

Case Study –Aluminum Casting Cleanup

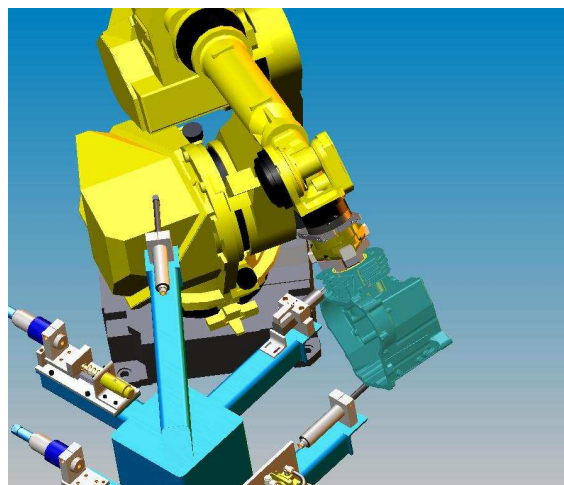
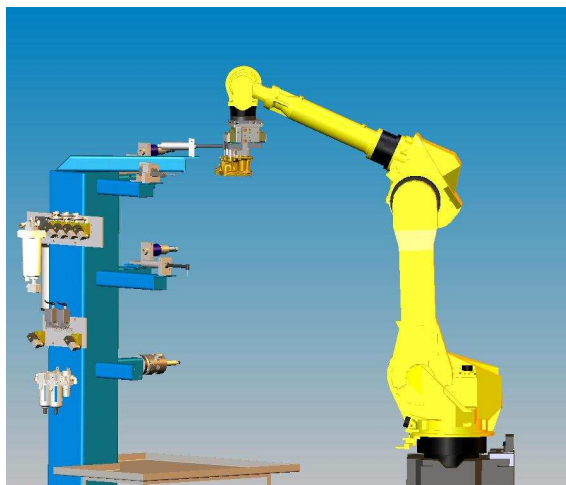
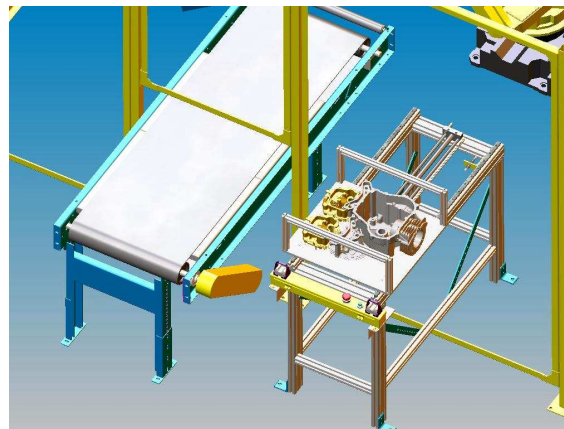
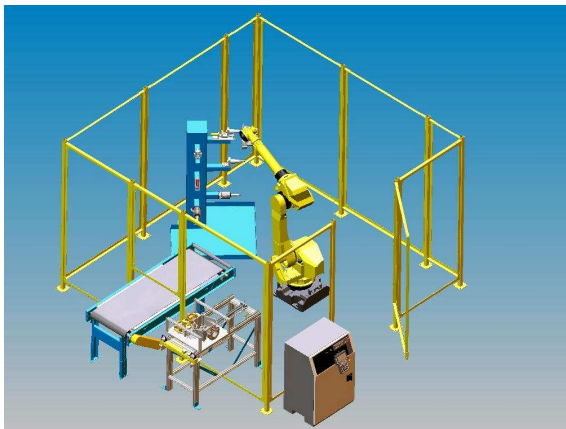
This die caster produces millions of customer-specific casting each year. Their parts range from engine blocks and heads to grill bodies and covers. Each of the parts requires some clean up before shipment to the end user, some more than others. This case is an example of an involved clean up process for engine crankcases and heads running in the same robotic workcell.

Overview

Manually casting clean up is tedious work that can result in injury to the worker. Other challenges faced by the production and engineering groups at the plant include how to plan for consistent throughput when the workforce is unstable and unpredictable.

System Requirements

- 38 second takt time
- Direct labor savings and reduction
- Use one robot for two parts
- Load incoming parts as they come (presence of burrs, flash, filled holes)
- Meet the financial goals set by the customer
- Improve tooling and process methodology given the capabilities of the robot vs. a person
- Turnkey through on site start up and acceptance





Description of the Solution

TEC designed and built a robotic workcell with a multiple tool TEC 'tool tree', fines collection pan, TEC infeed shuttle suitable for both heads and crankcase casings, FANUC M-710iC/50 6-axis robot with TEC gripper tool and quick change equipment from head to crankcase tool, safety fencing, programming and prove in of all tooling and robot paths and full turnkey on our floor.

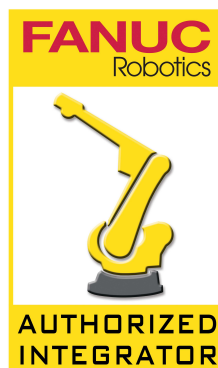
Two end-of-arm tools were supplied for gripping the parts. The cell runs one part or the other at any one time. The robot picks the part from the shuttle, moves to the tool tree and starts and stops the tools as needed while running the paths with the tools and places the finished parts onto the shuttle for operator handling.

The tools included a reciprocating file, a rotary drill, a rotary mill, a right angle drill and a brush. The TEC tool tree is designed for ease of maintenance and includes the pneumatic and electric dress. Several of the tools are mounted in compliant bases to allow for constant pressure against the part while machining.

TEC has a video of this cell operating at speed.

Customer Benefits

- Finally, an automation solution that works and makes sense
- Consistent takt time
- Safer work environment
- Better surface finishes and more complete deburring and deflashing as robot runs all paths for each part without judgments
- Extended tool life with compliance built into the tool mounts



TEC Automation, Inc.

**30 Hickory Springs Industrial Drive
Canton, GA 30115**

**Phone 770-720-3333
www.tec-automation.com**