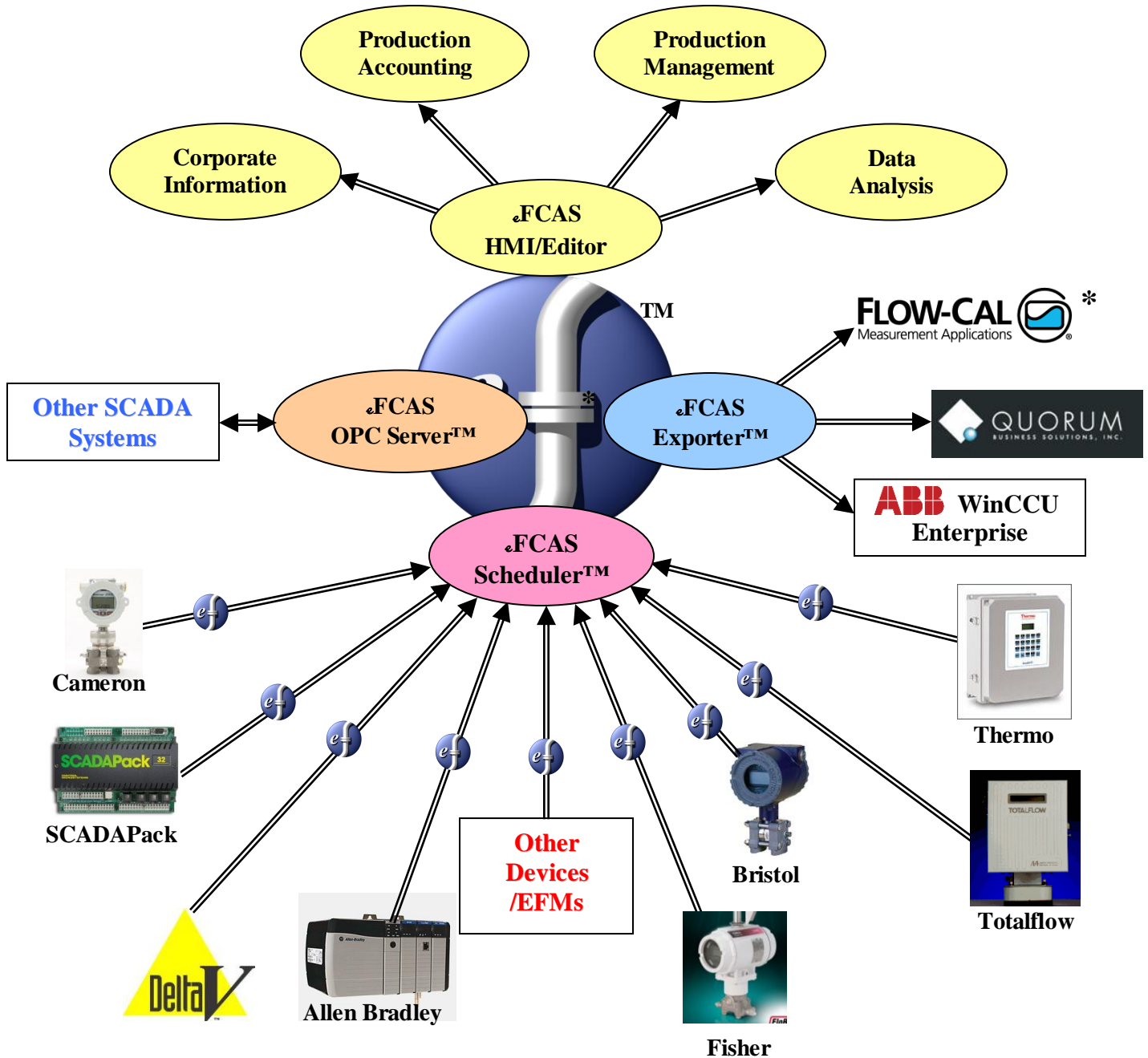


FCAS™

Production Management

EFM Data Management System

- Gathering
- Validation
- Auditing
- Alarming
- Trending
- Real-time History
- Editing
- Reporting
- Dissemination



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* Flow-Cal, Quorum, and ABB WinCCU, are Trademarks of their respective companies.



eFCAS™ Improves Corporate Bottom-line by:

- Automating EFM Historical and Real-time Data Collection,
- Automating EFM Data Validation,
- Automating EFM and Production Reports,
- Automating API 21.1/Directive 17 Compliance,
- Automating EFM Data-error Detection,
- Automating SCADA Collection of EFM Real-time Data,
- Automating Enterprise-wide Dissemination of EFM-related Information,
- Reducing System Integration Costs,
- Reducing Production Accounting Cycles,
- Reducing Prior Period Adjustments,
- Improving EFM Uptimes,
- Improving Employee Productivity,
- Improving Life-cycle of Small Quantity Brand/Model EFM Installed Base,
- Deploying Industry Leader in ROI for EFM Data Management Systems.

