



2060 *The* NIR Analyzer

A Turnkey Solution
for Process Analytical
Technology (PAT)

**PUSHING
THE
LIMITS
TOGETHER**

 **Metrohm**
Process Analytics

2060 *The* NIR Analyzer

Analyze any sample with a reliable inline process analyzer.

Near-infrared (NIR) spectroscopic techniques are characterized by their ability to gain rapid and accurate information from the high resolution spectra of solid, gas, and liquid samples without prior sample preparation or chemical reagents. They are economical and facilitate qualitative and quantitative as well as noninvasive and nondestructive analysis. For all these reasons, spectroscopic techniques are ideally suited for industrial quality control and process monitoring.

The **2060 *The* NIR Analyzer** is the next generation of process spectroscopy instruments from Metrohm Process Analytics. It has been designed to ensure high precision with maximum uptime. All steps from the implementation of the **2060 *The* NIR Analyzer** to your process to the communication results to the plant control system automatically have been thoroughly considered for a seamless process analyzer experience.

Besides, the **2060 *The* NIR Analyzer** has two embedded cutting edge softwares to guarantee the best performance of your process analyzer: the IMPACT software and the OMNIS software. While the IMPACT software is the interface to the user with all the capabilities for smart programming and communication protocols to the plant control room, the OMNIS software handles all the data analysis acquisition and chemometrics. This combination ensures that the **2060 *The* NIR Analyzer** is the perfect tool to support Process Analytical Technology (PAT).



KEY FEATURES OF 2060 *THE* NIR ANALYZER:

- High throughput spectrometer for fast measurements while preserving precision and accuracy
- Internal standards and reference channels for robust measurements eliminating operator interaction
- Industrial design for unattended 24/7 in-plant operation under harsh conditions
- Embedded proprietary software for instrument operation and diagnostics, for process communication protocols, and for automated sampling

Unique hardware for industrial applications

Metrohm Process Analytics is known as a pioneer in process analysis and one of the global process industry's preferred solution providers for monitoring key parameters in largescale industrial manufacturing processes.

The **2060 The NIR Analyzer** has some unique features for a NIR process analyzer. It is composed of a Human Interface (HI) cabinet and a NIR analysis cabinet. The HI cabinet has a reliable industrial PC with a high definition touch screen which includes our embedded proprietary software. The NIR cabinet has all the necessary modules to perform state-of-the-art measurements: light source, internal standards, multiplexer, and spectrometer.



FULLY REMOTELY CONTROLLABLE

Thanks to the variety of process communication protocols (Modbus, analog, and/or digital signals) offered by Metrohm Process Analytics, the **2060 The NIR Analyzer** can be operated remotely to immediately evaluate results every 10 seconds from the safety of a control room.

WEATHER-PROOF

Robust and durable as stainless steel. The **2060 The NIR Analyzer** can handle the most extreme elements thanks to the stainless steel (SS316) frames and cabinets. This process analyzer has an ingress protection of 65 (IP65) and can operate between 0 and 40 °C without the need to be protected in a shelter.

