

Detroit Incorporates ProVIEW™ as Build Book Solution



Customer Background

Detroit, a subsidiary of Daimler Trucks North America (itself a subsidiary of Daimler AG), manufactures heavy-duty commercial truck engines and chassis components for customers such as Freightliner and Western Star. The Detroit, Michigan based company has produced over 5 million engines since its inception in 1938. Out of their three million square foot manufacturing plant, Detroit produces a new engine every 2.5 minutes with a total plan of about 55,000 engines per year in the current build out.

Decades after the introduction of KANBAN to manufacturing plants, paper build books and instructions remain the standard practice on the production floor. Build books progress with a product through the production line providing work instructions to operators at each station. Detroit's engine manufacturing plant uses approximately 500 build books each day, printed offsite on a 48-hour lead time, with each book ranging from 45–60 pages. Sequencing is generally poor as there can be daily changes to the build requests, forcing operators to search for out-of-sequence build books. The books are time-consuming and costly to create and print, and worse, they greatly limit the ability to make real-time production updates.

Forward-thinking and environmentally-conscious companies like Detroit desire to be nimbler and employ diversified manufacturing lines that can handle a variety of product types in order to realize greater production efficiencies. Detroit realized that by phasing out paperwork instructions they could both achieve environmental goals and improve operations processes.

The Challenge

The challenge was to implement a system to monitor the movement of engines on the manufacturing floor and provide a dynamic replacement of the build instructions. Detroit manufactures four engine models that differ based on fuel economy, horsepower, and torque to meet the varied needs of their customers. Each engine is built on the same base design, then customized to achieve its final model. For this reason, Detroit needed to create a more flexible manufacturing process to enable all models to be built on the same line thus requiring the build book replacement to be customizable and dynamic.

Additionally, the chosen solution would have to work within the existing plant floor layout. Detroit can have upward of 90 Automated Guide Vehicles (AGVs) moving through production with each carrying a different type of engine, so it is imperative that the build book replacement be able to associate each AGV with the specific type of engine it is carrying.



The Solution



The solution chosen by Detroit was a logical one:

Omni-ID's ProVIEW™ System featuring the View 10 tag, the industry's only e-paper build

book replacement. The revolutionary View 10 is a 10-inch (25.4 cm) visual tag with an electrophoretic display protected by a rugged exterior that can provide both text instructions as well as graphics. The View 10 combines advanced RFID, infrared and WiFi communications technologies to drive real-time intelligence to operators.

Omni-ID's operations team worked closely with the Detroit team, conducting site visits to understand software, hardware and process limitations and to uncover improvement opportunities. Tests were executed to determine the strength of the wireless network so that the tags could communicate their location, receive instructions and communicate with existing production software.

View 10 tags are placed in the existing paper build book pockets on the AGVs and sit silent until they reach a designated station along the line where they receive the associated build book, based on the type of engine on that particular AGV. This enables Detroit to build multiple engine types, with multiple options and customizations, all along the same manufacturing line.

As the engine progresses from station to station (as many as 55–60 stations of assembly!) the work instructions are automatically advanced on the screen of the View 10. To ensure real-time accuracy, Omni-ID's ProVIEW software queries the Detroit system every 15 minutes to determine if a new build book has been uploaded. A major benefit of the View 10 is that real-time instruction updates can be made and communicated to the line — an impossibility with paper instructions.

Additionally, ProVIEW provides a complete end-to-end process view, providing location tracking and reporting capability through every step of the build. When the engine build is complete, the instructions are deleted from the View 10 and it is ready to be redeployed and receive its next assignment. No waiting for the next batch of printed build books to arrive, the process can begin again in seconds.

"We've been able to improve efficiencies, reduce material handling costs and it's just as big a help sometimes to find the areas where you are lacking or deficient at, and this is allowing us to capture data real-time."

— Robert Hyden, IT Program Manager, Detroit

The Results

There is no other product like Omni-ID's ProVIEW System on the market today. With its value as a productivity tool and an environmental asset, the View 10 is the technological evolution of the paper KANBAN system. Production benefits include:

- Complete process visibility on the production floor
- Plugs into existing production environment for seamless transition from paper
- Uptime improvements on production line
- Eliminates re-work due to replacement pages not making it to production line on timely basis
- Re-purpose of staff responsible for paper-based document control to a more productive activity
- ROI 12–8 months (Detroit: 45–60 pgs. per book, 500 books per day, 262 production days = more than 7 million pieces of paper saved per year!)

To learn more about Omni-ID's manufacturing solutions, contact us today!