

Auto manufacturer deploys AMRs and mobile conveyors in labor optimization initiative with 18-month ROI

THE CHALLENGE

A Tier 1 automotive manufacturer recognized two costly labor utilization issues in engine transport operations. The first was a trapped labor challenge. One team member, tasked exclusively with loading fully assembled car engines onto tow vehicles, had nothing to do between the departure of one vehicle and the arrival of the next. It was heavy-weight work when it was happening: a two-hook crane—and considerable effort—was used to hoist engines onto a trailer bound for the testing line.

The second issue was perfecting the timely movement of the three tow vehicles in use. Each stop requires park time for engine loading and unloading, so a single operator was responsible for driving all three vehicles in a drop-one-off, pick-one-up rotation.

The team was facing labor shortfalls on the engine assembly line, so inefficient use of resources on engine transport tasks was a problem that needed to be solved.

THE AUTOGUIDE SOLUTION

To fully automate the pickup and transport of assembled engines, a solution that pairs autonomous tuggers with custom-made mobile conveyors was designed. Three self-driving MAX-N Tuggers replaced three manual tow vehicles. New trailers were designed to carry four engine trays at a time, just as before—but with a major automation upgrade. The high-tech trailers feature built-in power conveyors that make loading engines onto the tugger a no-people-required process.

A MAX-N Tugger arriving for engine pickup travels in reverse for the last few feet of its journey, so the tow trailer backs up to the end of the production line. Guided by sensors, a successful dock and connection activates collaborating power conveyors. Conveyor 1 moves engines from the end of the assembly line toward the trailer. Conveyor 2, on the trailer, pulls engines in for transport. Simultaneously, the trailer conveyor offloads empty engine trays, returning them to assembly from the testing line.

Automation eliminates the need—and risk—for manual, crane-assisted loading. And three autonomous tuggers traveling in a synchronized, reliable manner ensure the steady flow of engines to the test line as well as continuous engine tray replenishment for the assembly line.

The success of autonomous engine transport operations inspired plans for a second AMR deployment, this time to support just-in-time lineside delivery of subassembly materials on a new production line.

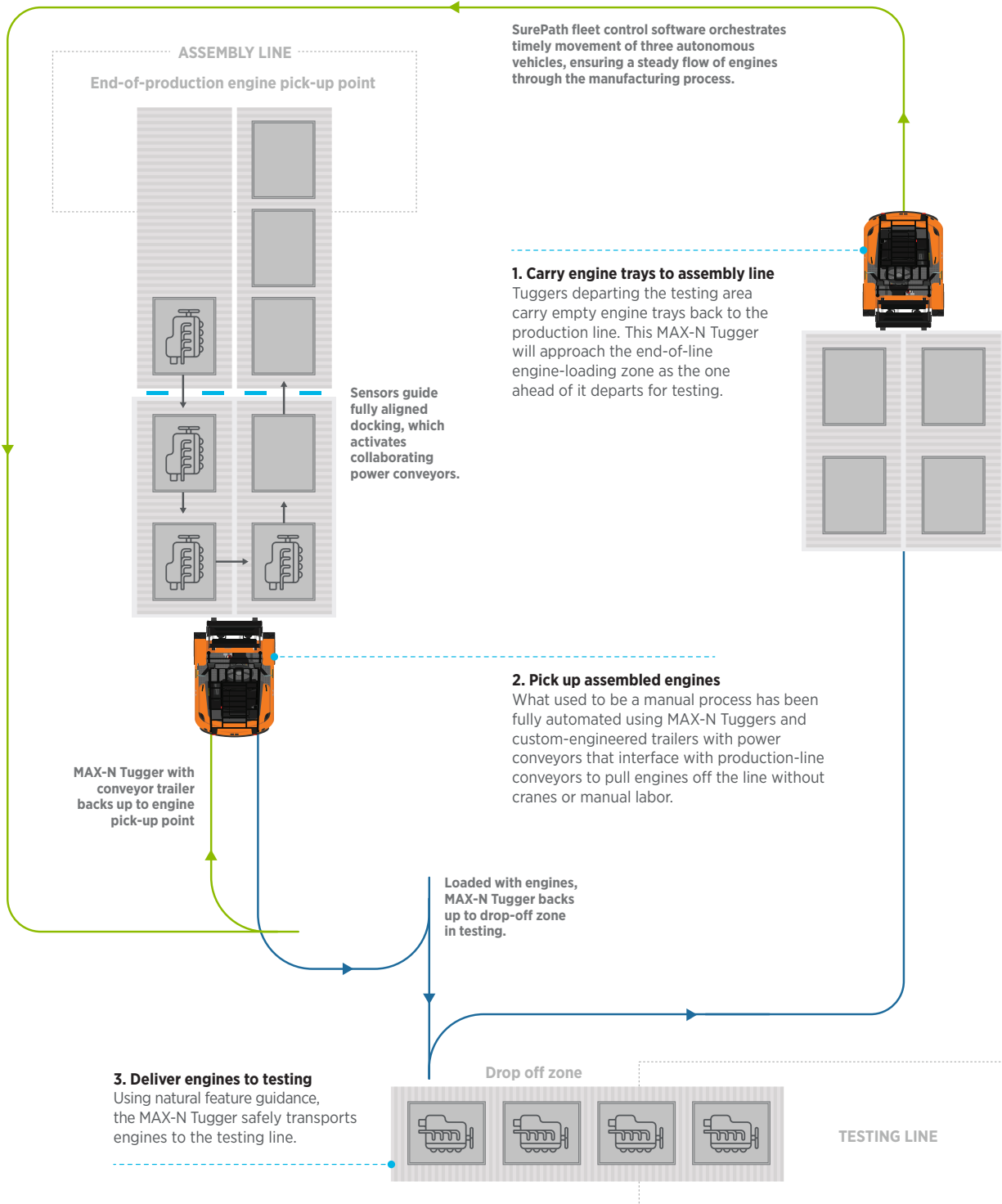
Autonomous solutions address one of today's biggest industry challenges: labor availability. When repetitive, time-consuming tasks are assigned to AMRs, valuable team members can be reallocated to roles that increase labor optimization metrics.

Results

- Achieved ROI in 18 months
- Reallocated 4 team members from engine transport to engine assembly, resolving labor availability issues on the line
- Reduced trapped labor time, increasing team efficiency
- Decreased risk by reducing manual, crane-assisted engine handling
- Increased safety by replacing manual tow vehicles with autonomous tuggers equipped with multiple safety sensors and natural feature navigation
- Designed second AMR deployment to bring autonomous efficiency to lineside delivery

THE DEPLOYMENT

- **Facility size:** 1 million square feet, 1,450 employees
- **Cycle time:** approximately 10.5 minutes per tugger, with 3 tuggers in motion simultaneously.
- **Cycles per day:** 84 per vehicle, 254 per day (during two 8 hour shifts)
- **Engines transported:** 1,016 engines automatically delivered to testing per day



For more information, please contact Sales@AGMobileRobots.com