ABB MEASUREMENT & ANALYTICS - PRODUCT BROCHURE

eXLent® #HMI

Custody transfer automation software

eXLent #HMI is not just another automation solution.

It is especially made for custody transfer of liquids and gases with fully functional application templates.

Besides of automating the daily operations, it helps the user to control the measurement accuracy and provides timely measurement data for all the stakeholders.

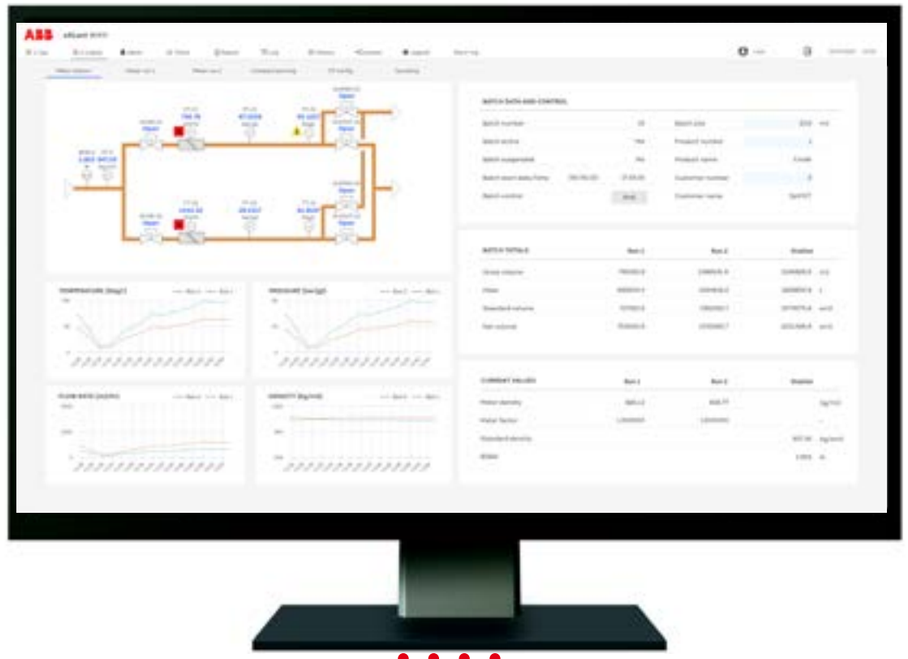
And by design, it is ready for next-generation process control systems.

Intuitive and reliable operation
Of flow metering and loading systems

eXLent #HMI provides all essential functions for controlling flow metering and loading systems and processing their measurement data .

The Human Machine Interface is designed according to the lastest HMI industry standards:

- ISA-101 Human Machine Interfaces for Process Automation Systems
- The High-Performance HMI Handbook
- NAMUR NE 107 Self-Monitoring and Diagnosis of Field Devices



The future of Process Control
Open, Modular and Connected

The industrial landscape is undergoing a significant transformation driven by digitalization and the rise of Industry 4.0. Process control systems, traditionally closed and vendor-specific, are poised for a major shift towards open, modular, and interconnected architectures.

Open Process Automation Standard (O-PAS)

The Open Process Automation Standard (O-PAS) fosters the development of open standards for process automation systems. This promotes interoperability between devices and software from different vendors, allowing for greater flexibility and future-proofing of control systems.

OPC UA (Unified Architecture)

OPC UA serves as a cornerstone for future process control systems, providing a secure and reliable communication protocol for industrial automation. It enables seamless data exchange between control systems, sensors, and actuators, regardless of vendor or platform.

Web Technology

The integration of web technologies like HTML5 and Javascript into process control systems is blurring the lines between industrial and IT infrastructure. This facilitates the development of user-friendly interfaces and enables remote access for monitoring and control.

Cloud and IIoT

SCADA systems will migrate to the cloud and use the lightweight MQTT protocol offering efficient communication for resource-constrained devices within Industrial Internet of Things (IIoT) architectures.

Object-oriented engineering

Object-oriented programming principles can be applied to process control systems, leading to modular and reusable components. This promotes faster development times, easier system maintenance, and improved scalability.

Cybersecurity

Open and connected systems introduce new cybersecurity challenges. Secure communication protocols, robust access control mechanisms, and secure data processing and storage are crucial for protecting critical infrastructure and ensuring operational integrity. IEC-62443 compliance will become a necessity.

