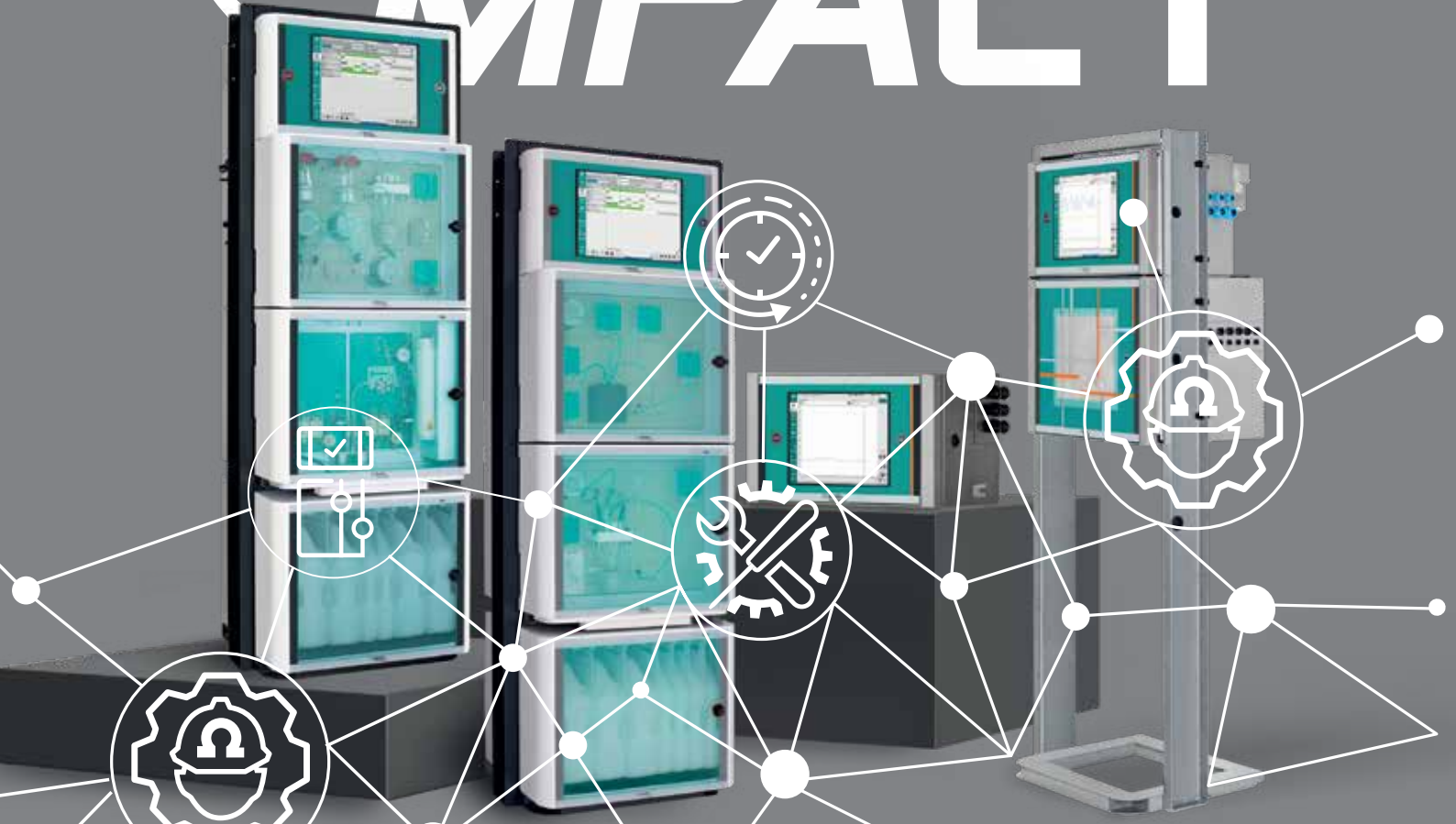# iMPACT

IMPACT
Software

Process monitoring at
your fingertips

**PUSHING
THE
LIMITS
TOGETHER**

Ω **Metrohm**
Process Analytics

Impactful software for process monitoring

USER EXPERIENCE FOR MULTIPLE ANALYTICAL TECHNOLOGIES

IMPACT (Intelligent Metrohm Process Analytics Control Technology) is a complete process analysis management and diagnostics software solution for Metrohm Process Analytics instruments. It is specifically designed for 24/7 inline, online, and atline analysis of multiple parameter across the plant infrastructure from quality control to manufacturing to finished product release.

