

How can OTTO work for your material handling?

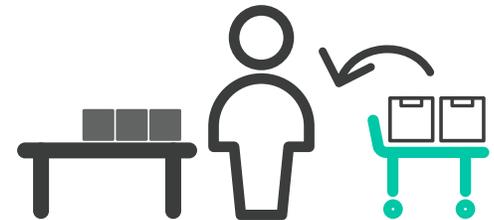
Workcell Delivery

Cellular manufacturing is a process where workers complete a series of tasks within a grouping of machines along an assembly line. The process is designed to reduce wasted time and resources. Yet, traditionally when workers complete a set of tasks, or run out of materials, they need to stop working at their station and either transfer the completed goods to their next destination along the assembly line, or replenish materials to continue working.

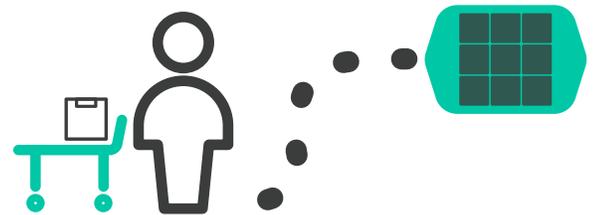
OTTO Autonomous Mobile Robots (AMRs) can be used to transfer or deliver materials to workers in their cells, eliminating the need for them to travel to collect materials. This enables skilled workers to focus their time on higher value tasks, which leads to higher output.

Workflow

- 1 | Operator completing assembly tasks, using materials from totes on a push cart.
- 2 | Operator's materials deplete, calls OTTO to deliver new supply of materials directly to their cell.
- 3 | OTTO autonomously navigates to workstation and is able to adjust route based on obstacles.
- 4 | OTTO delivers cart with new materials, and transports the empty cart away from the workstation, to its designated location.



Operator completes assembly tasks using raw materials.



Operator requires more materials and calls OTTO to deliver full cart to their station.

What's Involved

- Operator (tending machines, working at a station)
- Robot operator/supervisor
- OTTO AMR with cart
- OTTO Fleet Manager



OTTO delivers full cart of raw materials and takes away empty cart.



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Pitfalls to traditional process

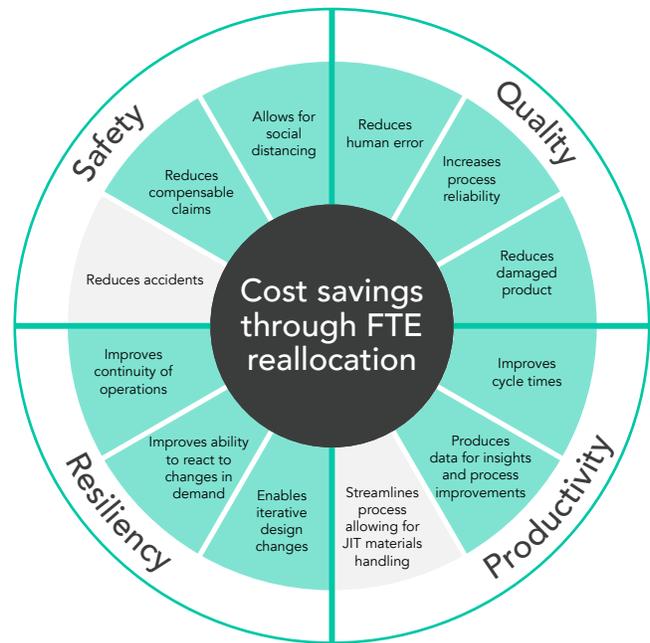
- ⊗ Workcell operators must stop their assigned task to transport materials, slowing down their output.
- ⊗ Workcell operators are often trained on specialized pieces of equipment. When required to stop work, this expertise is not utilized to its full capacity.
- ⊗ Traditional Automatic Guided Vehicles (AGVs) transporting materials use fixed routes. This prohibits easy adoption of infrastructure changes.

AMR implementation in manufacturing is generally driven by the need for cost savings, and the ROI is usually calculated through the reallocation of Full Time Equivalent (FTEs).

This chart highlights the other opportunities for costs savings and additional value that can be gained when AMRs are deployed.

Value gained with OTTO

- ✓ OTTO allows workers to remain productive in highly skilled tasks, while OTTO takes on the low skilled tasks.
- ✓ By transferring responsibility of low-skilled tasks to OTTO, skilled workers are able to realize a higher purpose in their role.
- ✓ OTTO provides a flexible alternative to traditional AGV solutions, allowing for easy adaptation of routes as cells change to meet demands.



How do I know if this workflow is right for me?

- ✓ Your cellular manufacturing process requires workers to stop their assembly tasks and leave their station to transport materials.
- ✓ Stable, well balanced combined payload mass under 150kg (330lbs) and fits on a 3' x 3' cart.
- ✓ Single floor operation with distinguishing features for localization.
- ✓ Seeking flexibility or reconfiguration of lines or routes.



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