Standardization

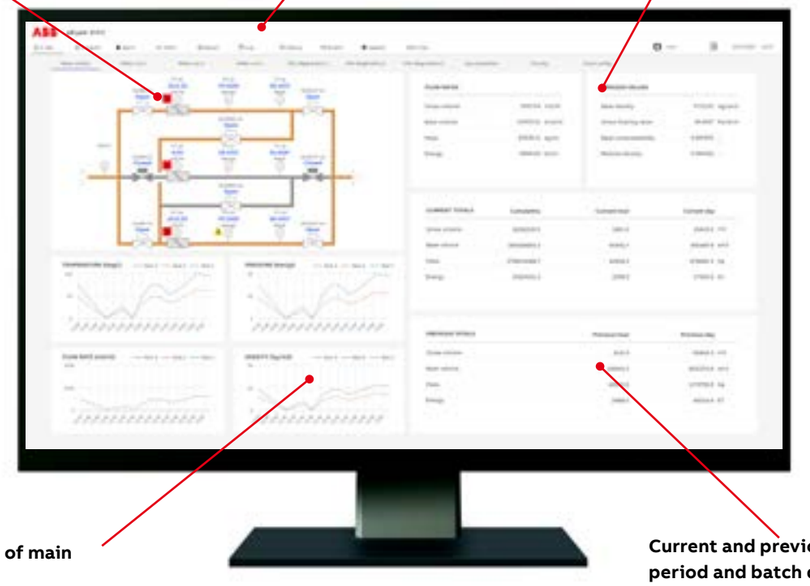
The adoption of standardization offers benefits for everyone: vendors, integrators and end-customers. Standardized protocols and interfaces ensure compatibility between devices and software, fostering a plug-and-play ecosystem. Standardized solutions simplify project execution and system integration, lowering overall costs.

The future of process control is undoubtably open, modular, and connected, based on secure and standard technology.

