

BENCHMARK BRIEFINGS

kardexremstar

SITE

BMW Manufacturing Corp
Spartanburg, SC

APPLICATION

Spare parts storage for automobile manufacturing

EQUIPMENT

Five Shuttle® Vertical Lift Modules with fire suppression system

SUMMARY

Storeroom capacity increase to handle plant expansion and additional production lines



BMW figures their Shuttle VLM system holds the equivalent of 45 drawer cabinets in half the floor space.

Auto Manufacturer Storeroom Expands Internally With VLMs To Support Almost Doubling of Manufacturing Capacity

Resounding popularity and sales of its new models, compelled BMW Manufacturing Corp. to enlarge its plant near Spartanburg, S.C., from 1.2 to 2.1 million square feet. The 900,000 square foot addition provides added production capacity plus a more flexible manufacturing base to accommodate a wider range of models and mixes of model volumes.

“Even with the dramatic increase in production capacity and manufacturing flexibility, the plant’s existing 7500 square foot storeroom housing spare parts for manufacturing equipment was not allotted any more space,” commented Tony Brannon, Coordinator, Central Operations Support.

“Although drawer cabinets, a pallet stacker, and shelving were already nearly full, the room’s vertical cube was largely untouched. Making more efficient use of this cube would allow parts for new machinery to be accepted.”

Vertical Lift Modules Carry the Load

To reach into the storeroom’s vertical cube, BMW installed five Kardex Remstar Shuttle Vertical Lift Modules side-by-side.

Three of the Shuttle units are 26 feet tall, while two are only 22 feet because of interfering roof beams. To help equalize storage capacity per VLM, the shorter units are wider — with wider internal trays (shelves) — to compensate. These units feature 69 trays each 72”w x 32”d. The taller, narrower VLMs have 55 trays each 49”w x 32”d.

“The five VLMs replaced a length of six foot high, 35-foot long shelving in a corner of the storeroom,” Brannon added. “The modules displaced little existing storage, however, because relatively few spares are held on shelves. The five



Items are quickly brought to the operator with a push of a button eliminating wasted walk and search time.

VLMs, including a 42-inch aisle, consume only 363 square feet of floor space.”

Storage Efficiency Gain

To calculate the number of VLMs required, BMW performed an analysis comparing them to standard 30”W x 30”D x 60”H drawer cabinets. The comparison was made against cabinet storage because the VLMs were slated to contain the same types of spares as maintained in the storeroom’s existing cabinets, plus some larger items such as VFD drives.

The evaluation demonstrated that each VLM could hold the contents of approximately nine cabinets. Including necessary 42-inch aisles, 45 equivalent cabinets would require about 800 square feet of floor space - twice the space required for the VLMs. The increase in storage efficiency for the VLMs reflects not only the use of the vertical cube, but also the reduced aisle space required per square foot of tray/drawer space as well as the VLMs’ design to effect higher storage density.

“The Kardex Remstar Shuttle Vertical Lift Modules automatically minimize tray-to-tray vertical spacing within the stacks each time the tallest item on a tray is removed and the tray is returned to the stack,” Brannon said. “In fact, the auto-optimization (CubeStar®) feature was the

single most important factor in the selection of these particular VLMs. Drawer-to-drawer spacing in cabinets is not readily adjustable, of course.”

The dollar value of floor space

Consumed by both VLMs and cabinets was also calculated to justify the investment. Storeroom floor space carries the same value as production floor space, which is assigned the highest figure at BMW’s South Carolina site. Consequently, the economic incentive for extending into the vertical cube is very high.

As a result of the storage space gained by installing the new vertical lift modules, the storeroom was able to easily accept spares for all of the plant’s new equipment. Should more space be required in the future, additional VLMs can be quickly added. The five VLMs were installed while the plant was operating and without the storeroom being shut down. Spares on the replaced shelving were temporarily consolidated on other shelves.

Fast Retrieval

The innovative vertical storage units provide enclosed protection for the densely-packed trays of parts. When a part is called for by a BMW storeroom associate, the correct tray is automatically lowered by an internal elevator to a waist-high extraction platform, where it is advanced out toward the associate for easy part removal (or putaway).



Parts as small as four inches and as large as 29.5 inches can be accommodated automatically.