SmartCen™
Smart centralized supervisory system

ABB

Measurement made easy

SmartCen™ provides accurate, secure and comprehensive measurement data that remains available for many years. Unlike many typical solutions, SmartCen™ not only automates the daily operations of flow metering systems but also the routine work of maintenance staff, metering engineers and ticket analysists. And it provides unique mismeasurement management with quick detection and accurate correction of measurement errors to minimize billing mistakes.

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Smart metering supervisory computer solutions

SmartCen™ is the uniform and company-wide metering supervisory solution resulting from the joint development of PETRONAS and ABB. The wealth pool of field experiences and challenges throughout the operating regions in conjunction with expertise on software development has shown to be an ideal combination in developing SmartCen™.

The highly sophisticated metering supervisory software includes modules for integrated validation software, virtual flow computing, online flow meter diagnostics, metering logbooks, asset management, web interfaces, and our patented mismeasurement management technology. The core of each SmartCen™ installation is our proven HMI software package eXLerate which is tailored to the oil and gas industry.

Using standardized look and feel, modules, and sequencing logic enables PETRONAS to efficiently manage all flow metering systems throughout their metering facilities. The modular approach allows for easy expansion at a later stage.

Benefits
- Real-time metering data, remotely accessible and quick response to metering issues
- Minimal human intervention during metering activities
- Centralized data, enabling proper analysis and diagnosis
- Certainty of immediate action upon mismeasurement
- Enhanced metering system reliability and integrity
- Standard application - No custom software required
- Real-time verification of flow computer computation & therefore a quick detection of abnormalities

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Meter Diagnostics display

Excellence in metering control
Key features

SmartCen™ is equipped with functionality for:
- Visualization, control, trending, diagnostics, troubleshooting
- A stable environment for 24/7, 365 days/year operation

Advanced metering alarm management
- Metering alarm prioritization & smart suppressing
- Intelligent alarm & event processing

Trending and diagnostics
- Online instrument performance trending
- Meter diagnostics including Ultrasonic & Coriolis meter.

Asset management
- Asset information supported via database
- For other purposes e.g. spare part ordering

Integrated validation software
- Integrated validation environment for all metering equipment including P, T, Density, GC, FC, OP, USM, TM etc.
- Visual status online & real-time validation sessions

System control for batching & continuous operations
- Batch loading operation, sampling system, proving sequence
- Continuous gas & liquid transfer operations

Online metering logbook & audit trail
- Operation & maintenance history with audit trail
- Operation logbook
- Sealing logbook

Integrated reporting
- Periodic report with multiple, flexible format, contract hours
- Capture data in flow computers & add custom calculations in reports
- Support for numerous different types & formats of reports

Web enabled
- Remote support for metering engineers
- Remote access for management purposes

Auto billing correction
- Recalculation in case of measurement issues based on corrected input variables

Integrated Virtual Flow Computers
- Online tracking and back-up calculation for flow computers

Tank, pipe- & sea line inventory management
- Track product movement for inventory & billing
- Calculate static measurement experience factor
- Generation of inventory and allocation reports

Mismeasurement management
- Determination of mismeasurement using logs, trending, alarms & other information sources
- Automatic calculation (theoretical) of mismeasurement utilizing Virtual Flow Computer
- Report generation incorporating recalculated figures

Meter factor Control Chart
- Monitor meter factor & generate k-factor chart

Mis-measurement Management
Automation intelligence

Flow measurement systems used for the custody transfer of oil and gas are designed to tolerate failing equipment without compromising the overall measurement accuracy. Spare meter runs and backup (redundant) equipment are highly efficient in avoiding measurement errors in case of a failing flow meter, transducer or flow computer. By promptly switching over to the spare equipment a measurement error is practically avoided. Hardware failures can be detected instantly and acted upon accordingly.

Other measurement issues ('mismeasurements') are less obvious to detect and are usually revealed only at calibration, maintenance, audit or mass balance, if detected at all. Where the discrete transfer of liquid products between tanks, ships, railcars and trucks allows for the comparison of the flow measurement system with level measurement systems, there is usually no second opinion for the measurement of continuous transfer through pipelines. Mismeasurements may not only have major financial impact, especially when left unnoticed for a longer period of time but also require expensive specialized personnel to analyze, quantify, document and correct the errors and to adjust prior accounting periods.

ABB has developed a methodology that automatically detects mismeasurement issues in real-time. The detection methods vary from basic consistency and discrepancy checks to sophisticated statistical algorithms. Furthermore the methodology includes a highly accurate and patented correction method based on API MPMS Chapters 21.1 and 21.2.

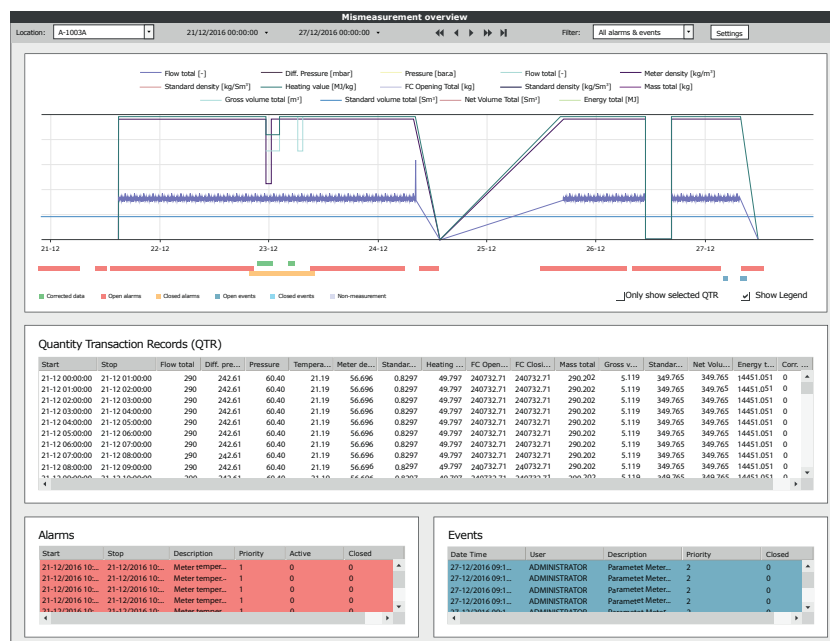Online quality control of custody measurement

Immediate detection of subtle measurement errors

Self-diagnostics on device & system level

Unique and most accurate correction method

Enables fully automatic billing corrections

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Mismeasurement
Management display

Service & support

Training, design & engineering
We provide a wide range of field services to support the end user with strategic cooperation, consultancy, application development support and training.

Service & support for specific projects and applications
We can offer required services to support system integrators and end users in the engineering, integration and implementation phase of their specific projects and applications. Our international partners in various countries actively assist our global technical support network, including on-site project activities.

Back-office & online services
With a 'your-problem-is-our-problem' approach, we extensively support end users internationally with our in-house expertise and experience.

Business partner activities
Working closely together with our end users, our support can be extended to sales oriented activities on behalf of our partners, such as presentations for end users, exhibitions, sales meetings, technical and bid clarification meetings as well as site surveys.

Custom development & implementation
With our team in Malaysia, we can handle the development of dedicated software applications, including design, implementation, test and after-sales support.

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