

Gate Cutoff and Grinding Cell

Model: ACT-04196
With Optional Edge Grinding

ACT-04196 is a robotic cell for automatic casting tree cutoff, trim cuts, and gate grinding operations. It utilizes 6-axis articulated and programmable foundry rated robotic arm as well as a pivoting, chop saw style 60 HP cutoff wheel station, and 5 HP belt station. Parts are loaded outside the machine on 180deg indexer table which rotates them inside the cell for processing. Cutoff pieces as well as parts after gate grinding are transferred outside on a conveyor. Latest in robotic safety devices and methodologies compliant with RIA regulations are used. The entire system is surrounded by dust and sound reducing enclosure with door safety interlocks.

Specifications:

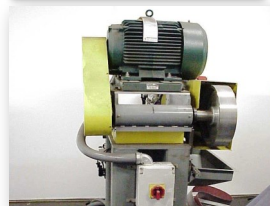
- Robot arm payloads: 300—800kg
- Belt grinding station: 40HP
- Dual wheel station: 60HP
- Automatic tool change EOAT adapter
- 180 degree indexer; tool magazine/indexer
- Steel slat conveyors
- Common base and full enclosure
- Standard cell size: 6.1 x 5.5 meters

Options:

- 5HP belt grinding station for smaller gates and edge grinding
- Rubber belt-type conveyor
- Custom part tooling (load fixtures, gripper fingers, handling clamps, etc.)
- Part programming
- HMI Operator Interface
- Pivoting cutoff wheel station



BELT HEAD



CHOP SAW



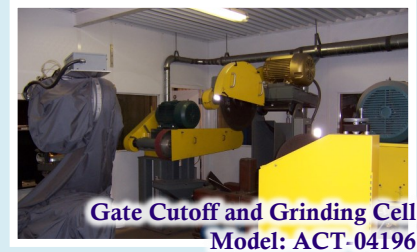
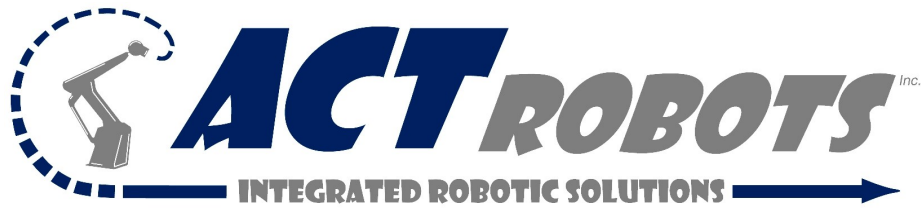
GRIPPER



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CASTING TREE CUTOFF

ACT's robotic system will perform automatic cutoff of multiple or single parts on casting tree. Part sizes and weights can vary within the robot arm and tooling maximum capacities. Castings are loaded on indexer outside the cell which then rotates to present them for pickup. Robot grips the castings, scans them, and presents them to 60HP dual wheel station where they are fed into the cutoff wheel at programmed sequence, feed-rate, and distance to perform single complete cut or multiple cuts separating parts from sprue.

The system measures and compensates for wheel wear automatically. Linear compliance slide allows control of force during cutting. It also compensates for mismatch between robot feed-rate and cutting speed. Sensor informs the robot when wheel is fully extended thus cut is complete.

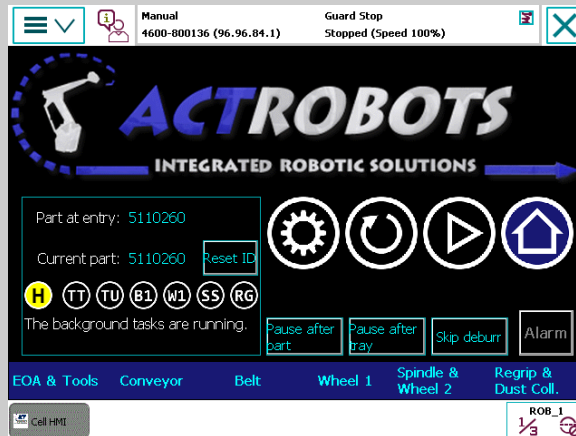
GATE TRIM CUT and GRINDING

The robot can pickup single parts after casting tree cutoff and perform gate trim cuts on the 60HP dual wheel station as well as grind the gates to specified window distance from witness line on 40HP belt grinding station. Parts are picked from indexer, scanned for deformation or handling errors, trim cut, and grinded on abrasive belt with in-process gate size measurement. More grinding takes place if gates are still too large after measurement routine executes.

The belt station is equipped with linear compliance slide and force exerted by the belt on the part is programmable. This allows for varying gate sizes to be grinded without crash or collision with the contact wheel (belt station is simply deflected back by larger than expected gate). Localized air chiller is used to keep grinding temperature as low as possible. Steel or rubber coated contact wheels can be used.

EDGE GRINDING

2 or 5 HP belt grinding station can be installed for grinding smaller gates or reaching into tight spaces and grinding edges such as TE of vanes and blades. Belt arms with small contact wheels allow grinding of recessed edges on parts such as double airfoil vanes. The station is mounted on linear compliance slide for easier programming and force control.



HMI

Optional HMI (Human Machine Interface) software is loaded and runs on robot teach pendant. The interface provides graphical screens to allow operators and maintenance easy part selection, extensive diagnostics, parameter adjustments, helpful manual controls, machine and station status, etc. Settings for functions such as part scanning, wheel wear, and more can be easily edited.

