Automotive Assembly and Marriage Solution

Features and Benefits
Cost effectively “reinvented” chassis assembly and marriage operation

Allows both synchronized and non-synchronized assembly processes

“Opportunity” charging enables continuous AGV operation

Sleep mode reduces AGV power consumption

System provides unobstructed aisles, allowing complete access to the assembly line via fork trucks, conveyors, or other equipment

Industry Group: Automatic Guided Vehicle Systems (AGVS)

In this automotive assembly plant, 38 AGVs are used as moving assembly platforms to provide complete assembly of chassis powertrain components and chassis to body marriage. The assembly line is comprised of 20 workstations, 11 of which are stationary to accommodate processes that cannot be completed on a moving vehicle (i.e., brake fill/test). This unique arrangement combines the benefits of both synchronized and non-synchronized assembly processes, with a maximum throughput of 75 automobiles per hour.

After an engine is placed on the AGV and released, the AGV maintains a constant speed and serves as a moving assembly platform passing through various assembly stations. Automotive components including brake lines, hubs, rear springs, and other components are placed on the assembly fixtures of the AGV and/or assembled to the engine.

Upon completion of moving assembly operations, the AGV is sent into one of six brake fluid fill and test stations. AGV’s must be stopped at this point to allow assembly workers to accurately evacuate, fill, and test the brakes. The AGV system controller automatically keeps track of the sequence of each AGV to assure the marriage of the proper engine and automobile.

The AGVs then enter one of three marriage stations where the powertrain assembly is lifted off of the AGV by
a ball screw lift device. The powertrain assembly is then mounted to the automobile body located directly above the AGV on an overhead Power and Free Conveyor. After the marriage is complete, the empty AGV is released and travels back to the engine load area, starting the assembly process over again.