NAMUR NE 107 alert symbols

Quick access to other functions

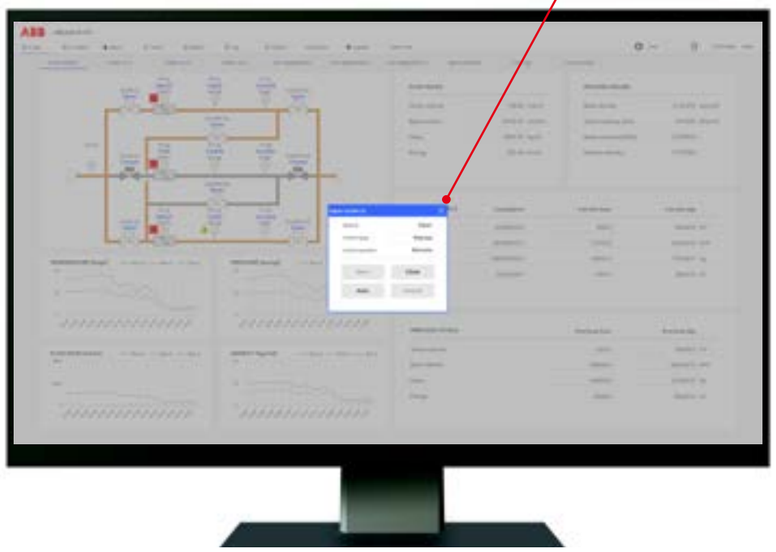
Batch control



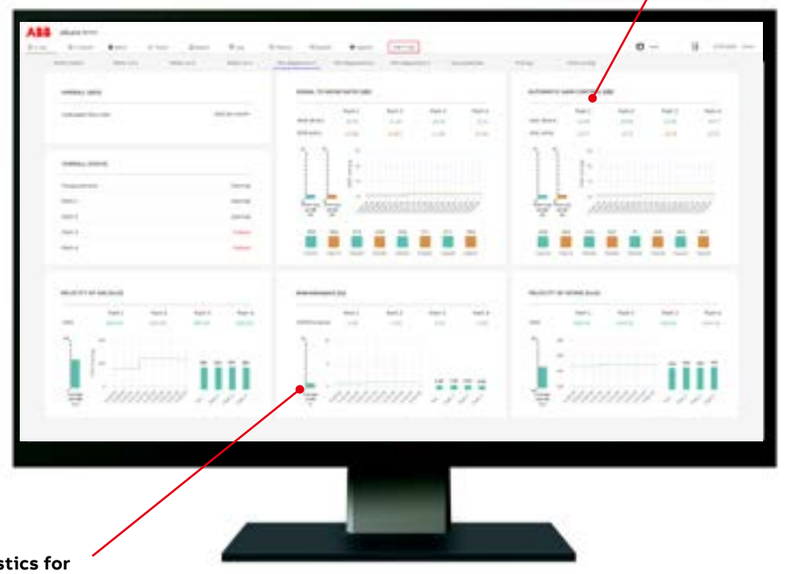
Real-time trends of main parameters

Current and previous period and batch data

System controls

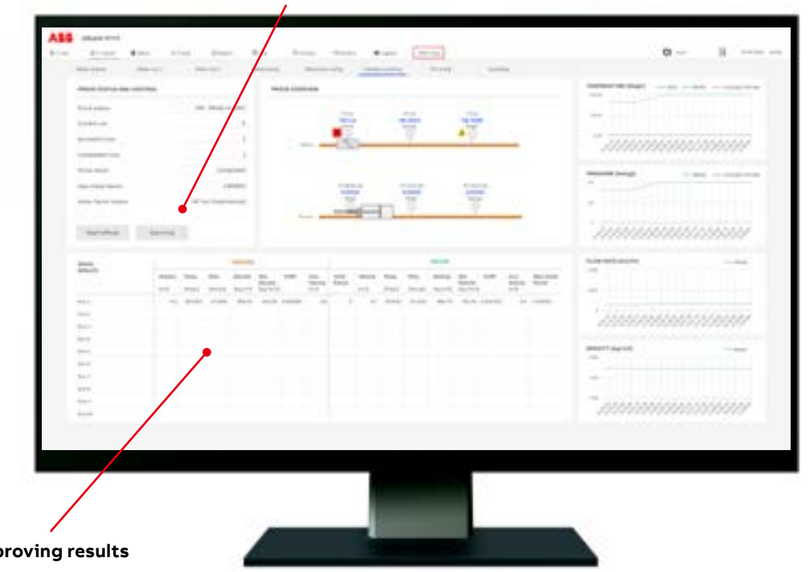


Real-time performance indicators

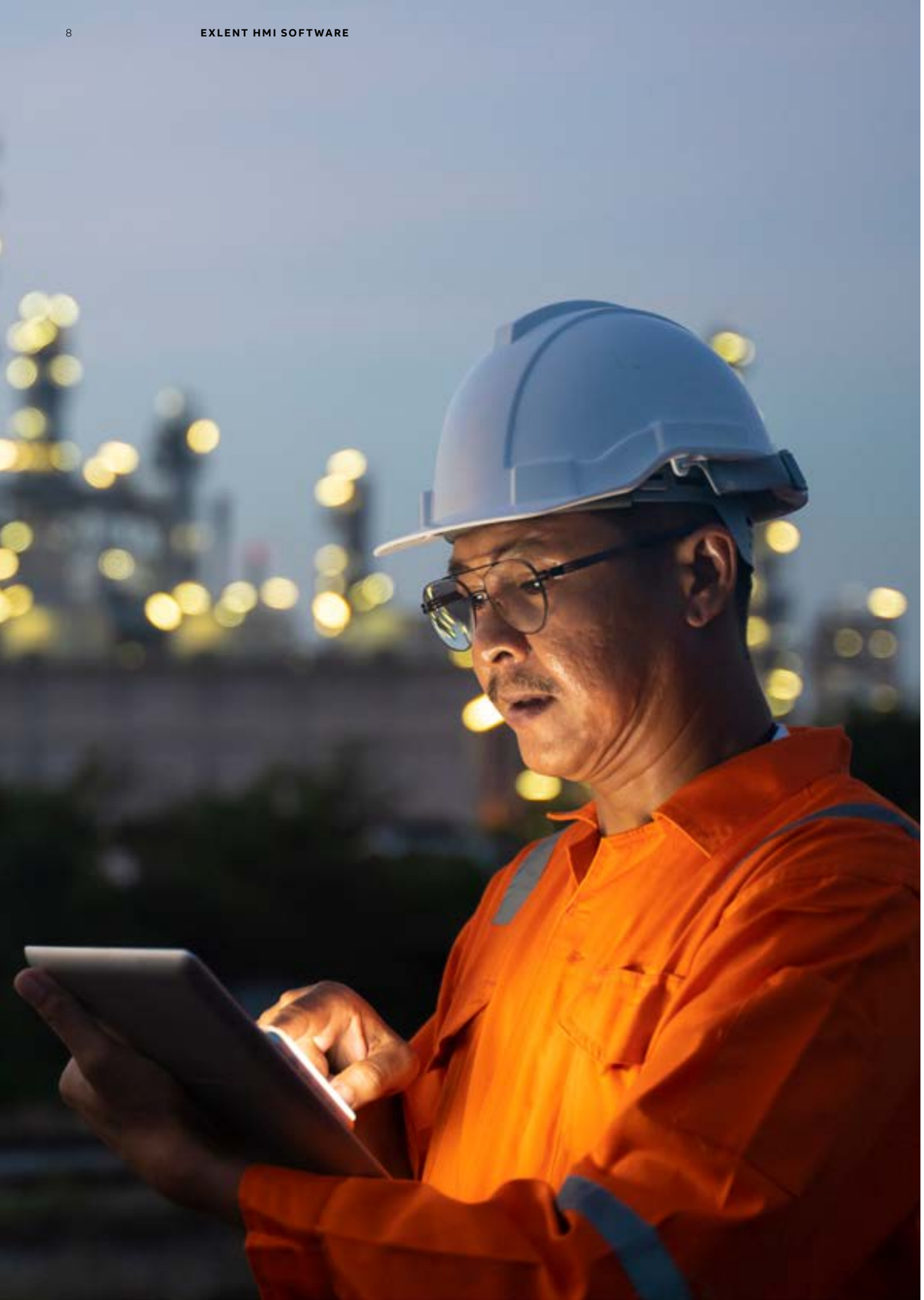


Advanced diagnostics for Ultrasonic flow meters

Proving operation



Detailed proving results



Pure web technology
Accessible from any end-device

eXLent #HMI is based on the Atvise® software, which is the first professional HMI/SCADA system based on open web standards such as HTML5, CSS, JavaScript and SVG.

- No Plugins – You just need a web browser
- No client software installation, licensing or maintenance
- Responsive Design – visualize and control your system from your mobile device without duplicating designs
- Multilanguage – users can access the application in their language through a web browser
- SVG – High quality vector graphics for a clean visualization without “pixelated” effect
- Future proof – based on open web standards to ensure a modern and up-to-date control system

HTML5 CSS3 JavaScript SVG

Secure by design
Compliant with latest industry standards

Secure communication

By default all communication is secure and based on OPC UA and HTTPS only.

Secure data

Data (configuration and historical) are stored in encrypted format. For optimal protection disc encryption should be enabled as well.

Authentication

- Password expiry and lockout.
- Server side logout after inactivity.
- Client certificate based authentication.
- Password complexity requirements.

Role Based Access Control (RBAC)

Fine grained permissions down to datapoint level.
RBAC is also used for application engineering.

Traceability

All security related events are logged.

Log rotation

Log files are automatically archived at a certain age.

Applicable standards:

- IEC 62443-4-2: Technical security requirements for IACS components
- API STD 1164: Pipeline Control Systems Cybersecurity

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Role Based Access Control

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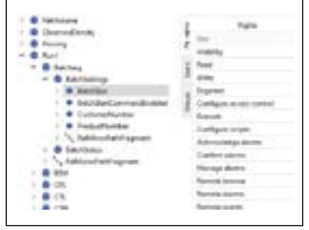
Granular permissions on node level



