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**AS/RS to Provide an Engine Block  
Work-in-Process Buffer  
Global Engine Manufacturing Association (GEMA)  
Dundee, Michigan, USA**

References

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References

Automotive

New Installations



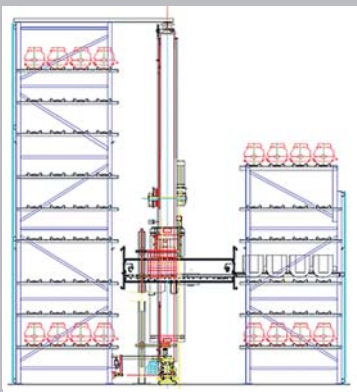
## Real Time Assembly of Engine Blocks

### Initial Situation

The Global Engine Manufacturing Alliance (GEMA) is a manufacturing arm of Global Engine Alliance LLC, which is a joint venture of Daimler, Mitsubishi Motors, and Hyundai Motor Company for developing a line of shared engines.

Durr and viastore systems were hired by GEMA to build and install a new state of the art system at the facility that would allow GEMA to store the completed engine blocks upside down and four (4) deep in the rack. The system also needed to be able to automatically interface with the robotics system in the assembly area.

With the new systems, GEMA is able to sort, store, and retrieve engine blocks for final assembly in real time.



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### System Solution

Initially, viastore systems installed a one-aisle mini-load system in the North Plant, followed by the second phase of an additional one-aisle mini load system in the South plant. Both lines were set up and run off at Durr's facility in Wixom, Michigan, before the final installation at GEMA's plants.

Then viastore was contracted by Durr Ecoclean (Wixom, Michigan) to provide two (2) AS/RS mini load systems, an AS/RS rack structure, the mechanical and electrical aisle hardware, and an interface to the plant control system for GEMA in Dundee, Michigan.

As engine blocks are consumed in the final assembly process, the S/R machine deposits the correct block type in a staging location for retrieval by robot and final transport to the assembly line. The system provides a work-in-process buffer of engine blocks available for immediate use directly in-line with final assembly.

The viad@tMFC inventory control system determines the storage location of each engine block and directs S/R machine operation.

The S/R machine and rack structure is designed to cradle the engine blocks in a stable, consistent location, eliminating the need for additional special load carriers, while preventing damage to sensitive machined surfaces. The S/R machine load-handling device and rack structure are equipped with rubber pads, steel pins, and cradles to accurately transport and position the engine blocks for storage and access by the robots.

### The Result

The AS/RS eliminated a previously manual labor intensive and damage prone operation.

### Scope of Supply:

- (2) Individual Systems – North Plant and South Plant
- Automated Storage/Retrieval System
- S/R machines
- Mechanical/Electrical aisle hardware
- AS/RS Rack
- Interface to plant control system

### Essential Features:

- (2) viaspeed S/R machines, with custom telescopic fork load-handling devices servicing (3,600) storage locations for engine blocks.
- Product stored: 4-cylinder aluminum engine blocks (1.8L, 2.0L, 2.4L, 2.4LT), handled directly without additional carrying device.
- Engine blocks stored (4) deep in each opening.
- Product weight: 75 lb. (34 kg) per block, total weight for slug of (4) = 300 lb. (136 kg)
- Input/Output using a gantry robot and articulating arm robots.