With advanced real-time monitoring of the process, a better and more efficient understanding is achieved, while preventing costly production upsets or even shutdowns. **IMPACT** is embedded in the versatile 2060 platform across multiple Metrohm analytical techniques (e.g., titration, ion chromatography, voltammetry, and spectroscopy) for real-time data analysis and acquisition. **IMPACT** can be further integrated to a plant Distributed Control System (DCS), a Programmable Logic Controller (PLC), or a Supervisory Control And Data Acquisition (SCADA) system as part of automation and control.

One software interface for all your analysis results – With **IMPACT,** titration, ion chromatography, and spectroscopy results are coming from one source and processed together. Additionally, ease of data validation is one of the major advantages of our software. If the result obtained is not in the expected range or differs much from the previous result, a standard sample can be analyzed to verify the performance of the instrument.

Above all, this all-in-one software is tailored to the application and ways of operating. It is specifically designed to help maximize process efficiency and productivity by eliminating software from multiple vendors.

KEY ADVANTAGES:
- **Immediate data processing** for fast response times.
- **Flexible operation screens** to focus on important parameters.
- Setting control parameters for **alarms and diagnostics.**
- Intuitive **user interface** for smooth navigation within operation screens.
- Fast decision taking with integrated **smart programming.**
- Fully **remotely controllable** due to multiple process communication protocols.

IMPACT software, together with your control room system software, is the best solution to monitor your process analysis.
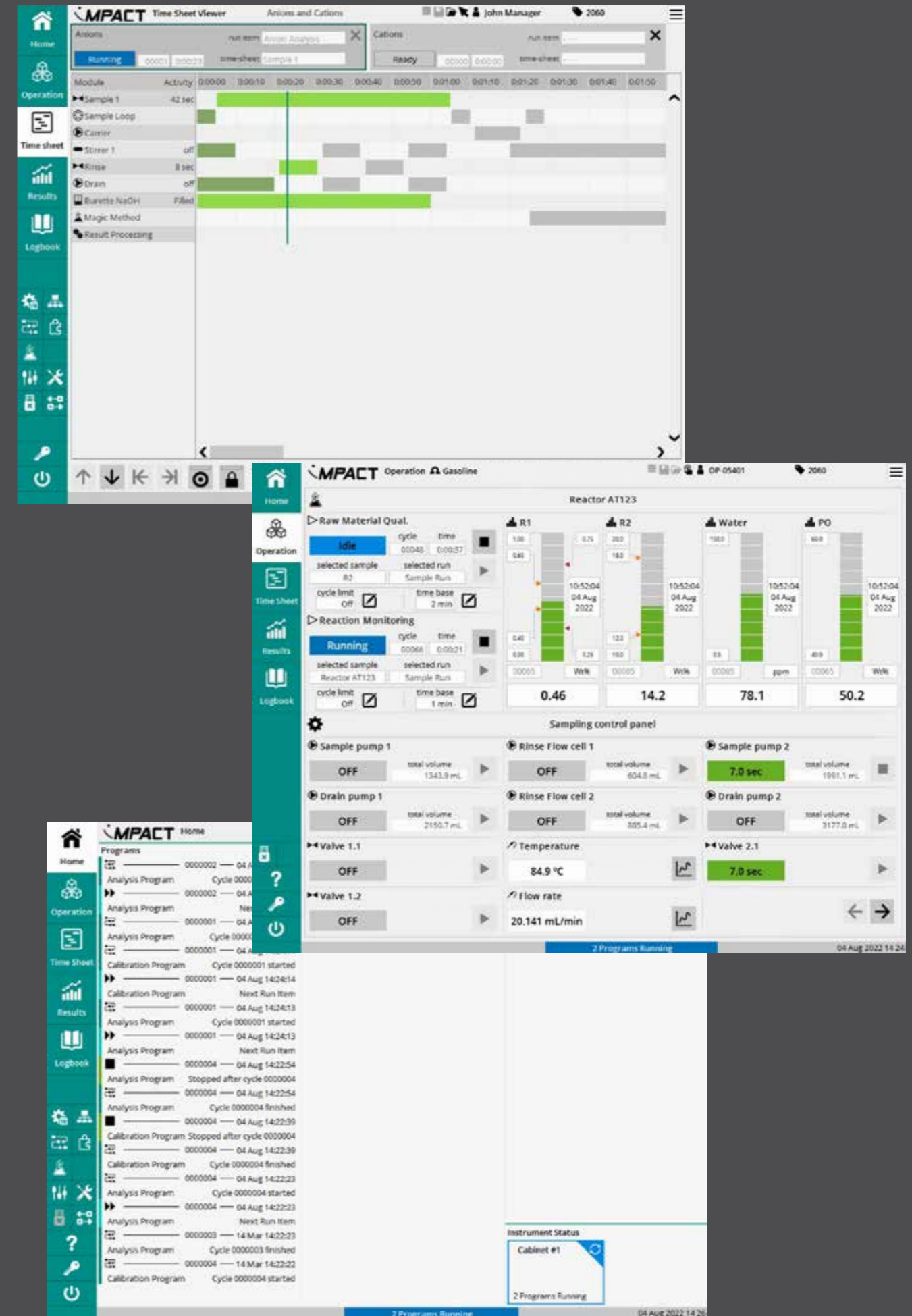
Routine operation made easy