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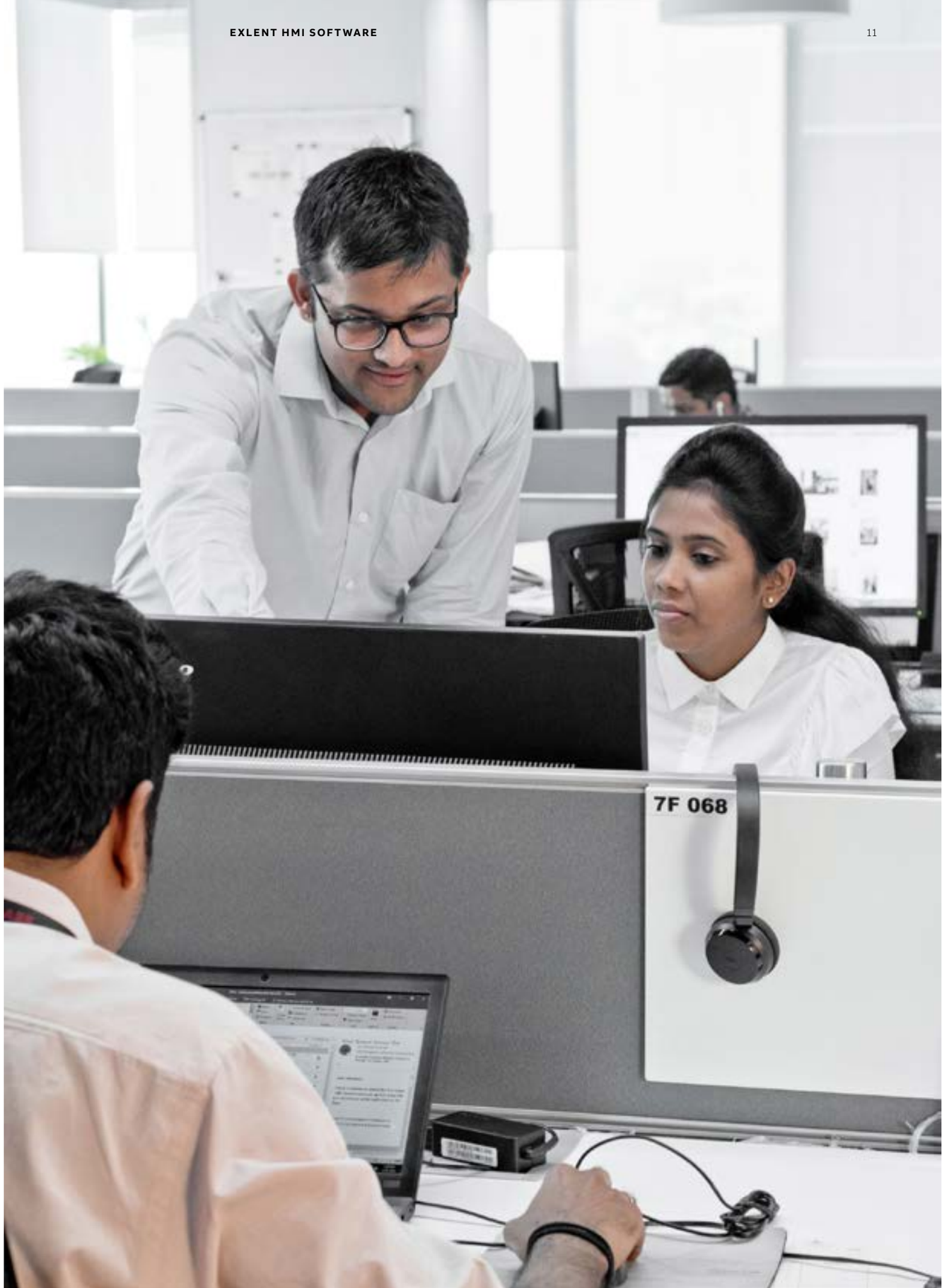
Configurable password complexity



Versatile and scalable

eXLent #HMI is highly versatile and scalable software that can be used on different Process Automation levels.