INDUSTRIAL DESIGN

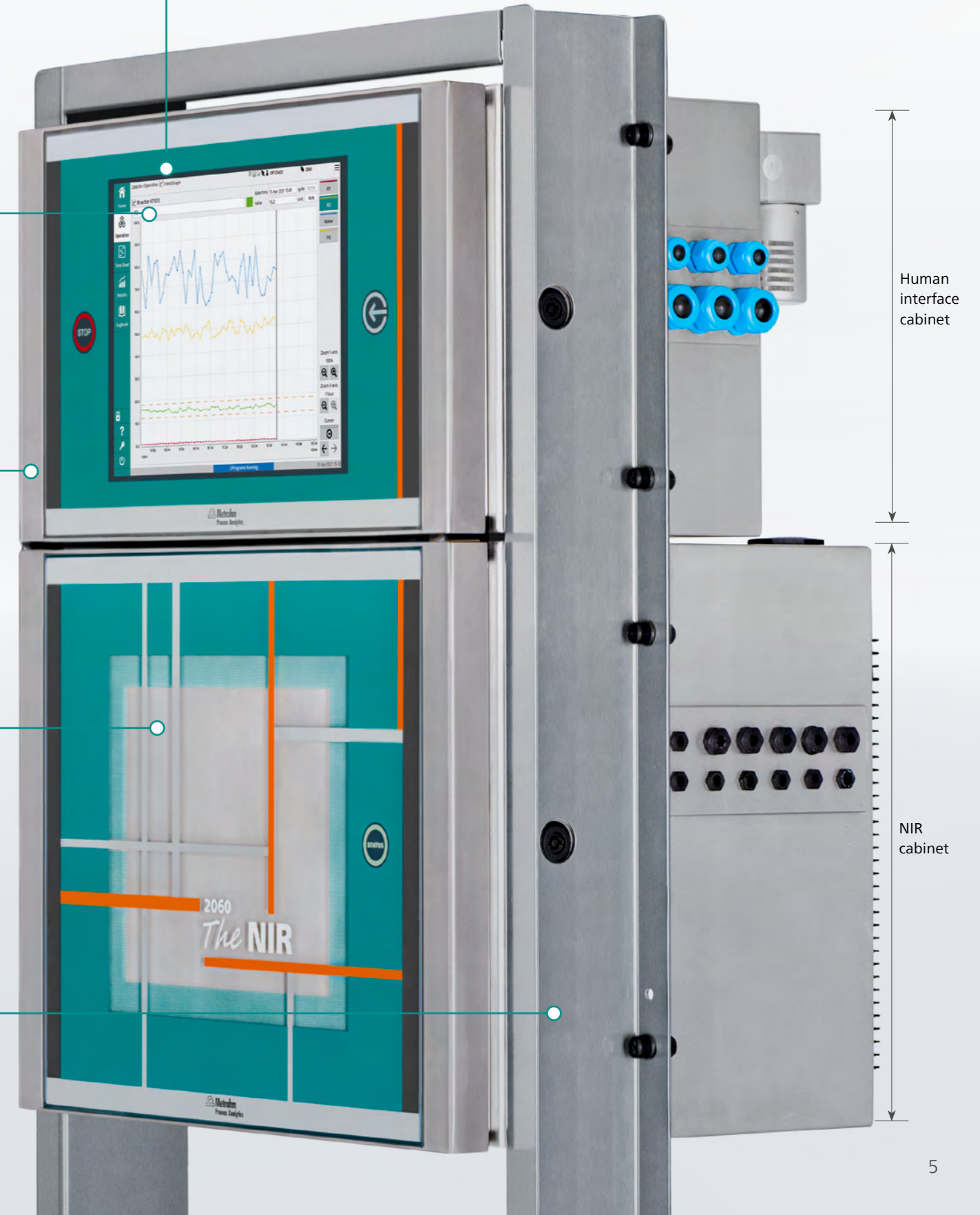
The **2060 The NIR Analyzer** is designed for 24/7 operation and maximum uptime – thanks to the built-in power buffer, short power outages (below 60 seconds) do not disrupt operation. In the event of longer power outages, a controlled shutdown sequence is in place so programs and data are always protected.

READY TO INSTALL ANYWHERE

The **2060 The NIR Analyzer** can be configured inside of a holding frame which can be installed in various ways: wall mounted, bolted on a table or floor, and on wheels for a portable option.

CUSTOMIZABLE HUMAN INTERFACE

Options are limitless. The HI allows access not only to the analysis results (tables, trend charts) but also to the diagnostic functions on the analyzer as well as to the status of the programs. Additionally, the HI was designed with a resistive touch screen such that operators can use protective gloves while operating the touch screen panel.



State-of-the-art NIR Technology

High quality from the inside out.

SPECTROMETER

The high throughput, state-of-the-art spectrometer is developed and produced within the Metrohm group. Based on a Littrow design, it incorporates a three-stage thermoelectrically (TE) cooled low-noise InGaAs detector and robust optics.

