



System 800xA Asset Optimization, with ABB's DMS (Device Management System) provides an integrated device management solution for calibration of HART® or conventional 4-20 mA devices. DMS Calibration Integration along with ABB's DMS software and MFT HART Calibrator / Communicator can reduce device lifecycle management costs significantly through precise calibration and secure electronic documentation. This data sheet discusses the functionality associated with DMS Calibration Integration.

DMS Calibration Integration brings a calibration solution to the operator environment to give a single window interface for multiple systems. It manages data exchange between DMS, the calibration management environment and System 800xA for items such as alarms, synchronization of topology, device instances and device specific parameters needed for calibration procedures in DMS. This means that any device engineered in the 800xA system will be automatically added to (or deleted from) the DMS.

The calibration workflow is further reduced through the elimination of paperwork. Calibration records are generated by the handheld Calibrator and stored in the database. All actions are audit trailed.

800xA's DMS Calibration Integration includes a DMS Division aspect, a DMS aspect, DMS Asset Monitor aspect and a Parameter Mapping aspect.

#### **DMS Division Aspect**

DMS hierarchically groups related devices through a DMS Division. A DMS Division can be as small as a single device or as large as the entire enterprise. DMS Calibration Integration allows for the easy, one time mapping of one or more of these DMS Divisions into 800xA Object Structures. Typically, one DMS Division is mapped to an 800xA Object representing the Control Network in the Control Structure. When the DMS Division aspect is created in System 800xA, it automatically connects to a corresponding DMS Division in the DMS system.

#### **DMS aspect**

Each device belonging to the DMS Division is represented by one DMS aspect. The DMS aspect allows device specific DMS Calibration information to be viewed from any System 800xA workplace.

#### **DMS asset monitor aspect**

When the DMS determines that calibrations are due, the DMS Asset Monitor provides System 800xA users with notification. It displays the current status of actions taken, such as unscheduled, scheduled, work in progress, etc.

#### **Parameter mapping aspect**

Device configuration is performed and the data stored using System 800xA's Fieldbus Management tools. Some device configuration data is also required by the DMS system to perform calibrations. Parameter Mapping makes the information available in the DMS.

## Calibration work-flow example

800xA Asset Optimization's DMS Calibration Integration allows plant personnel to access field device calibration information through the 800xA workplace and streamline the calibration workflow. Provided below is a typical example of how this integration, using the described aspects, simplifies the calibration process.

This workflow follows the interaction between two maintenance roles: Supervisor and Maintenance Technician.

1. Based on a calibration schedule, ABB's DMS system identifies a device requiring calibration or is overdue for calibration and generates an alarm.
2. The supervisor is notified via the DMS asset monitor and Process Portal alarm and events. If the supervisor is not near a workstation, the DMS asset monitor notification is delivered via mobile telephone, e-mail account or pager by 800xA's SMS (Short Messaging Service) and e-mail messaging service.
3. Once at any available 800xA workplace, the supervisor logs in, reviews the alarm page, and accesses the device's DMS asset monitor aspect or the Asset Reporter aspect. These aspects show the device's "Calibration Due" or "Overdue" condition. The supervisor then right-clicks on the Calibration State condition and selects Fault Report Submitter from the context menu (Figure 1).
4. The Fault Report Submitter is used to electronically generate a work request to the plant's Computerized Maintenance Management System (CMMS) and in turn added to the DMS Action List. If the plant does not have a CMMS, the fault report can be submitted directly to DMS.
5. When the Fault Report is submitted, a Work Order is automatically created in the CMMS. The CMMS Work Order number will also be available in the DMS (Figure 2).
6. The supervisor processes the Work Order and can assign a maintenance technician in the same step. At any time, a summary of Active Work Orders for a particular device can be viewed directly from a System 800xA workplace.

