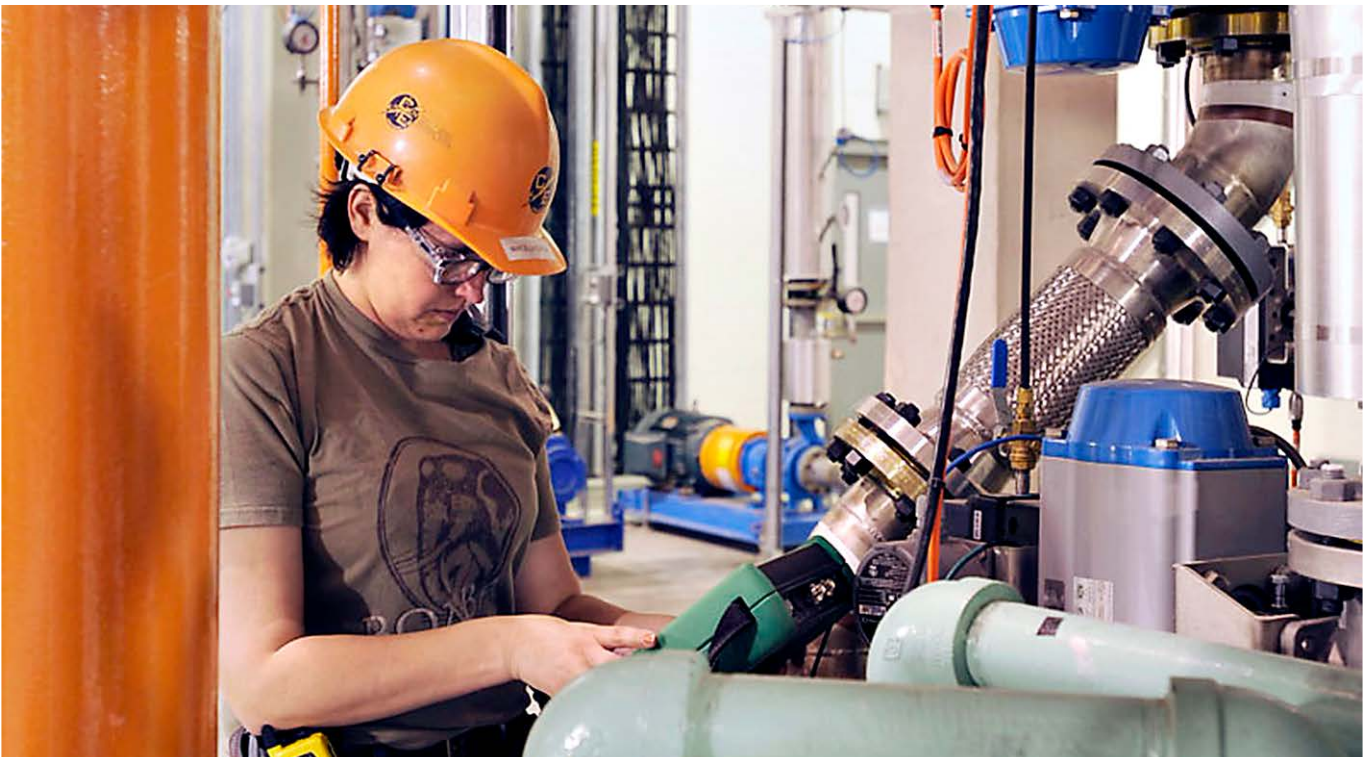


# Calibration process for a massive PROFIBUS PA installation at BASF



**CH2M Hill, US**

BEAMEX  
CASE  
STORY

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**beamex**  
WORLD-CLASS CALIBRATION SOLUTIONS™

**B**ASF, a German-based chemical maker, began construction on a new resins plant in the beginning of 2008. Located in Wyandotte, Michigan, US, the facility was created to produce the Joncryl product range. Joncryl is the trade name for several hundred different polymers that are used in the coatings industry.

BASF selected CH2M Hill as their agency to engineer, procure, and manage the project. At the time of construction, it was the largest PROFIBUS PA installation in North America. Today this plant contains over 3,300 PROFIBUS PA devices on over 250 segments. Over 200,000 tons per annum of polymers, oligomers, and resin cuts, are produced and primarily supply to the printing industry.