IMPACT is the cutting edge software from Metrohm Process Analytics that can help to detect early process events to reduce forced shut-downs and process failures. This software solution generates useful data/results about the process through our variaties of process communication protocols to the plant control room. As a result, IMPACT ensures a better performance, scalability, and safety of different processes.

As part of Metrohm Process Analytics philosophy, IMPACT is a flexible, modular, and innovative software designed for production processes. This software tool guarantees secure data management and complete data traceability.

Furthermore, IMPACT allows you to work with two different techniques in perfect harmony. For instance, with spectroscopy process analyzers, it is necessary to measure refence values to verify the validity of near-infrared spectroscopy «NIRS» predictions. IMPACT software can automate the comparison of a reference method (e.g., titration) and NIR results and report any deviations. This online measuring of the reference method removes the step of bringing samples to the lab and allows an automated and constant check on NIRS results
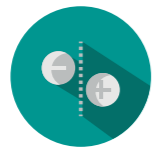
Titration   Photometry   Electrochemistry

Spectroscopy   Ion Chromatography

The reference data can be collected with a process analyzer (or laboratory instrument) to generate such analytical models. IMPACT software can easily transfer these models to the production site via standard communication protocols. The prediction models can be applied to each individual continuously recorded spectra and the analysis results are displayed in seconds.

On top of that, IMPACT enables the smart validation of data. So if the result is not in the expected range and differs significantly from the previous result, a standard can be analyzed to verify the analyzer's performance. If the analyzer does not perform optimally, it will be detected and a corrective action, such as calibration or re-sampling, will be taken. Validation actions can be disabled for subsequent results that are out of range. Moreover, if the results are outside the normal control limits, the frequency of the analysis can be increased to obtain more data for process intervention. This saves reagents when possible and provides the maximum number of results when needed.