eFCAS Suite of Tools for Managing EFM Data:

- Gathering—eFCAS Scheduler™ and eFCAS Communication Drivers™,
- Validation and Editing—eFCAS Editor™,
- Auditing—eFCAS Secure Database™,
- Gas Composition—eFCAS Manage Composition Utility™,
- Reporting—eFCAS Reports™,
- Easy 3rd Party Integration of Real-time Data —eFCAS OPC Server™
- Exports to 3rd-party Validation Software—eFCAS Exporter™,
- Dissemination of EFM data enterprise-wide—eFCAS Editor™.

eFCAS Production Management:

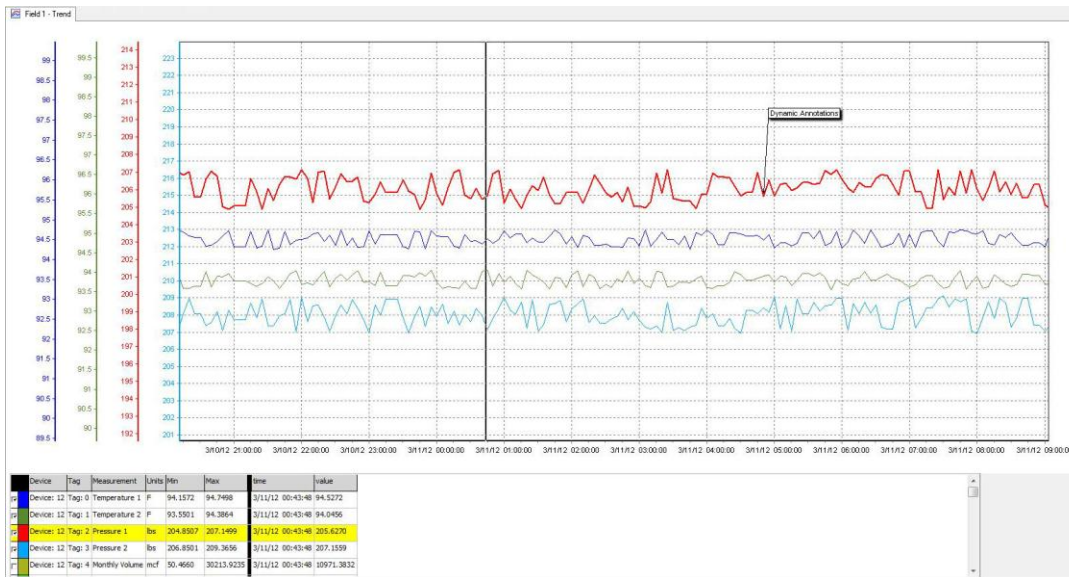
- Real-time Device and Tag/Point Configuration,
- Real-time Data History and Historian Functionality,
- Advanced Real-time Trending,
- Graphic Configuration and Control,
- Well Testing and Allocations,
- Alarm Summary Screens,
- Alarm Call-outs.

eFCAS HMI/Editor

eFCAS is a complete HMI handling both Measurement EFM Data and Real-time operations data with the eFCAS Secure Database comprising the heart of the system. EFM data is gathered automatically by the eFCAS scheduler, via the eFCAS protocol drivers, and is stored in the eFCAS Secure Database for use by the entire eFCAS System.

eFCAS Advanced Trending

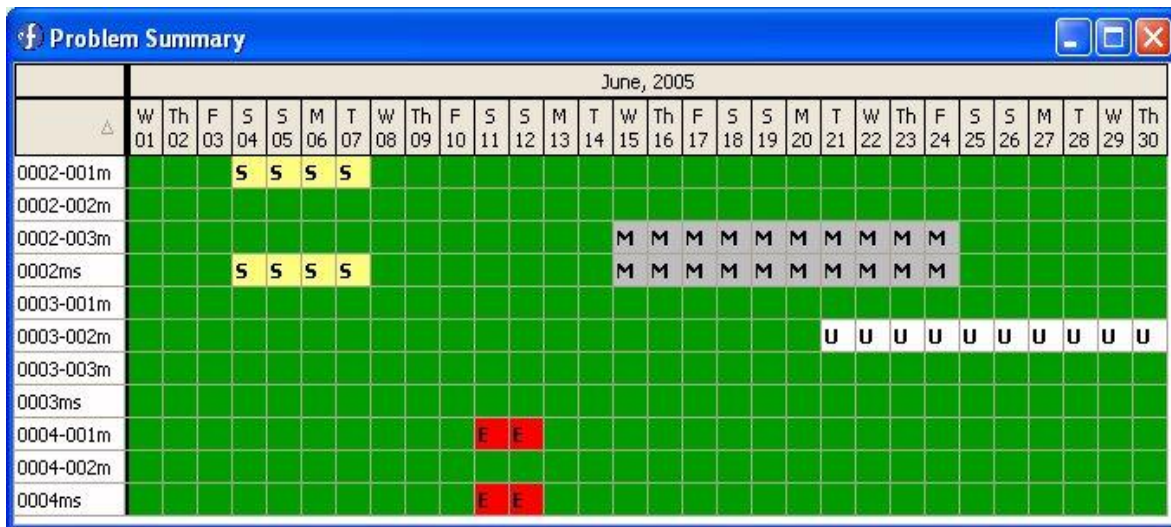
- Single & Multi-channel and Right-click Trending—Up to 10 y-axes,
- Turn on and off channels on-the-fly to easily visualize data,
- Exporting Trend Data—To CSV or Excel,
- Trend Curve Analysis and Anomalies,
- Annotate Real-time and automatically store it within the history database.



