

## Real-time AML Information Management



### Introduction

Everyone in our Industry is talking about Digitalization and Digital transformation, industry 4.0, IoT, digitalization, digital transformation, integrating, big data, interoperability, data analytics, artificial intelligence, and machine learning.

But all of this starts with reliable measurements, working safer, reduce cost and work more efficient. We are buying for decades smart sensors, but we do not use the diagnostics and do not combine these data with historical validation data, maintenance/engineering data and real time process data.

### Data Quality

It is not just about the process data. The issue with data quality is looking to all data of the entire evacuation system including all measurements/devices, its usage, its value and all historical maintenance, diagnostic, calibration, and validation data.

In today's highly competitive landscape, to keep your company financially healthy and accountable you want to:

- have a transparent system
  - deliver the exact numbers, with the right quality, without altering the data
- optimize the system by integrating the different silo's
- reducing errors
- work closer to operation limits, while keeping it safe
- have traceability of your data

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Easier said than done. The desire to fix the problem is often ignored due to the expectation of extremely high costs, effort and required time.

Currently operators only use data validity as a check, is the process reading within the expected range of 50 bar but measuring 60 bar.

We have found that other parameters are missing and should be added to the current real-time data analysis to get better results:

- Data integrity: the rate of change of the process measurement, measuring 60 bar and it is changing within 20 sec from 60 bar to 50 bar
- Data redundancy: two process measurement from the same parameter, two pressure transmitters measuring 60 bar.
- Data consistency: a holistic view using different pieces of information about the system to verify the quality of the measurement, your flow is going from low to high pressure.
- Diagnostic real-time data: telling you the current health status of the meter, do I still have flow in my analyzer?
- Real-time uncertainty data: total and calibration uncertainty, recalibration when outside the uncertainty limits.
- Historical data: measurement data history, uncertainty data history, diagnostic data history, validation data history, maintenance data history, operational state history, sample analysis data history
- Maintenance data: telling you about historical maintenance data like calibration, validation, verification, sample & calibration frequencies, manufacturer requirements and device/sensor failures.

## Customer Challenges

We recently executed a survey with end users and plant owners about the challenges and opportunities in our Industry. What we discovered that some of them are facing the same pain points with their installed base:

- Sensors cannot be replaced easily from manufacturer A by manufacturer B because it is propriety and the data are not exchangeable and is not always the same.
- During the replacement of devices/sensors, we have to re-wire the complete cabling because it is not compatible, standardized or needs other connections than the existing equipment.
- Distributed Control system (DCS) upgrades is not easy in some of the cases they must rewrite the software because older versions are not compatible with the latest platforms.
- The I/O hardware of these DCS is not able to configure smart data out of these devices/sensors

The questions here is would you accept today that your iPhone is not able to exchange data with another smartphone? or that you want to replace a light in your home, and you have to re-wire the complete cabling? or you want to upgrade your computer and you must rewrite all software application? Why are we accepting this in our industry?

The survey gives us other insights on answers we received on the questions like:

- What keeps operators and plant owners awake in the night? Being flogged for cost
- Where are they afraid of? Safety/Environmental events and loss of production
- What are they Angry about? Why is not simpler





# Real-time AML Information Management

AML provides:

- Data acquisition/storage
- Health status monitoring
- Condition based maintenance and decision making
- Fault recognition and alerting
- Key performance indicators
- Data analytics
- User defined reports
- Data history analysis
- Artificial intelligence

AML is:

- Easy to use
- Cheap
- Reliable
- User configurable
- Scalable
- Quick to implement
- Interoperable
- Cyber secured
- Based on standards

## Value proposition

AML helps the technicians and engineers to automate and optimize the workflows, improve trust in the devices and save maintenance costs through data driven decision making.

AML 4.1 Information Management system exist out of different modules:

1. Analyzer Management (AMADAS).
2. Continuous Emission Monitoring System (CEMS)
3. Vibration monitoring devices
4. Fire and Gas
5. Turbine inlet cooling energy savings and optimization
6. Virtual Metering, Metrology and Flow Measurements for Energy, Gas & Liquid (Virtual Metering)
7. Product Allocation and Hydrocarbon accounting information Management & Maintenance
8. Process safety Information Management and Maintenance System

New features are:

- Modular structure, making functionality additions and integration / interoperability with other systems (CEMS, LIMS, DCS, Plant Maintenance, Data historians) much simpler
- 60% reduction in implementation, start-up and maintenance time by reducing the number of services hours/days
- Works every I/O device

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- Easier to implement additional functionality requested by customers.
- Completely customer configurable, allowing the end user to add or modify new equipment from the web interface, without external help.
- (User defined) customized reports
- Sensor brand, hardware, and technology independent
- Incorporation of the newest cyber security standards (AML did not have any security breach since the founding)
- Ability to provide a corporate (private) cloud solution, covering multiple plants and sensors

## Lessons learned

Based on experience, Hint has noticed that the end customer needs a single focal point within their organization to take responsibility of the application. The users need to be trained in a phased implementation. First, they need to learn and understand how to acquire validation data and operational states. In phase two the users can use data analytics to plan which equipment need more attention. In phase three the experience is used to prevent problems through artificial intelligence.



## Here is my question to you

Would you be interested to test our new generation software AML 4.2 (cloud) platform which can show you the proof of evidence that your measurements/devices in the field are trustful, that it is much simpler to implement and in use it than ever before, against lower cost and at lower risk?

**What are the benefits for you:** If we can show you the evidence that your sensor and systems are trustful, we will reduce the company risk which results in lower insurance, maintenance - and service rates?

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### What is the incentive for you as plant owner to collaborate with us?

The incentive for you is that our solution can easily be implemented in existing- and new plants. That the trial will proof you the evidence that real-time data coming from your measurements is trustful, traceable and that our system can work with your existing sensors, equipment, and systems without replacing them.

We will share the knowledge and experience of other trials with you. The benefits here is that it becomes an industry standard and not a propriety solution.

### What is your investment

We offer you our software platform at no investment, you are only paying for our labor during the implementation for the proof of concept. We ask you to allow us to demonstrate your use case at our user conference and seminars

Contact: Wout Last

President - Hint

Internet: [www.hint-global.com](http://www.hint-global.com)

Email: [wlast@hint-global.com](mailto:wlast@hint-global.com)

Cell. +1 832 762 1908 or +31 6 53314828

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