

# AML Information Management

In the modern world, we are used to having all the information we want to see, available at the tip of our fingers. A technician knows that his work situation differs a lot from that.

It is all about the availability and quality of data and the tools to handle that information. This should be historical and actual data concerning process data, diagnostic data as well as maintenance data. Without the data available, you need to collect it manually. Costing you a lot of time which you could spend on real maintenance and improvements.

As technician, you want to move from problem solving, to problem identification and problem prevention.

## Goal of AML Information Management

The goal of AML Information Management is to provide users with an information platform of instruments in combination with easy to use tools to improve the quality and efficiency of processes and the connected instruments.

## Application Availability

A dedicated workstation for a specific tool limits the use of that tool and limits the availability of the data you require to efficiently execute your maintenance tasks.

AML is a web (cloud) based application, which means that the user can use all the tools provided in AML through a standard web browser.

All the tools are available for all users at the same time. Instead of the dedicated workstation, the user can use the tools from any device with a web browser (desktop, laptop, mobile device).

AML Mobile is a simplified version of AML Information Management, specially designed for the mobile phone. If you can access the application depends on the network architecture and rules as set by your company and your AML user account. For example, if the application is restricted to the plant, you cannot access the application from your holiday address.

Hint promotes the use of the application and does not want to limit a company to a certain amount of users or devices, therefore user licenses are not applicable. The basic annual support fee, which includes all licenses, is based on the amount of hardware on which the application is installed (servers) and the selected software modules.

## Data Availability

Within AML, a user can easily add instruments to the solution and add data points to an instrument.



As basic functionality, AML supports communication methods like Modbus TCP, OPC DA, and OPC UA. By use of these, the user can create a high level of interoperability between systems. You can gather data from instruments directly and from other systems like DCS, LIMS, CEMS, AMADAS, Data Historians and many more.

AML can act as OPC Server (OPC DA or OPC UA), providing the ability to share data to other systems. For specific functions, AML can push data to an instrument or other system, for example to request an operational state change to the DCS or give a validation start signal to an instrument.

## Advanced Diagnostics

For the maintenance of instruments, the (historical) diagnostic data is of high importance. The diagnostics can be used to interpret the health of an instrument and assist in finding causes of issues.

AML provides the ability to create new diagnostic data points based on existing data points (compare/calculate). Each data point can be used to create an event or alarm.

## Data Quality & Analytics

The quality of data is determined by a set of rules. One of the most well-known rules concerns the validation of an instrument. If your validation result is bad, your data cannot be trusted. An opinion on the quality of data should not depend on only one rule. As more rules are added, you provide more proof on the trustworthiness of your data. AML provides a set of quality rules based on analytical performance and operational state, among others. In addition, the user can add their own quality rules based on diagnostic data. The data quality quantifier is one of the basic diagnostics added to an instrument within AML and can be combined with events and alarms.

Data rules can be set for:

- Data integrity
- Data redundancy
- Data repeatability
- Data reproducibility
- Data consistency
- Data uncertainty
- Data history
- Data transparency
- Data traceability

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## Analytical Performance

Analyzer performance is monitored, validated and controlled by statistical process control (SPC) methods. Validation is the process of confirming actual analyzer performance against traceable and accepted standards and is a non-corrective metrological procedure.

To accomplish this AML uses control charts to determine whether the measurement is in a state of statistical process control.

The control chart is evaluated through decision rules that help to detect special cause variation in validation data.

Next to that there are statistical significance tests which are used on the historical chart to determine if the long-term performance contains erroneous data (e.g. caused by defective equipment) and if that data should be excluded from the data set.

## Key Performance Indicators (KPI's)

Real-time, time rated performance indicators can be set for instruments. These KPI's can be viewed on instrument level and any level above (unit, plant, etc.), providing an indicator for the performance of the whole plant.

AML provides a standard set of KPI's, based on the operational state of an instrument, like Mean Time Between Failure (MTBF) and Breakdown rate. KPI's can also be created and added by the user based on other data like maintenance data and validation data.

## AML Applications

### AML IO

- Data acquisition
- Data historian (Sensor diagnostics, validation & calibration history, process data)
- Interfaces to DCS, plant data historians, CEMS, Sensors (analyzers, detectors, etc.)
- Handshake DCS and analyzers (bidirectional)

### AML Control (& Initiation)

- Initiate validations and share Statistical Process Control results
- Schedule and log maintenance activities (Planned and condition-based maintenance)
- Interfaces to Historians (LIMS)

AML Control & Initiation is connected to AML IO for data gathering, control & initiation.



## AML Enterprise

- View
- Analytics
- Reports
- Interfaces to corporate systems (data historian, Hydrocarbon accounting, document management, plant maintenance)

AML Enterprise is an application which can be used on corporate/enterprise level. The data is a replication of the AML Control layer in the application.

## Scalability

AML can be used in the range from 1 till thousands of instruments. Multiple AML IO applications can be connected to AML Control.

AML Enterprise can be connected to multiple AML Control applications, thus building a very flexible and expandable tree structure. Instruments and applications can be added on the fly, without the need for a shut down.

## Maintainability

As AML is a web application, only the servers or virtual machines on which the solution is installed require maintenance. There is no maintenance of the application on client side and updates (with enhancements) will be available for the user as soon as the server is updated.

## Maintenance Management

Maintenance tasks can be created, scheduled, planned and monitored in AML. Maintenance tasks can also be automatically generated based on the condition of the instrument.

## AML Features:

- Analyzer management
- (Virtual) Metering
- Loading control
- Emission monitoring
- Laboratory management
- Laboratory & Plant design
- 3D visualization
- Sensor Data Quality
- Integrated data store
- Allocation
- Process safety
- Fire & Gas

## Integration / Interoperability benefits:

- Cost saving
- Reduction in maintenance
- Reduction in redundant data capture
- Integrated data store
- Reduction in hardware
- Reduction in yearly costs
- One focal point for support
- Cyber security management
- Reduced implementation risk
- Faster implementation
- Pre designed application cooperation

## Integrated Data Store benefits:

- Data accessibility
- Data availability
- Data reliability
- Extensive reporting options
- Broader comparison options
- Central quality labeling
- Data shared on corporate level
- Advanced analysis
- Cross discipline information sharing

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