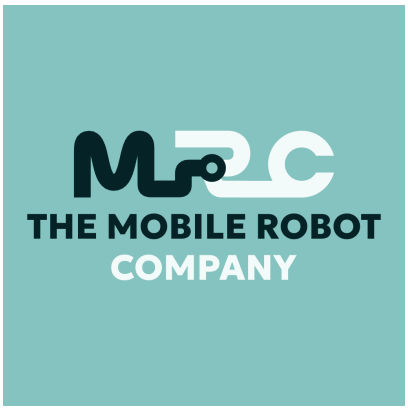

The Mobile Robot Company

Knowledge Center — Operation in Crowded Environments · 2026-08-04

https://info.mobilerobot.com/applications/scenarios/operation-in-crowded-environments

Operation in Crowded Environments

Warehouse floors are shared spaces: people walking, pallet jacks crossing, freight staged where it fits. The J1600 is built to run autonomously in this traffic — with a certified protective field around the vehicle — and to hand the really chaotic moments back to a person.

The protective field

- A **360-degree safety field** surrounds the vehicle, supporting both forward and reverse autonomous travel.
- Two **2D safety LiDAR scanners**, front and rear, provide certified personnel detection (https://info.mobilerobot.com/safety-compliance/safety-functions/person-detection/) — separate from the 3D navigation LiDAR and RGB AI camera (https://info.mobilerobot.com/safety-compliance/safety-overview/navigation-sensors-vs-safety-sensors/), which belong to the navigation stack.
- The field is **speed-dependent**: it expands as travel speed increases and adjusts as the vehicle slows.
- **Blue light strips** project the current protected area onto the floor, so people nearby can see the zone at a glance. White lights mean the vehicle is in manual mode.

Person detection in the safety field and the braking system (https://info.mobilerobot.com/safety-compliance/safety-functions/braking/) are rated Performance Level d (https://info.mobilerobot.com/safety-compliance/safety-functions/performance-levels/); safety-field size adjustment (https://info.mobilerobot.com/safety-compliance/safety-functions/safety-field-adjustment/) is also PL d. An independent safety controller, three emergency-stop buttons, a belly button for stop-and-reverse, and certified motor controllers and encoders complete the architecture — see how J1600 safety works (https://info.mobilerobot.com/safety-compliance/safety-overview/how-j1600-safety-works/).

Navigating around people

At a public test event, a first-time user sent the J1600 on a delivery (https://info.mobilerobot.com/applications/customer-stories/video-case-stories/) and watched it route around people on its way — standard behavior, not a stunt. The 3D LiDAR SLAM navigation (htt

ps://info.mobilerobot.com/products/j1600/navigation-and-obstacle-avoidance/) continuously updates its environment model and drives around obstacles, moving or static, at up to 5.4 km/h. Preferred travel zones can be defined to keep autonomous traffic in safer corridors through busy production areas. See Dynamic Route Changes (https://info.mobilerobot.com/applications/scenarios/dynamic-route-changes/).

Before any autonomous run (https://info.mobilerobot.com/documentation/user-guides/autonomous-operation/) starts, the operator confirms the mode change (https://info.mobilerobot.com/safety-compliance/safety-overview/manual-and-autonomous-mode-safety/) and the robot instructs them to step away — autonomy never starts by surprise.

When crowded becomes chaotic

There is a difference between traffic and gridlock. An overflowing receiving area with no clear lane is a job for human improvisation: take the tiller — takeover is immediate — and drive the pallet through manually (https://info.mobilerobot.com/documentation/user-guides/manual-operation/). Navigating genuinely cluttered floors is one of the jobs deliberately kept human; see Handling Exceptions and Irregular Loads (https://info.mobilerobot.com/applications/scenarios/handling-exceptions-and-irregular-loads/) and Mixed Manual and Autonomous Work (https://info.mobilerobot.com/applications/scenarios/mixed-manual-and-autonomous-work/).

Where this matters most

- Cross-docking (https://info.mobilerobot.com/applications/use-cases/cross-docking/) floors with staged freight and constant movement
- Inbound receiving (https://info.mobilerobot.com/applications/use-cases/inbound-receiving/) during unloading peaks
- Production areas (https://info.mobilerobot.com/applications/use-cases/production-supply/) where autonomous traffic shares corridors with line workers
- Outbound staging (https://info.mobilerobot.com/applications/use-cases/buffer-and-staging-management/) as shipping waves build

No stopping-distance curves or safety-distance tables are published; current product documentation applies to deployment decisions. The layered design is intended to make transport more predictable and may reduce workplace accidents (https://info.mobilerobot.com/applications/results/safety-improvements/) compared with manual pallet handling.