The spectrometer compartment is temperature stabilized, ensuring high precision and high reproducibility of measurements.

MULTIPLEXER (MUX)

Up to five sample channels can be measured with the Metrohm multiplexer «NIR-MUX». On top of a high optical throughput, the **2060 The NIR Analyzer** was designed with a high resolution encoder for excellent reproducibility and stability in channel positioning.

Moreover, it is an analyzer built to last a lifetime. It was designed for high durability and can ensure more than 300 million cycles. No maintenance is needed as it has a wear-free design with no moving parts. Additionally, performance checks and instrument calibrations are always performed seamlessly on their dedicated channel.

LIGHT SOURCE

We bring attention to every detail, even to the lamp. To ensure long life of a critical component, we have custom-made the lamp filament, specially designed the electronics, power supply, and even the light source housing for enhanced stability. The light source module has a NIST-traceable calibration unit which can easily be recalibrated.

To facilitate preventive maintenance, the lamp is continuously monitored by the software and indicates when to exchange before it fails, thus maximizing instrument uptime. The bulb can be exchanged via a plug-and-play module.



Durable ruggedized fiber optics

Obtain the highest quality results by choosing the correct sampling solution for the best analytical performance.

With more than 45 years of experience, Metrohm Process Analytics «MPA» designs the best solutions for your process and optical fibers are no exception. MPA's optical fibers utilized in harsh environments are not affected by temperature or humidity, and are chemical and mechanical resistant. Furthermore, the jacketed fibers are UL marked, ensuring compliance of processes site requirements.

Fiber optics are an economical means of performing remote, unattended measurements, reducing operation costs and increasing productivity. Up to five sampling points can be connected to a single NIR cabinet, even hundreds of meters away. Of the utmost importance is the correct selection and

implementation of optical probes and flow cells to obtain meaningful «real-time» results from a changing process. Each sampling point can utilize different types of optical fibers (single or micro-bundle) depending on the nature of the sample for improved performance.

> [Find the best sampling solution for your sample here.](#)



Ruggedized optical fiber for in-plant operation.



Fiber tip showing the illumination (outer) and collection (inner) fibers.

Internationally certified
UL certified fiber and probes to meet your requirements

Easy and safe
Fibers can be disconnected from the process without removing the probe, thus not disturbing the process

Robust designs
Sturdy fiber-probe connection to overcome vibrations and damages

Suitable for any environment
Stainless steel (SS316) materials – suitable for harsh environments and outdoor installations

The intelligent and proprietary Metrohm Process Analytics IMPACT software (Intelligent Metrohm Process Analytics Control Technology) is used across the 2060 platform. IMPACT is a complete solution offering a wide range of possibilities for process monitoring and automation.

It facilitates the acquisition of analytical data from Metrohm process analyzers, displays and transfers results to any Distributed Control System or Programmable Logic Controller (DCS, PLC), seamlessly connects to external systems (e.g., sensors), and smoothly executes advanced programs.

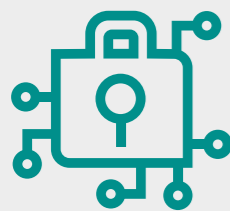


«REAL-TIME» DATA

Knowledge is key, and the **IMPACT software** is ideal for superior process monitoring. NIR data are collected and displayed in «real-time» on the HI. Operators can at any moment have an overview of the NIR predictions for each of the five channels, so they can be up to date at all times.

TAILORED PROGRAMS

With **IMPACT software**, advanced programs can be tailor-made to perfectly match each application. As each program is independent, **IMPACT** can be programmed to monitor multiple measuring points at the same time or control a sample conditioning system (SCS).



DATA INTEGRITY

Your data are safe with us. The **IMPACT software** has been designed to store NIR 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.

MULTILEVEL ACCESS

Different access levels can be configured to make even the routine user feel at ease with the **IMPACT software**. Advanced users can have a deeper access to the software and change/edit parameters.