eFCAS Advanced Trending

EFM Data Editing and Recalculation

eFCAS presents all meters and meter stations in a tree view, giving one-click access to tabular and graphical views of edited EFM data and original EFM data. eFCAS securely stores original data—which cannot be edited—along with the edited data. All data editing is tracked in an audit trail, capturing user's name, time of, and reasons for, changes.



FCAS Data Problem Summary Screen

Rapid Identification of Suspect Data—Data Problem Summary Screen

The Data Problem Summary Screen provides a summary view of all EFM collected data, alerting users when eFCAS detects missing or questionable data. A single mouse-click presents the suspect data detail for evaluation.

Benefit to Operations and Production

The eFCAS Editor™ screens provide field personnel with:

- Rapid access to any meter or meter station from familiar Windows® Tree View,
- Rapid overview of field problems using Problem Summary Screen,
- Rapid EFM problem data identification and editing—tabular or graphical, and
- Rapid recognition of many EFM hardware problems,

all designed to reduce manpower requirements and reduce operating costs for the enterprise.



eFCAS Scheduler & eFCAS Communication Drivers

EFM data collection via **eFCAS Communication Drivers** is scheduled through an easy process of creating tasks, using the **eFCAS Scheduler** configuration screens.

eFCAS Communication Drivers, most written to use the native protocol of the device manufacturer, collect audit trail information automatically and then store the data in the **eFCAS Secure Database**.

Benefit to Operations and Production

The **eFCAS Scheduler** and **eFCAS Communication Drivers** provide field personnel with:

- **Rapid schedule configuration,**
- **Communications drivers fully integrated with the EFM Data Management System,**
- **Reduced driver cost—no third-party drivers to purchase or to integrate, and**
- **Fully automated data collection,**

all designed to reduce manpower requirements and reduce operating costs for the enterprise.

eFCAS Reports

The **eFCAS** advanced reporting system, which is built-in, uses “out-of-the-box” standard **eFCAS Reports**, or user-developed ad-hoc reports, which can be scheduled to run automatically, reducing reporting time and cost to the enterprise.

The screenshot shows a window titled 'Hourly Volume Report' with a toolbar and a table of data. The table has a blue header with the text 'Hourly Volume Report' and 'Major Oil Company Large Gas Field'. The table columns are: METER NAME, ENTRY TIME, VOL (MCF), DP (in H2O), SP (PSIG), TEMP (DegF), EXTENSION, FLOW TIME, ENERGY (MMBTU), GRAVITY, CO2, N2, ORIFICE DIAMETER, and PIPE DIAMETER. The data rows show various meter readings for the date 03.18.2006 at 10:00 am.

METER NAME	ENTRY TIME	VOL (MCF)	DP (in H2O)	SP (PSIG)	TEMP (DegF)	EXTENSION	FLOW TIME	ENERGY (MMBTU)	GRAVITY	CO2	N2	ORIFICE DIAMETER	PIPE DIAMETER
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	3.00	6.00
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	508.846	0.00	0.00	63.71	0.00	0.00	0.00	0.66	0.31	0.69	3.00	6.00
0001-002 Meter	03.18.2006 10:00 am	159.691	113.55	130.32	63.27	128.33	1.00	153.13	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	159.691	113.55	130.32	63.27	128.33	1.00	153.13	0.66	0.31	0.69	2.00	6.00
0001-002 Meter	03.18.2006 10:00 am	159.691	113.55	130.32	63.27	128.33	1.00	153.13	0.66	0.31	0.69	2.00	6.00

eFCAS OPC Server

The **eFCAS OPC Server** facilitates the connection from third-party SCADA systems, or any OPC client, to the **eFCAS Scheduler** and **eFCAS Communications Drivers**.

eFCAS Exporter

eFCAS is a complete EFM Data Management System with EFM validation capability built into the eFCAS Editor, and does not require any third-party validation software.



CPU LLC

Metairie: 504-456-7446

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Houston: 713-392-4277

www.cpullc.com

Fax: (504) 780-0454