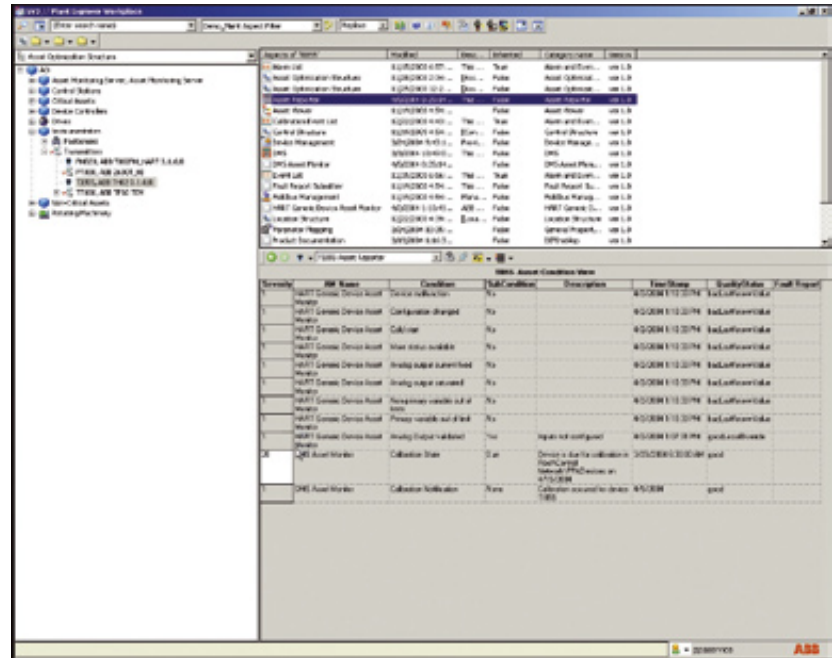


Figure 1. Asset Reporter showing calibration conditions

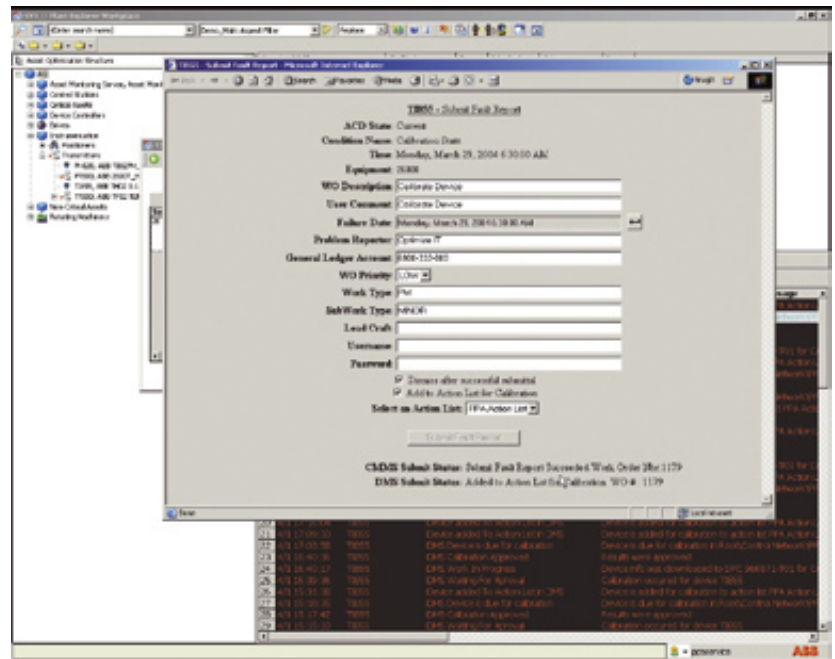


Figure 2. Submit Fault Report to CMMS/DMS

7. At this point, a maintenance technician is dispatched to execute the Work Order. Using the hand held HART calibrator / communicator, in-place calibration is possible. The handheld steps the technician through the entire calibration and documents “as found” and “as left” calibration results. These results are stored and available for upload to the system (Figure 3).

8. Before performing calibration in the field, the maintenance technician downloads the calibration procedures from the Action List on any 800xA workplace to the handheld. This will generate a “DMS Work in Progress” event in the 800xA system.

9. With procedures in hand, the technician goes to the field and calibrates the device.

10. Once calibration is complete, the maintenance technician returns to any 800xA Workplace and uploads the results from the handheld to the system. At this point, a “DMS Waiting for Approval” event is generated in System 800xA’s audit trail and event system.

11. From any System 800xA workplace, the supervisor can review and approve the calibration. Selecting the calibration specific audit trail in the DMS aspect, the supervisor can review all actions that have taken place. A detailed review of results can be opened from the audit trail (Figure 4).

12. If the Supervisor approves the calibration:
- The calibration alarm is cleared
  - A “DMS Calibration Approved” event is generated in System 800xA
  - The device’s DMS Asset Monitor and Asset Reporter aspects show the calibration state to be “Good”
  - The CMMS Work Order can be closed

The preceding example demonstrates how 800xA’s DMS Calibration Integration significantly reduces device lifecycle management costs through precise calibration, configuration and secure electronic documentation. The ability to track, schedule, and document calibrations in a streamlined manner enables better utilization of resources, timely execution of calibration procedures and compliance to regulatory or quality standards. In addition, by supporting in place calibrations in the field, expensive removal and replacement of field devices for the sole purpose of calibration can be avoided, further reducing the cost of maintenance.