CUSTOMIZABLE OPERATION SCREENS

IMPACT software can be configured to show multiple operation screens. These screens can be defined to control programs (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.

ALARMS AND DIAGNOSTICS

Not only does the **IMPACT software** 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.



OMNIS

A WHOLE NEW LEVEL OF PERFORMANCE

**FIRST SPECTROSCOPY
INSTRUMENT WORKING
WITH OMNIS**

Experience an analytical software solution designed for the future!

Intuitive, easy-to-use, and intelligent. Graphical representations of hardware components, drag-and-drop functionality, and context-sensitive operation make the workflow as easy and efficient as possible. OMNIS is the software used to control and perform the NIR analysis. The access to OMNIS is reserved to advanced users.

EASIER

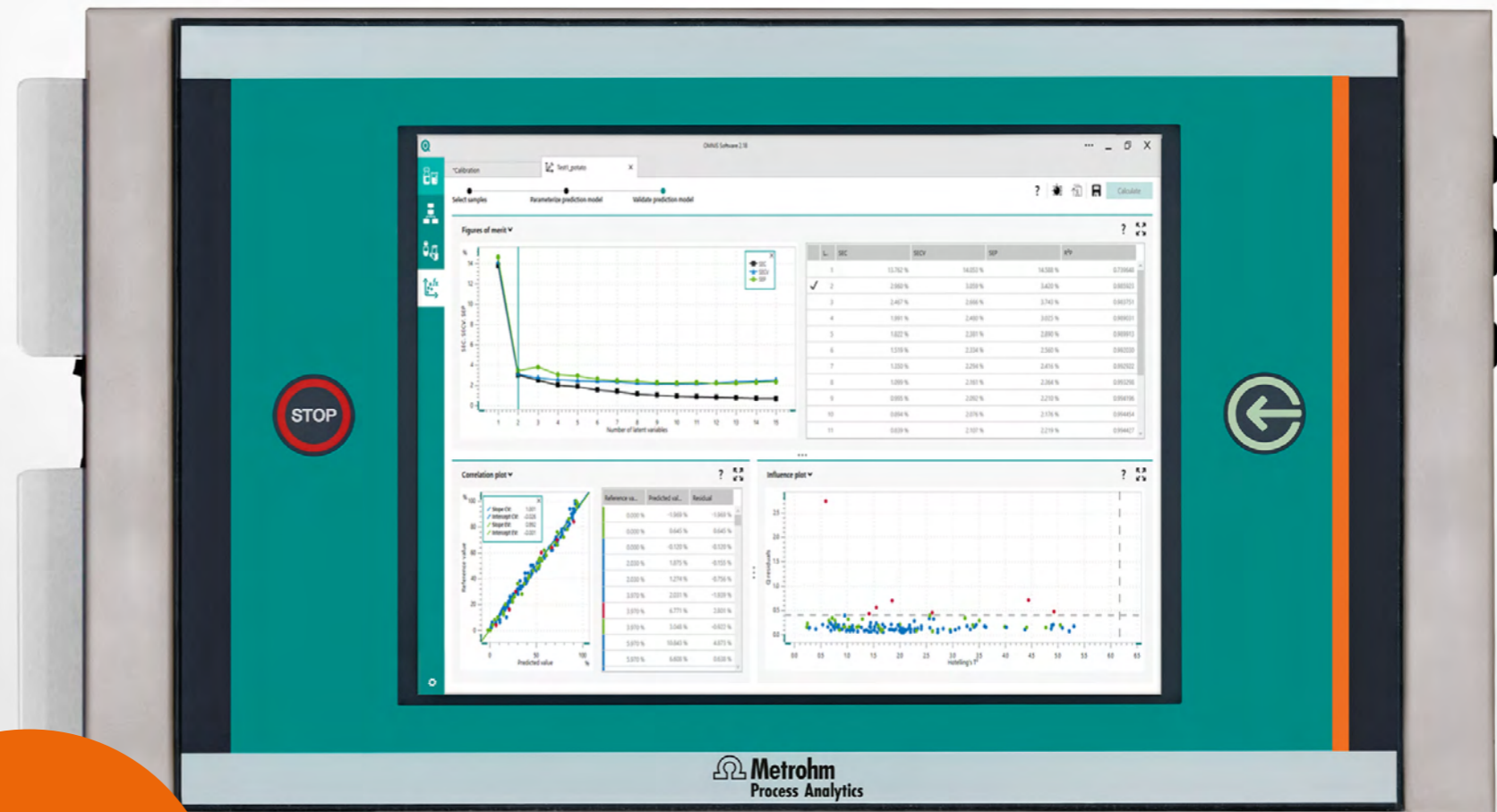
OMNIS has an intuitive and context-sensitive user interface (UI). For instance, Metrohm developed an all-new interface for model development and prediction, making chemometrics easily accessible to all users. Furthermore, the prediction models can be seamlessly transferred from instrument to instrument.