CAPABILITIES OF IMPACT SOFTWARE:
- Real-time data – process data is collected and displayed on the touchscreen user interface instanly
- Data integrity – All data are stored in an encrypted database to prevent data tampering
- Easy transferability of data from the laboratory or other analyzers to analyzer
- Easy traceability – Automatic generated log files makes for easy audit trails and prevents lost data
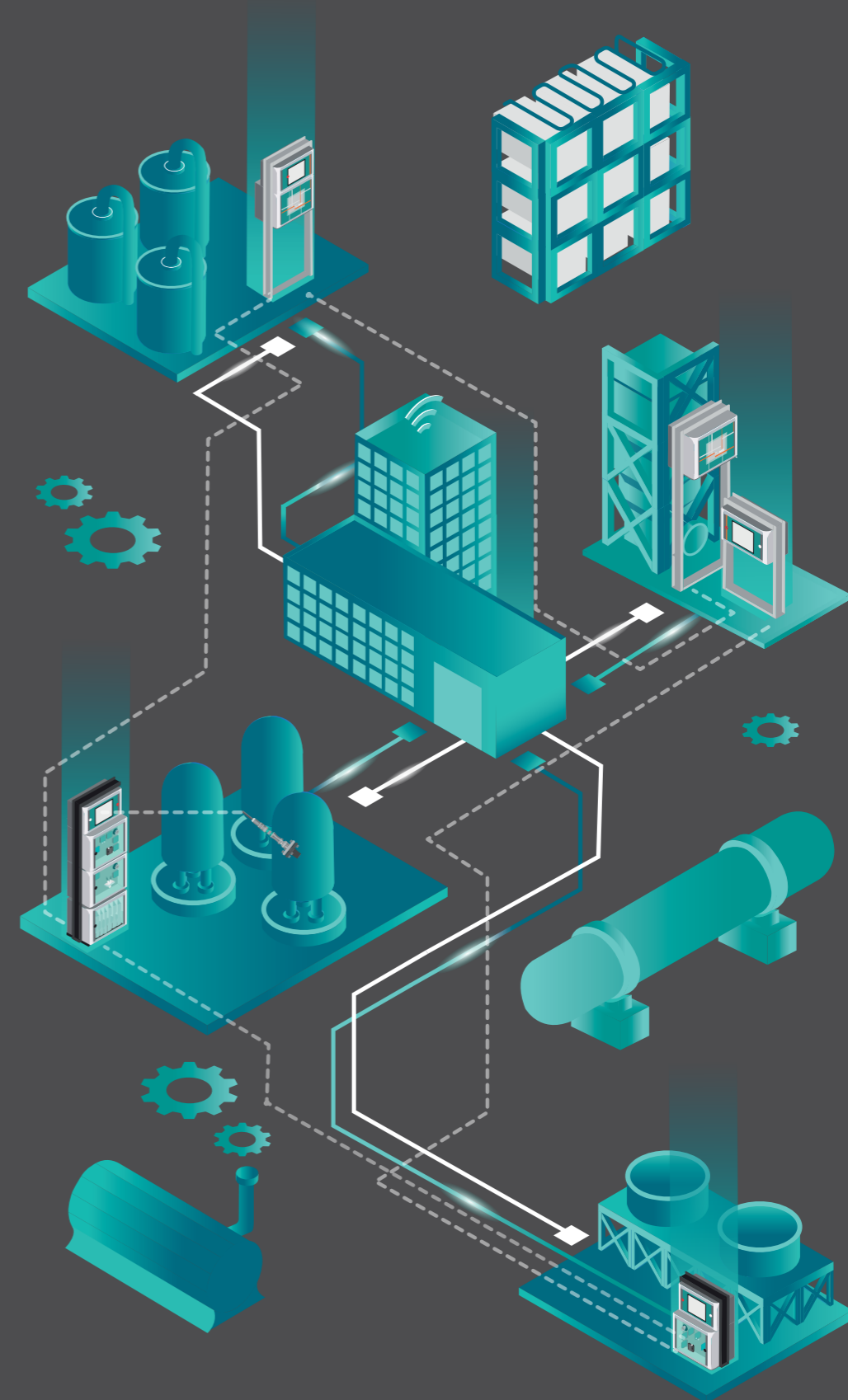
Process Analytical Technology (PAT) analyzers, optimize, and eventually control processes and their important parameters. This control contributes significantly to the manufacturer's quality and safety assurance and overall process reliability.

Smart programming for process analysis

EVERYTHING IN ONE IMPACTFUL SUITE

In order to detect out-of-specifications product and events, a powerful software tool is as important as a process analyzer. In all industries, quality is essential to increasing yield thus, the growing demand for real-time process monitoring and the confidence in the secure data being collected.