Level 1 - Local HMI

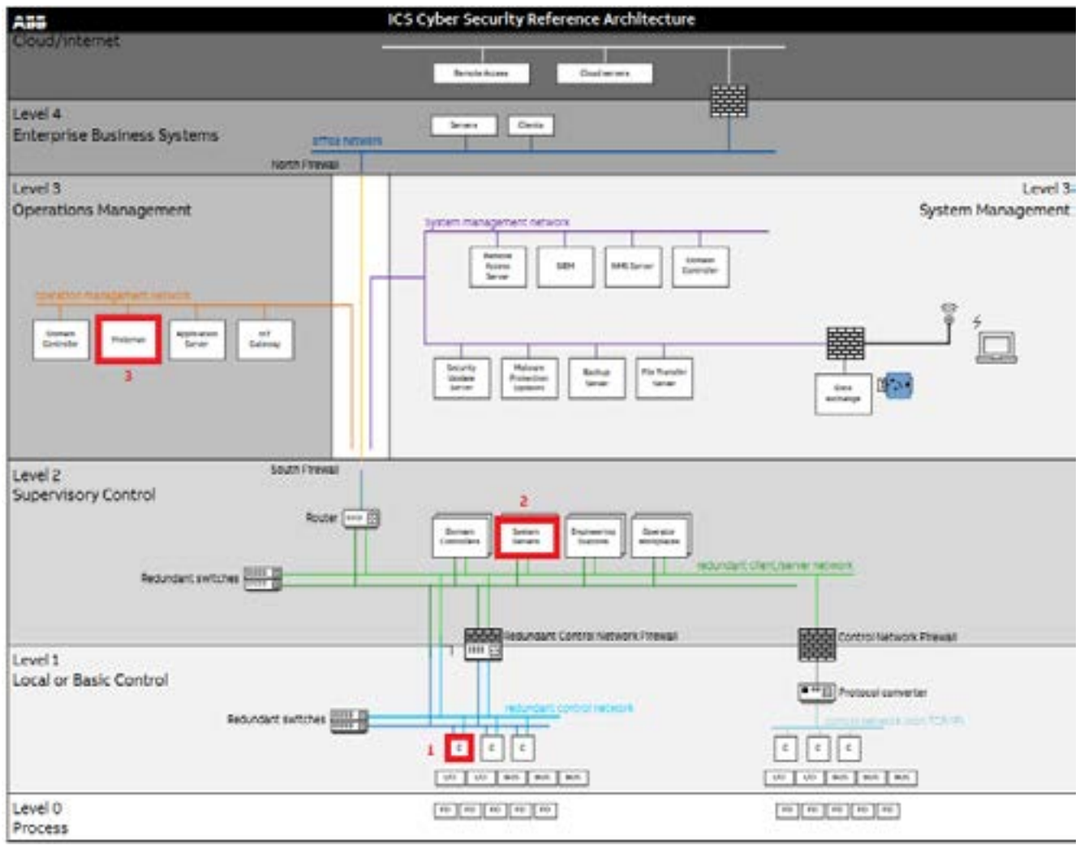
As a local HMI to operate individual custody transfer points e.g., a flow meter run or a truck loading rack.

Level 2 - Supervisory Control

As a Metering Supervisory Computer to manage one or more flow metering stations..

Level 3 - Measurement Historian

As a central repository for billing data with validation, editing and correction capability.



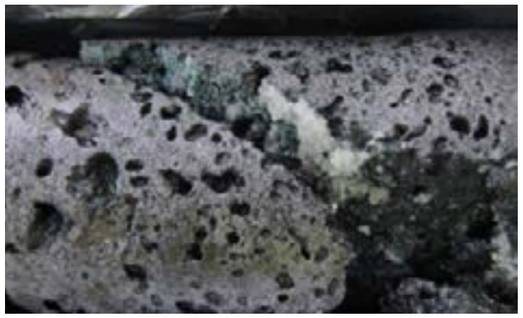
Accurate billing data for any fluid

eXLent #HMI provides accurate custody transfer (billing) data for all commonly traded liquids and gases, including conventional and renewable energy and CO2 a.k.a. Carbon Capture UtIlisation and Storage (CCUS).

Corrections and recalculations are performed with flow computer precision based on the latest standards (API, ISO etc.) including the GERG-2008 Equation-Of-State for hydrocarbon fluids, Hydrogen and CCUS mixtures.

Hydrogen

CO2 (CCUS)



e-Fuels

Biogas

LNG

H2/NG blends

Lease Automatic Custody Transfer (LACT) Application template

Complete LACT management solution together with Flow-X LACT controllers.

For controlling driver access to LACT systems and dispatching production data to customers.

Provides a central driver database that can be modified by authorized users with driver definitions automatically dispatched to the Flow-X LACT controller.

Overview display for monitoring of remote LACT sites.

Daily and monthly production reports are automatically generated and emailed.

Mailing lists can be configured and assigned to the different reports.

Data is segragated by customer, designee and transporting company.

— Driver authorization

— Remote operation

— Driver database

— Measurement tickets storage

— Customer, designee and lease configuration

— Sample pot assignments

— Email subscriptions

eXLent #HMI application templates are developed and maintained by ABB and are fully open and adaptable for the user.
A wizard allows the application to be set up for the actual system layout, with zero programming required.

Metering Supervisory Control Application template

For monitoring and controlling gas and liquid flow metering systems together with Flow-X flow computers

Operator displays for monitoring the system and the metering equipment and for controlling block valves, flow control valves, provers and samplers.

Device diagnostics display for ultrasonic flow meters

Daily, batch and proving reports are automatically generated and archived.