FASTER

OMNIS is capable of performing several fully automated analyses at the same time. This allows operators to connect more than one NIR cabinet to one HI cabinet. On top of that, it is optimized to produce NIR results every 10 seconds.

SAFER

Sample integrity is of utmost importance to our customers, and everything revolves around them. The OMNIS software links all information, parameters, and results to the sample. This approach, combined with a context-sensitive user interface, streamlines operation greatly.

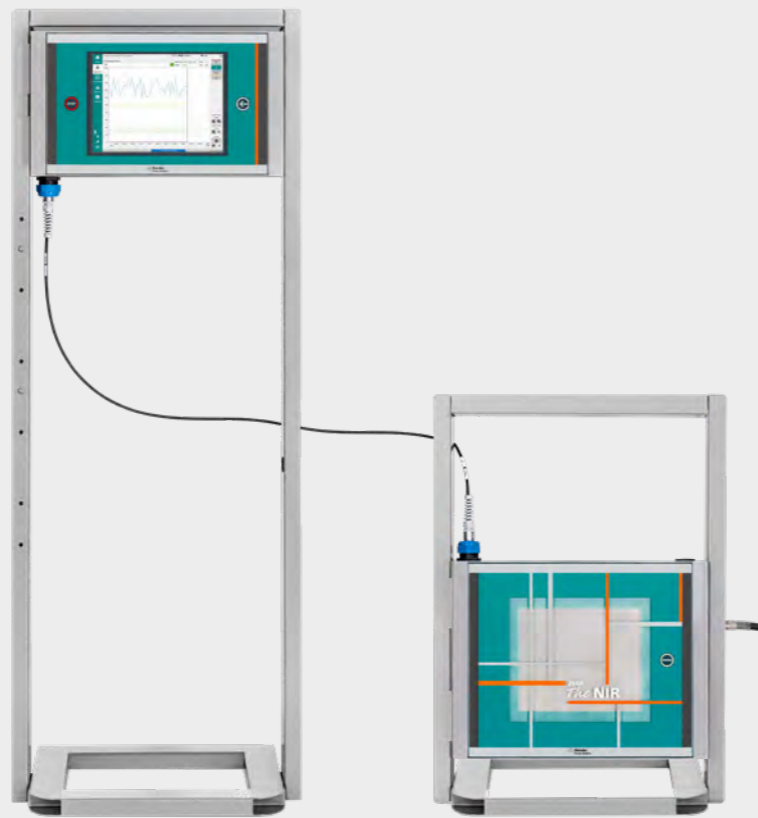


Easier,
faster,
and safer

Select the best configuration for your needs



2060 The NIR Analyzer



2060 The NIR-R Analyzer

The 2060 *The NIR Analyzer* offers the possibility to choose the configuration which suits best your needs. A compact installation with the 2060 HI and NIR cabinets combined in the same frame is possible with the 2060 *The NIR Analyzer*. Whether space constraints are in place, or operators prefer to have the HI more accessible to look at results, or plant managers prefer to limit the optical

fibers, length by placing the NIR cabinet close to the sampling points, the 2060 *The NIR-R Analyzer* is the right solution to this. The communication between the HI and NIR cabinets is ensured via optical fibers so that the separation distance between the two cabinets can be as far as kilometers away.