IMPACT is in complete sync with Metrohm Process Analyzers. The analyzers can be used in part to control a process with direct feedback of results to the DCS/PLC/SCADA for various purposes (e.g., correct dosage of chemicals). New data is automatically recorded and smartly interpolated to send warning signals and alarms to alert of deviating process conditions to the DCS/PLC/SCADA. Additionally, sample data can be used to calculate the next optimal sample volume, saving analysis time and optimizing the final results. All these features guarantee an optimized chemical dosing, so unnecessary costs and waste are reduced while still providing maximum quality.

Thanks to «time programming sheets», which give a graphical overview of the analysis program, **IMPACT** software is extremely intuitive and easy to use. All data can be configured to be displayed in different formats (charts, histograms, tables…), and the users can work on multiple operation screens already predefined based on specific requirements and application preferences.

With **IMPACT**, advanced programs can be tailor-made to perfectly match each application. As each program is independent, **IMPACT** can be programmed so that out of limit results can trigger alarms, conditional actions are taken (e.g., calibrate, re-measure) or external pumps or control valves are activated precisely for corrective action.

> Smart programs are as smart as their programmer's imagination can go
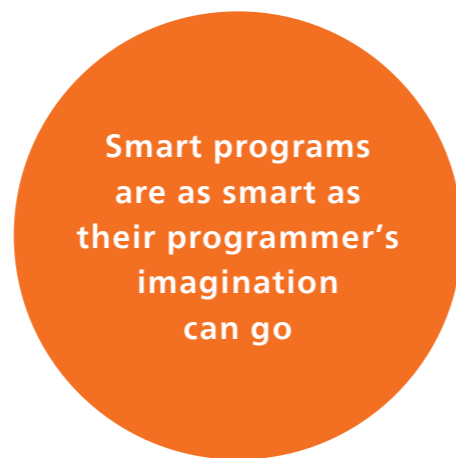
REAL BENEFITS – PULP & PAPER INDUSTRY

Real-time process control to optimize multiple parameters (e.g., liquor quality) enables improved liquor reutilization, reduced equipment maintenance, and increased recovery and causticizing efficiency. In pulp mills, alkali determination is commonly made through ABC-tests either in the laboratory (every hour) or online (every 30 minutes) with our 2060 TI Process Analyzer.

Near-infrared spectroscopy «NIRS» is a secondary technique, meaning it requires a prediction model (obtained by a primary method such as titration) if quantification of samples is desired. Titration-based methodologies can complement online NIRS which offers 24/7 reagentless automated measurements every 45 seconds with no need to carry samples to the laboratory. A single NIRS process analyzer can be connected to up to five sampling points, offering a competitive cost-per-sampling point.

