

Mi-Forms Eliminates Paper Forms Inefficiencies at Cataler North America

Background

Cataler North America (CNA), a subsidiary of Toyota Motor Corporation, is a leading manufacturer of automotive catalysts used in catalytic converters. CNA processes ceramic substrates to prepare the catalysts, a process which includes the application of various finishing materials. The proper application of these materials is of the utmost importance to their production process.

The Powder operation is extremely critical to effective and quality production at CNA. Important data collection processes are required at every stage of production.

Assistant IT Manager Chris Painter and Systems Administrator Charles “Chuck” Watkins saw serious inefficiencies in collection and analysis of this critical data, collected via paper check sheet forms that were used to verify the correct concentrations of the slurry. They chose Mi-Co’s Mi-Forms electronic forms solution to improve their data collection and analysis process because they felt that Mi-Co had a proven track record, having successfully implemented mobile data collection solutions in a variety of industries. CNA also felt that Mi-Forms was the only technology that could give their lab personnel the real-time interactive access to forms data that is needed across different departments in the company.

Previous Process

Watkins, the subject matter expert on Mi-Forms at CNA, explains that before the implementation of Mi-Forms on Tablet PCs, the powder check sheet form process was performed with pen and paper, spread out across multiple documents, and accessed by multiple departments. Quality Lab personnel would receive samples from the powder department and perform associated tests. The lab personnel had to complete the tests due to the complexity of the forms being used and the formulas for the calculation of the correct slurry. Once the forms were completed, they were taken to the Lab Supervisor for review and approval. Results and samples were then issued back to the powder department and adjustments were made accordingly. These steps created a serious bottleneck in their operations, which were further slowed down by departmental communication and mismatched shifts.

In addition, any time a powder specification changed, a paper form change was required along with the associated document control processes, which occasionally led to erroneous check sheets in the powder department. Finally, check sheets would simply get lost periodically due to the manual nature of the process. This process was highly inefficient and unable to support the complex coordination required between multiple departments to successfully create needed products in a timely manner. Watkins notes, “Before Mi-Forms and electronic data at the point of inspection, errors were much more likely to occur in the process. Our manual process was inhibiting our production capability, greatly reducing our efficiency and effectiveness.”

Painter and Watkins became familiar with the Mi-Forms design tools and architecture and used the Mi-Forms tools to construct electronic versions of the powder check sheets and incorporate the needed workflows. After a period of testing and development, CNA began to fully implement the Mi-Forms into its powder development process, outfitting many of its personnel with Tablet PCs and wirelessly connecting the entire process.



Current Process and Benefits

Today, the process at CNA is much more efficient than in the old days of pen and paper. Watkins and the CNA staff have now compressed the powder check sheets into one easy-to-use Mi-Forms e-form. One Mi-Forms e-form replaced approximately 20 paper forms since each powder part number had its own form in the previous process. Part numbers and associated data specifications are pulled from a backend SQL Server. Data is entered via handwriting recognition on a Tablet PC, thus allowing the user procedure to remain relatively unchanged and minimize the need for retraining. Mi-Forms' flexible and powerful form Designer allows CNA to change specifications without having to re-design the entire form. Also, because the form is easy to use, responsibility for the powder testing has shifted to the powder department, removing the original bottleneck. Mi-Forms' natural, comfortable, yet powerful mobile interface removed the need for highly trained lab technicians to perform the test, and also reduced the need for additional technical headcount. Furthermore, the check sheet sessions are now stored server-side, so check sheets cannot be lost when switching between departments. This also improves document control; there is almost no chance that an obsolete form with incorrect specifications will be used for a test.

In addition, all calculations are performed automatically by user-developed VBScripts embedded in the forms, removing the possibility of arithmetic errors from the powder personnel. In addition, Mi-Forms integrated real-time data validation ensures that the forms are completed properly before being submitted to the server. Mi-Forms powerful feature set also allows the user to further constrain input data, improving data accuracy. Test results are given to the user visually to allow for quick determination of product status. Also, adjustments are now given automatically based on target amounts pulled from SQL Server, without the need for further analysis that would impede the efficiency of the process.

Further improving efficiency and effectiveness, the Mi-Forms Server workflow capability allows the Lab Supervisor to approve forms quickly and remotely, creating a much more streamlined process and saving time for both the production and quality departments. This critical analysis data is pushed back into the SQL Server as well as the Mi-Forms Server, which allows quick custom reporting on the result sets. A complete copy of the form with the original ink marks is also stored on a file server in PDF format as well, creating an "electronic file cabinet".

Watkins confirms that since the product's deployment, CNA has seen excellent ROI by replacing manual inspection processes with Mi-Forms. With their collection processes automated, bottlenecks and errors have been eliminated. Furthermore, response time to errors has been drastically decreased since remote and automatic updates keep personnel from losing time waiting on confirmations from supervisors. Because the initial powder department and quality lab implementation was such a success, CNA has been rolling out Mi-Forms to additional areas of CNA's operations including other internal operations groups and the paper-intensive processes in the HR department.

Summarizes Watkins, "Mi-Forms has proven to be an effective Kaizen within our facility."

Kaizen ([改善](#), [Japanese](#) for "improvement") is a Japanese philosophy that focuses on continuous improvement throughout all aspects of life. When applied to the workplace, Kaizen activities continually improve all functions of a business, from manufacturing to management and from the CEO to the assembly line workers.^[1] By improving standardized activities and processes, Kaizen aims to eliminate waste (see [Lean manufacturing](#)). Kaizen was first implemented in several Japanese businesses during the country's recovery after World War II, including Toyota, and has since spread to businesses throughout the world.^[2] [From Wikipedia, the free encyclopedia](#)

Mi-Co

Mi-Co, developer of Mi-Forms E-Forms for mobile field and site inspection, provides digital writing software to increase the efficiency and effectiveness of the entire process of capturing and using data. Mi-Co's end-to-end enterprise Mi-Forms Software System enables flexible forms design and the capture, handwriting verification, and communication of forms based data for enterprise users. Mi-Forms supports enterprise data capture using the Tablet PC, the Digital Pen, Pocket PC, and signature capture devices. Mi-Co is headquartered in Research Triangle Park, North Carolina. For more information on Mi-Co, please visit www.mi-corporation.com

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