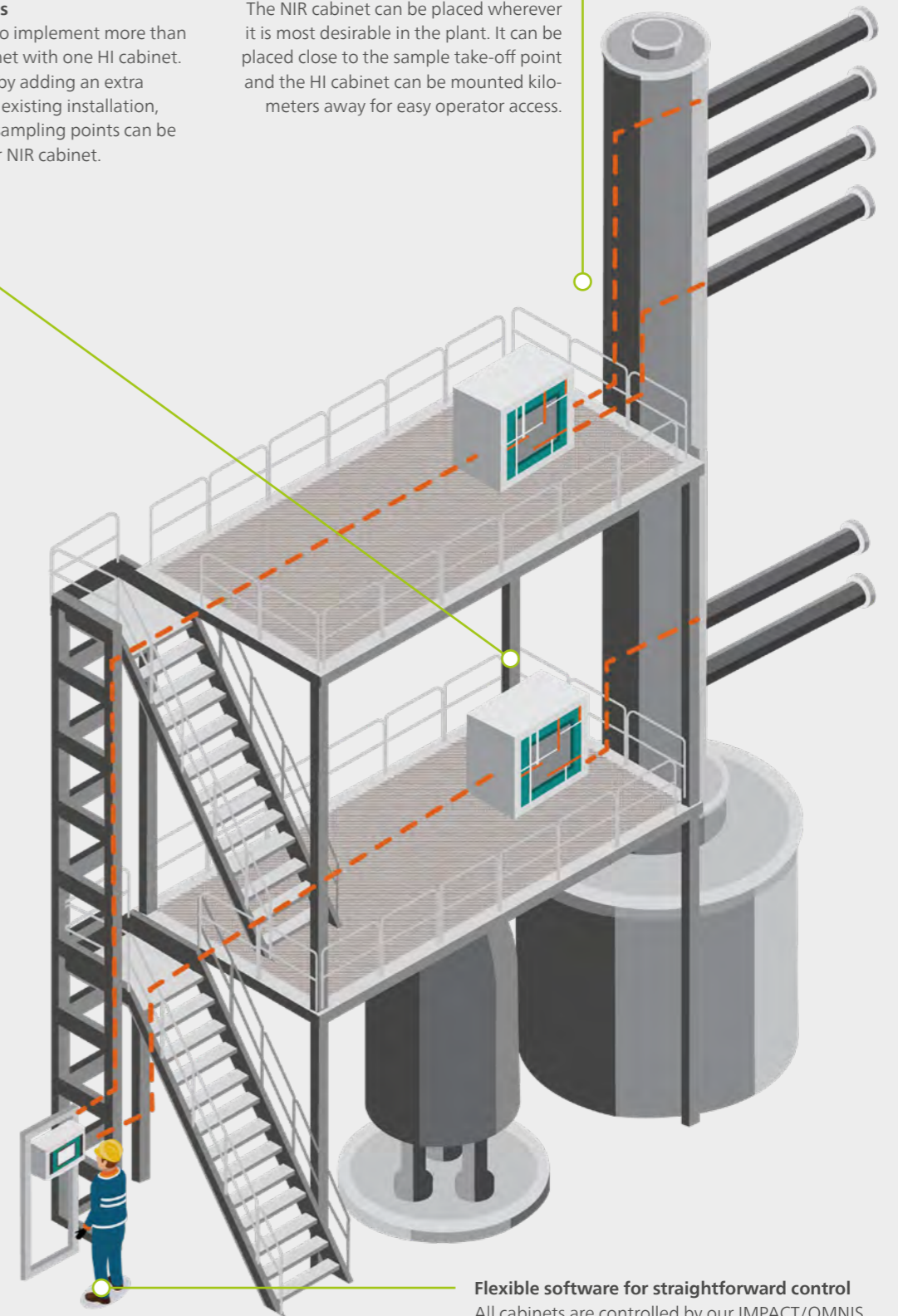
IMPLEMENTATION MADE EASIER

Maximum flexibility for countless combinations

It is possible to implement more than one NIR cabinet with one HI cabinet. For instance, by adding an extra cabinet to an existing installation, an extra five sampling points can be measured per NIR cabinet.