OPC UA connectivity to all data for any control and business system.

— High Performance HMI

— System Controls

— Meter Proving

— Reporting

— Long-term data storage

— OPC UA Server

— Device diagnostics

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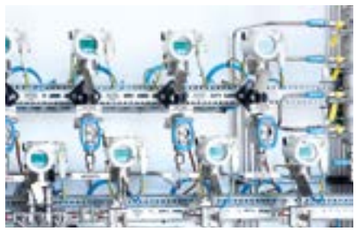


OPC UA
And not only for real-time data

OPC UA is much more than just a protocol – it's a framework to define and exchange standardized data with embedded end-to-end security.

Unlike most other SCADA/HMI software, eXLent #HMI not only supports OPC UA real-time data, but also aggregated data, historical data, methods and alarms and conditions.

What makest eXLent #HMI really special is that it supports all of these OPC UA features not only as an OPC UA client (to read information from field devices), but also as an OPC UA server for transmitting data to higher-level systems in distributed architectures.

This allows process data, alarm information and historical data to be transmitted to other systems (e.g. DCS, SCADA, Historian) without any programming.

Server and Client functionality

- **OPC UA Real-time data**
- **OPC UA Historical Access**
- **OPC UA Alarms & Conditions**
- **OPC UA Methods**
- **OPC UA Aggregates**
- **OPC UA Access Control**

Advanced alarm management
No more alarm duplication

Alarm management with shelving, suppression and deactivation functionality.

Automatic alarm suppression based on nestable alarm hierarchies.

Alarm information exchanged with other systems supporting the OPC UA Alarms & Conditions standard, enabling the operator to remotely view any eXLent #HMI alarm.

Applicable standard:

- ISA-18.2: Management of Alarm Systems for the Process Industries

Secure flow computer data storage
Single-source-of-truth

eXLent #HMI acquires and stores historical data archives from Flow-X flow computers in a secure way.

Communication with the flow computer is based on HTTPS and OPC UA, while data is stored in a secure format on an encrypted disc.

In case there is any doubt about a meter ticket for instance, eXLent #HMI can provide the original flow computer values without any doubt about their authenticity.

Any Flow-X archive can be stored in this way, not only measurement tickets but also meter proving results and as-found/as-left validation results for instance.

Flexible reporting
Based on XLSX templates

Report files can be generated automatically and on demand.

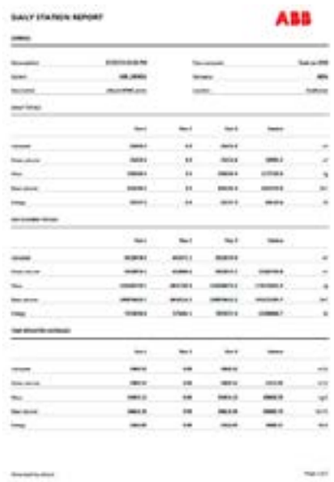
Reports are defined as a template in XLSX file format, enabling rich formatted layouts with headers and footers and graphics and charts where needed.

A single report template can be used multiple times, e.g. for different time frames or different stakeholders.

Reports files are generated in PDF and XLSX format and stored in the secure historical data repository.

Historical reports can be searched for, viewed, reprinted and emailed.

The application templates provide several standard reports, such as daily, monthly and batch reports, that can be freely modified and copied.



Engineering, services and support
Build, advice, assist and teach

Engineering services
eXLent #HMI is open software enabling system integrators to build their own application starting from one of our fully working templates. Engineering and consulting services can be provided on either a turnkey or project basis, including any application development.

Technical support
Technical support is provided by a dedicated support team with actual engineering and field experience and in close connnection with the R&D department for more complicated issues.

Training
In order to make users feel confident with our software, we provide both operator and engineering trainings that are tailored to your own specific needs and knowledge level in order to achieve optimum results.

Simple license model
There is no limitation on number of data points (tags) and system functionality. Licensing is based on concurrent connected data points (CCD) and number opf devices only.

Powerful IDE
Applications are engineered with HTML, CSS and JavaScript via object-oriented data structures including displays, alarms and scripts
Data can be automatically generated from OPC UA information models
Complete traceability and transparency can be obtained by the embedded version control feature.

Easy deployment
No client installation is required
The entire application resides in a single file
Changes can be transferred in XML format or via version control, and can be applied on live systems without a server restart.

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