The intuitive **IMPACT** software is designed to program and control both analyzers with various analysis applications (e.g., tiamo for the 2060 TI Process Analyzer and OMNIS for the 2060 *The* NIR Analyzer). Depending on your needs, either the 2060 *The* NIR Analyzer, the 2060 Process Analyzer, or a combination of both analyzers can be implemented.
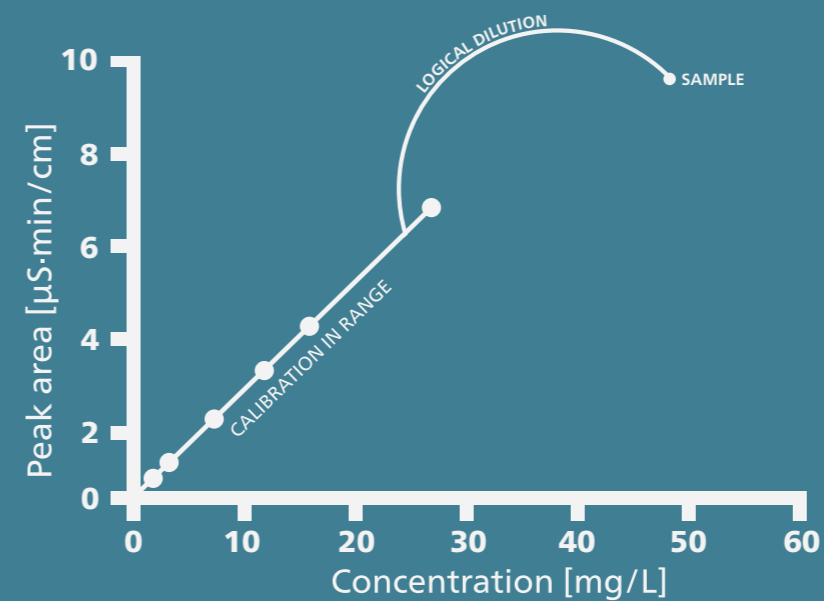
If the sample is outside the calibration range, it is diluted with the optimum dilution factor and analyzed. Thus your results are always within the calibration range.
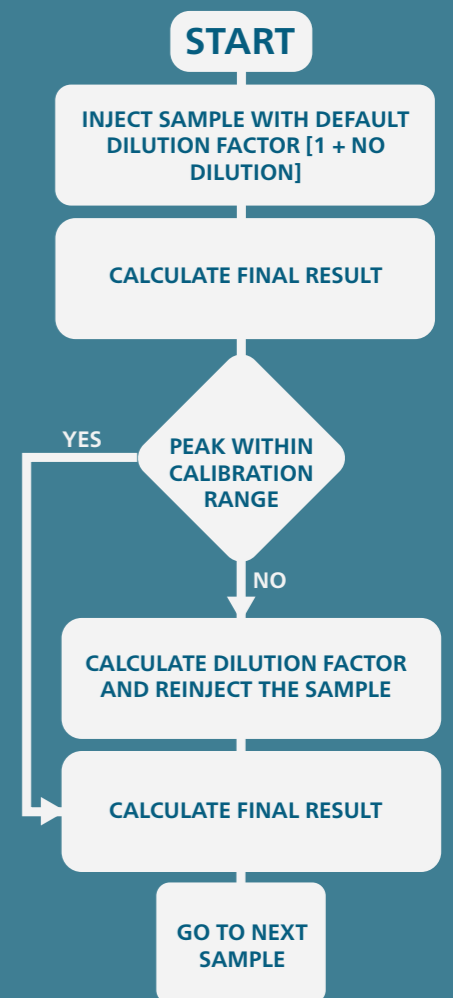
Determination of the optimum dilution factor.

Intuitive and reliable

Control is key for any process, and **IMPACT** makes it possible. The operation screens can be defined to control connected sampling panels to pretreat process samples, to display results in different formats, and to perform routine diagnostics. Also, users can fine-tune methods to reflect any changes in the process, and set limit conditions and alarms to control the analyzer.

Thanks to the variety of industrial communication protocols, **IMPACT** can transmit valuable results in the same format to any DCS/PLC/SCADA to retrieve process data from sensors (e.g., temperature, pH, flow).

Setting up conditional actions and alarms has never been easier and problem-free. Thanks to the modular dashboard design of the operation screen, control of every aspect of your process analysis is possible. The graphical user interface (GUI) of the **IMPACT** software is programmed by simple intuitive operation, and can be performed even by non-experts.

IMPACT can be configured to show multiple operation screens. These screens can be defined to control many programs (e.g., start, stop, loop, cycles, status...) and to display results in different formats (charts, histograms, tables...). Each user can have their own operation screen defined based on their personal requirements.

For each process unit, several programs can be defined and launched using the user interface or remotely by using inputs from the DCS/PLC/SCADA