Anywhere you need

The NIR cabinet can be placed wherever it is most desirable in the plant. It can be placed close to the sample take-off point and the HI cabinet can be mounted kilometers away for easy operator access.



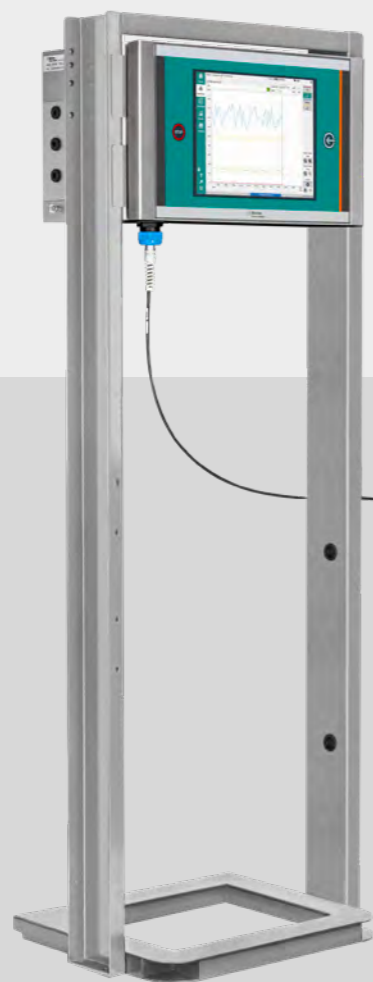
Flexible software for straightforward control

All cabinets are controlled by our IMPACT/OMNIS software allowing parallel measurements on two cabinets, as opposed to channel-per-channel with a single cabinet.

Safe operation in hazardous areas



2060 The NIR-Ex Analyzer



2060 The NIR-REx Analyzer



EXPLOSION-PROOF CERTIFICATION – KNOW YOUR OPTIONS

Where high concentrations of flammable gases, hazardous vapors, or dust occur, it is vital that instruments are safe to operate and do not initiate an explosion. Explosion-proof process analyzers are configured to comply with explosion-proof electrical area classifications (IECEx). The 2060 *The NIR* Analyzers can be initially designed or upgraded to work in such hazardous environments by using a purge system for ATEX enclosures.

Both versions, combined and remote, can be used in explosive areas depending on user or site requirements. Note that all electrical signals coming in and out of an IECEx certified instrument are intrinsically safe. This is true, for instance, for the 4–20 mA or Modbus communication of the 2060 *The NIR-Ex* Analyzer with a PLC, or for the communication between the NIR cabinet and the HI cabinet in case of a remote configuration (2060 *The NIR-REx* Analyzer).

Solutions for all major industries

More than 10,000 units installed and commissioned worldwide.

Take a look at any of the major manufacturing industries and even beyond at oil extraction, polymer production, and pharmaceutical manufacturing. World-leading companies from all of them rely on our robust process analyzers. Applications are legion; here is an overview of some of the most typical and challenging ones.

Petrochemistry / Refining

- Crude oil distillation
- Reforming
- Gasoline and diesel blending

Chemicals

- Reaction monitoring
- Drying processes
- Distillation

Semiconductor

- Etching baths
- Cleaning baths
- Reacting baths

Pharmaceuticals

- Active Ingredients (API) production
- Formulation
- Drying process

Polymer

- Reaction monitoring
- Quality control (QC) on finished products
- Extrusion

Pulp and paper

- Moisture monitoring
- Green and white liquors monitoring
- Lime analysis

Biotechnology

- Fermentation
- Cell culture
- Bioplastics

Food and Feed

- Fat content
- Protein content
- Quality control

> [Download the Applications Book based on 45 years of global installations](#)





2060

The **NIR**

