisation, repair forecasts and operational monitoring via remote access - all of this is related to IIoT, the Industrial Internet of Things. IIoT enables industries and companies to improve the efficiency and reliability of their operations. It is based, among other things, on the principle of precise data acquisition, processing and analysis. With the help of the information collected, the user gains better insights and knowledge of processes and can thus, for example, avoid machine failures and reduce costly repair work.

This development does not stop at filter presses either. In order for production processes to function properly and bring the greatest possible benefit, constant monitoring of these processes is necessary. A filtration failure can often lead to significant damage or high costs. With the cloud-based online monitoring tool Roxia Malibu™, AQUACHEM, after the partial takeover by Roxia Oy in July 2022, is entering the world of digital services and offers its customers an intuitive and future-oriented tool for process optimisation.

Filter press operators are often faced with the challenge that detailed process information is only accessible locally via the monitors installed on the filter control units. It is therefore a relatively difficult task to draw comparisons between several filter systems and the filtration cycles and phases. In the control room, screens are stacked, cluttered with complex data and charts. Evaluating the filter performance is therefore time-consuming.

Roxia Malibu™ was specially developed for this case. The aim of this software is to display the overall picture of the complete filtration process. With just one user interface, the most important data is presented in an easy-to-understand manner and at a glance. Within a few minutes, the operator can get an idea of the entire filtration process. Utilisation level, productivity, waiting times, average cycle time and much more. In addition, the data history of the last 72 hours can be accessed.

Features

- Realistic, detailed 3D environment of the entire filtration process
- User-friendly interface
- Reliable connection of the filtration components
- Fast analysis of production volume, process results and downtime
- Process comparisons between several filter systems
- Online process monitoring
- Maintenance notifications
- Operations of the filter process are shown in relation

How Roxia Malibu™ works

This is intelligent filtration! Existing control systems and sensors are used and connected to the Roxia Malibu™ application. The data is collected during the filtration process and sent directly to the cloud. There, they are recorded in real time and processed in the Roxia Malibu™ online portal. This software can be operated remotely by any employee easily and without any prior knowledge. The data can also be evaluated online. In a detailed 3D model, this collected data on pumps, filters, thickeners and other components is presented very clearly.

The online portal can be installed on any fully automated AQUACHEM filter press and integrated with any other process equipment and control systems (DCS – Distributed Control System). The customer has access to Roxia Malibu™ and thus the collected data and graphics via all devices that can be connected to the Internet - whether computer, smartphone or tablet. In order to guarantee maximum data security, the service is secured by SSL/TSL encryption, which is also used in online banking. Hardware-based virtual private network

(VPN) and the physical firewall isolate the filter PLC from the public network. AQUACHEM also uses its own internet connection to send the data to the cloud.

Roxia Malibu™ also automatically creates custom reports that are easy to understand. These reports can be customised to suit a wide variety of needs and audiences: production workers, maintenance professionals, senior management, and anyone else in the organisation. The data analysis provided can then be used to analyse product performance and quality, measure energy consumption and identify reasons for waiting times and error messages.

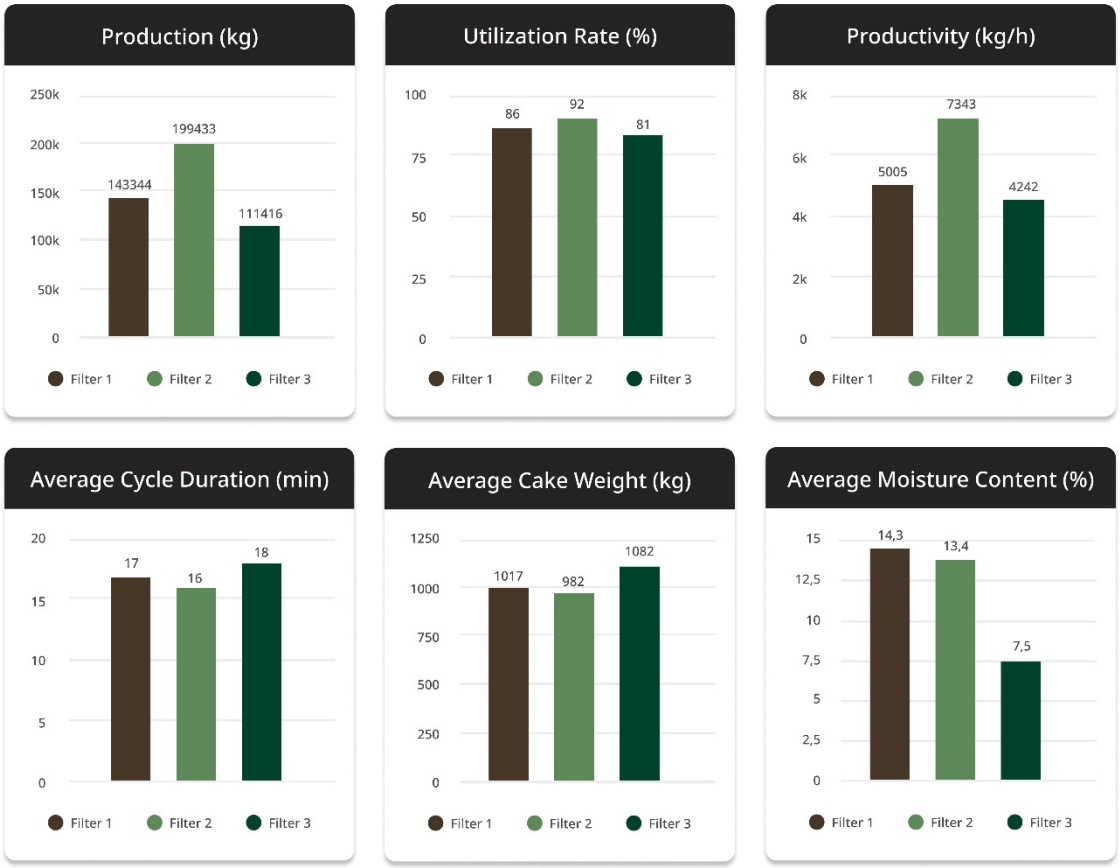

Image 2: A clear comparison of production between filters is one of the most useful KPIs for daily use (source: Roxia Oy)