Results displayed has histograms with different alarm limits defined

Sample preconditioning panel control

Results from external devices such as pumps can be displayed in full

Get ahead of the curve
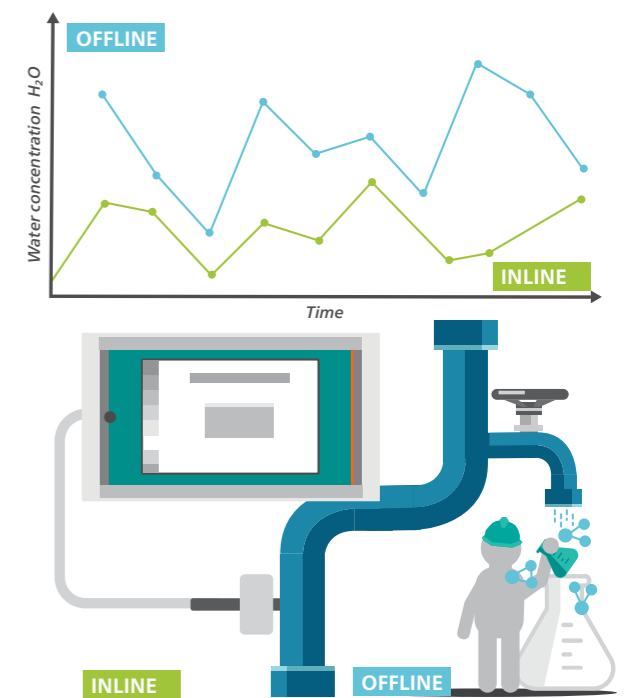

REAL BENEFITS – CHEMICAL INDUSTRY
In process where the analysis environment is really sensitive, early detection and implementation of out of specification readings is extremely beneficial. For inline monitoring of moisture content in propylene oxide (PO) for example, real-time analysis is a requisite for high throughput PO production because this gives short response times in case of process changes or increased water content in the final product.

By using **IMPACT,** operators gain the most representative, up to date information they need to accurately identify trends, reduce downtimes, and address operational issues before costly problems arise. In addition, the time of response to moisture formation is fast and immediate warnings are delivered in case of out-of-specification readings. **IMPACT** can recollect, record, analyze, and document all important analytical parameters at the same time 24/7 in one software suite for easy access and fast response time.

**DETECT PROCESS CHANGES
BEFORE THEY ARISE**
Not only does **IMPACT** provide the results from the analysis, it also performs health checks more commonly used on the whole system and proactively informs operators of potential issues. Alarms are triggered if hardware faults are detected, or analytical data are trending out of range.

Metrohm Process Analytics has decades of application know-how in process analysis and they can provide the right solution to handle a wide range of analyte concentrations. With this combination of analyzer solutions together with fast and reliable software, the assets of the company are highly insured. Alarms can be set up based on user defined upper and lower limits. So if a sample is out of limit, an alarm is triggered and the signal is transmitted to the PLC/DCS/SCADA for further action.

Warning line

Sampling control panel

Out-of-specification line

Secure and accessible

ADVANCED LEVEL

BASIC LEVEL

DATA CAN BE EVALUATED AND USER-SPECIFIC RESULTS CAN BE CREATED

That's not all, this software has the ability to have multiple users, each with different access levels. Each profile can be customized with a different degree of detail of what can be displayed in the operation screen and the relative possibility of making changes to the settings or parameters.

EASY DATA TRANSFER AND COLLECTION

In many process solutions, measurements with process analyzers take place directly in the medium or in a bypass making calibration and maintenance a challenge. **IMPACT** makes the transfer of all data (e.g., calibration and maintenance data) from analyzer to analyzer easy. This translates to less maintenance work, thus avoiding downtimes while saving costs.

SPECIFIC USER RIGHTS CAN BE DEFINED TO ENSURE PROCESS SECURITY

This software has been designed to store results in an encrypted database. All collected data are fully traceable, preventing data tampering. The power buffer and the controlled shutdown sequence prevent data corruption, and the operating system is embedded, preventing user accessibility as another layer of protection.
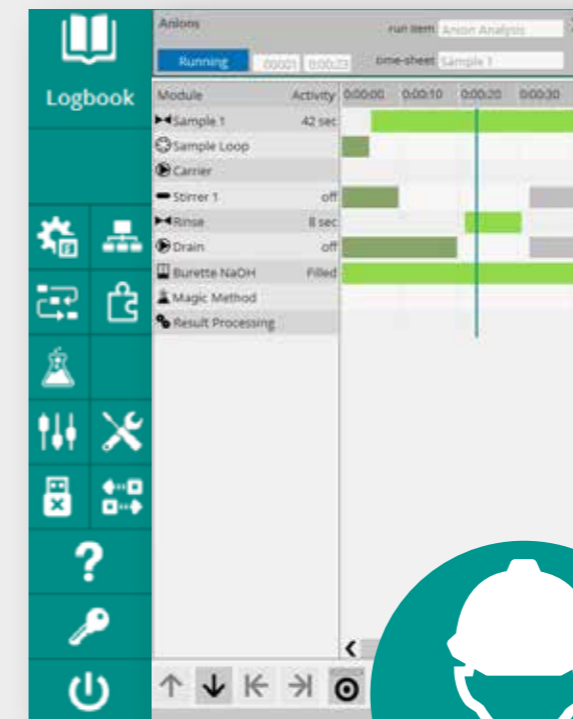