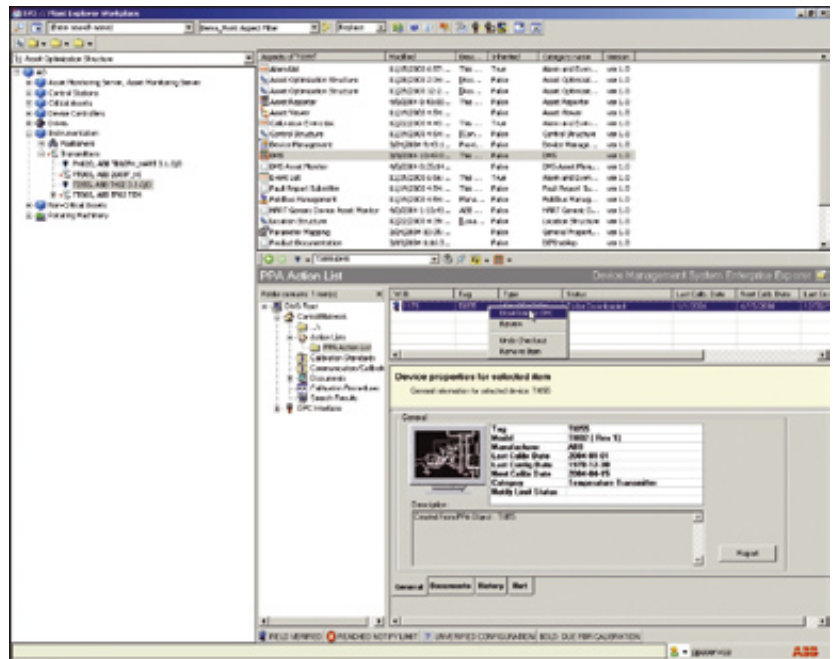


Figure 3. DMS Aspect

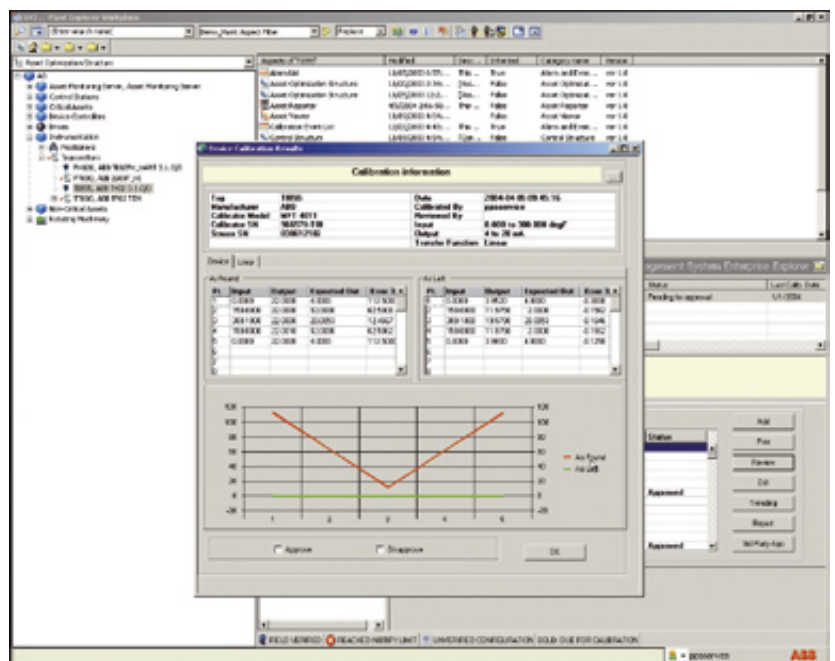


Figure 4. Detailed Review of Field Calibration Results

## Additional DMS Calibration Integration System Requirements

DMS Calibration Integration requires ABB's Device Management System (DMS) software and calibration hardware.

### Additional DMS Calibration Integration System Requirements

800xA System Requirements	DMS Requirements
800xA SV 5.0 800xA SV 4.1 800xA SV 4.0 800xA SV 3.1, SV 3.1 SP1, SV 3.1 SP2	DMS System Software Version 2.6 DMS System Software Version 2.2 DMS System Software Version 2.0 DMS System Software Version 2.0

Table 1. DMS requirements

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