Roxia Malibu™ is a turnkey solution and therefore a system that can be seamlessly integrated. In addition, it can be fully adapted to customer requirements and provides the user with perfect support during their daily work. From a single device to a worldwide roll-out in the company network. Roxia Malibu™ simply fits every need.

Image 3: Realistic 3D modeled environment of the filtration process (source: Roxia Oy)

Installation or retrofit on AQUACHEM filter presses

Regardless of whether the customer already has a fully automatic AQUACHEM filter press or is planning to purchase a new one. Roxia Malibu™ can be easily and simply installed or retrofitted by AQUACHEM personnel.

These experts help pinpoint bottlenecks to avoid unplanned downtimes. The areas are carefully analysed using selected process indicators and the system is set up for maximum customer benefit:

- The efficiency in the drying phase can be estimated on the basis of pressure changes.
- Disturbances in drying can be traced very easily by anomalies in the air pressure curves.
- By analysing changes in water volume, damage to tissue and membranes can be detected at an early stage.
- Product quality is assured by analysing cake moisture or filtrate opacity and conductivity.

AQUACHEM professionals help to optimise the entire filtration process to achieve the desired cake moisture and maximise filter capacity. Roxia Malibu™ is not just an IIoT portal, but also houses an artificial intelligence in the background that optimises the filtration cycle to the highest level.

Advantages:

- Optimisation of production processes
- Reduction of operational disruptions
- Fast and easy error detection
- Minimised downtime costs
- Easier maintenance planning
- Instant and remote access to cycle statistics
- Real-time process monitoring
- Handling also via mobile devices
- Analysis of the most common alarms and fault messages
- Instant access to product documentation
- Smart dewatering

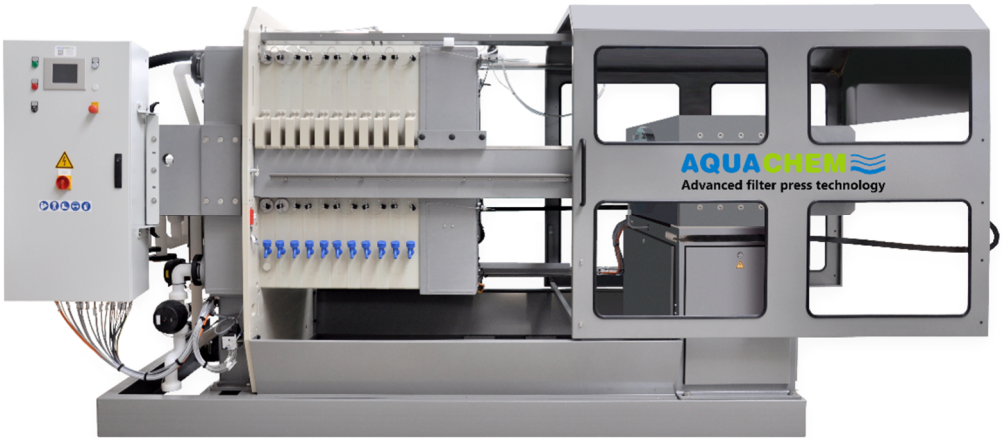

Image 4: Fully automatic filter press AF1200 from AQUACHEM (source: AQUACHEM GmbH Separationstechnik)

Cooperation with Roxia

In July of last year, the Finnish process technology company Roxia and filter press manufacturer AQUACHEM deepened their cooperation through a partial takeover after many years of cooperation. Customers around the world will benefit from this collaboration as AQUACHEM and Roxia form a strong partnership that combines decades of solid-liquid separation experience with a complementary range of filtration technologies.

Customers of AQUACHEM products have access to Roxia's extensive sales network and after-sales know-how as an official service partner for comprehensive on-site service outside of the DACH region. In addition, the partnership is strongly supported by Roxia's advanced environmental technologies and state-of-the-art industrial automation solutions.

With this strategic step, Roxia now secures long-term access to AQUACHEM's state-of-the-art filter press technology. The deepened collaboration allows both parties to grow related customer service and business in general in a more sustainable way.

Roxia Oy is headquartered in Finland and supplies high-tech technologies for drainage, industrial automation and the environment. The team specialises in the mining, minerals, metallurgical, chemical, food and pharmaceutical industries and develops the most efficient solutions for each specific need. Roxia offers support from Australia, Chile, China, Finland, Germany, Peru, South Africa, Sweden and the United States.

AQUACHEM GmbH Separationstechnik based in Germany specialises in the development and production of conventional and fully automatic filter presses. AQUACHEM is one of the leading manufacturers in the development and production of fully automatic filter systems and offers its customers tailor-made solutions for every area of application.

Further information at: www.roxia.com and https://en.aquachem.de

Contact information for reader inquiries

AQUACHEM GmbH Separationstechnik
Benzstrasse 6
89250 Senden
Tel.: +49 7307 92170 0
info@aquachem.de
https://en.aquachem.de