New User

User Settings

Name	Bob Operator
Access Level	Basic
Password	•••••
Password Check	•••••

Configured Users

	Name	Access
1	Bob Operator	Basic
2	John Manager	Advanced
3	Karen Engineer	Advanced
*		
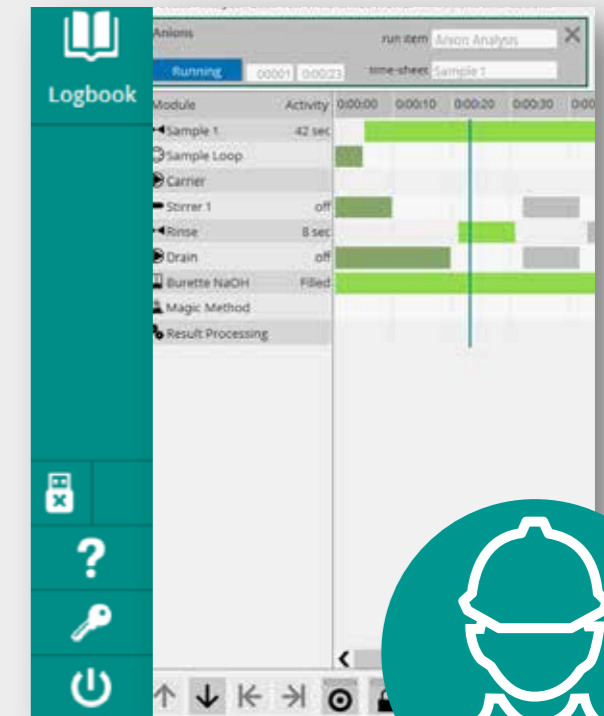
**Advanced users can have a deeper acces to the software to edit.**

Regular users cannot temper with the data/programs.

Designed for PAT

IMPACT helps you get a handle on your costs at all times. Its tailored programs, multi-level access, and customatizable dashboard makes process monitoring easy and efficient, just as it gives you real-time data of your process so you do not miss a thing.

The world is progressing through industry 4.0, integrating digital and physical worlds, in an advanced effort to make a digital transformation. Manufacturing processes of the future (e.g., chemical baths, rigs, and refineries) requires bringing data from the physical to the digital world. This data must be turned into worthwhile information by preforming real-time visualizations and trusted analytics. Smart data must be translated into decisions and actions, and back into movements in the physical world. A complete digital transformation requires advanced automation, such as that offered by process analyzers and dedicated process software.

Besides the chemical analysis, software, sample preparation, preconditioning, and location of the analyzer are deciding factors for the success of inline, online, and atline analysis. Metrohm Process Analytics can provide a complete end-to-end solution for almost any application, allowing seamless startup and integration of your instrument on site.
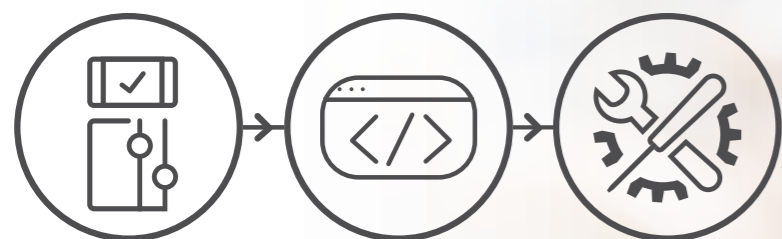
Process analyzers   **Software**   **Process control tools**

www.metrohm.com