Jim Garrison, a CH2M Hill I&C Engineer, played a major role in organizing and creating the calibration process for the plant. When CH2M Hill began designing the calibration and commissioning program, two primary considerations guided their decision. The first was the need for a device that was separate from the distributed control system (DCS), to enable proper monitoring of the PA segments. Jim had to ensure the instruments were wired in accordance with the segment drawing. This was important for several reasons, with the primary reason being the ability to allow verification of segment accuracy before the DCS system was on site. The second capability that molded their decision was the need for a device with the functionality to set or modify an instrument's PA address in the field without needing a laptop and an external power supply.

## Robust functionality results in major time savings

Jim and his team conducted a thorough search for a device which could perform key tasks.

“The only one on the market we found capable of the desired functionality was the Beamex MC5 multifunction calibrator with PROFIBUS PA communication,” Jim says.

Although, he was confident in the MC5's ability to function properly, to be absolutely certain, he contacted Beamex. Ned Espy, Technical Director at Beamex Inc., came to CH2M Hill with a unit.

Together, they were able to test and confirm that the CH2M Hill testing concept would work. The concept developed for testing each segment is the following:

1. The installation electricians would install, wire, and perform continuity checks for all required wiring, hardware, and instrumentation for a segment including termination of the home run cables to the PA Couplers.

2. After installation was complete the checkout team would, segment by segment, connect one home run cable to the 24VDC fieldbus compatible power supply in the cabinet and connect the other home run cable to the MC5's PROFIBUS modem.

3. The checkout team (composed of 2-3 people in radio contact) would split up with one person remaining at the panel with the MC5 and the segment drawing and the others in the field. The person with the MC5 would generate a “live list” and verify that the PA addresses of all devices listed on the segment drawing appeared in the list.

4. The member in the field would disconnect the PA cable from an instrument on the segment. The member at the MC5 would verify that the address that disappeared from the “live list” matched the address of the instrument that was disconnected in accordance with the segment drawing. The removed device would then be reconnected and the team would proceed to the next instrument.

5. Once the segment had been verified, the home run cables were reconnected to their PA couplers.

This process was done prior to complete loop checks with the

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**Marcella Dupuis, Project Engineer, uses an MC5 to calibrate one of 3,300 PROFIBUS PA devices.**



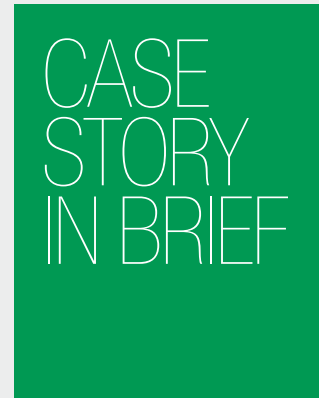
# CH2M Hill, US

## DESCRIPTION

- Beamex MC5 multifunction calibrator with PROFIBUS PA communication option

## MAIN BENEFITS

- Robust functionality
- Major time savings
- Versatility
- Ease of use



“ I WOULD ESTIMATE THE SAVINGS IN TROUBLESHOOTING TIME AND GAIN IN LOOP CHECK EFFICIENCY TO BE ON THE ORDER OF SEVERAL MAN-WEEKS.

DCS being conducted to ensure all devices were addressed correctly and connected to the correct segment. While this may seem duplicative, since a full DCS to device loop check verified much of the same information, they found that it made the full loop checks much faster and troubleshooting much easier since they already verified device addressing and the accuracy and integrity of the wiring from the coupler to the field device.

“I would estimate the savings in troubleshooting time and gain in loop check efficiency to be on the order of several man-weeks,” Jim states.

During instances when they needed to move a device from one segment to another, the MC5 was also utilized. When this occurred, it frequently required the technician to change the address of the instrument, to avoid addressing conflicts with devices on the new segment. Since the MC5 can also provide power to an instrument, they were able to simply disconnect the instrument from the field distribution box and connect the MC5 to the device's spur cable. Then, communication with the device and modification of the address from an easily accessible location prior to connecting the device to the new segment was completed. The cost and effort savings from this capability was substantial as well.

All in all, CH2M Hill utilized the Beamex MC5 to save money and time, and increase efficiency for the largest installation of PROFIBUS in North America.

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