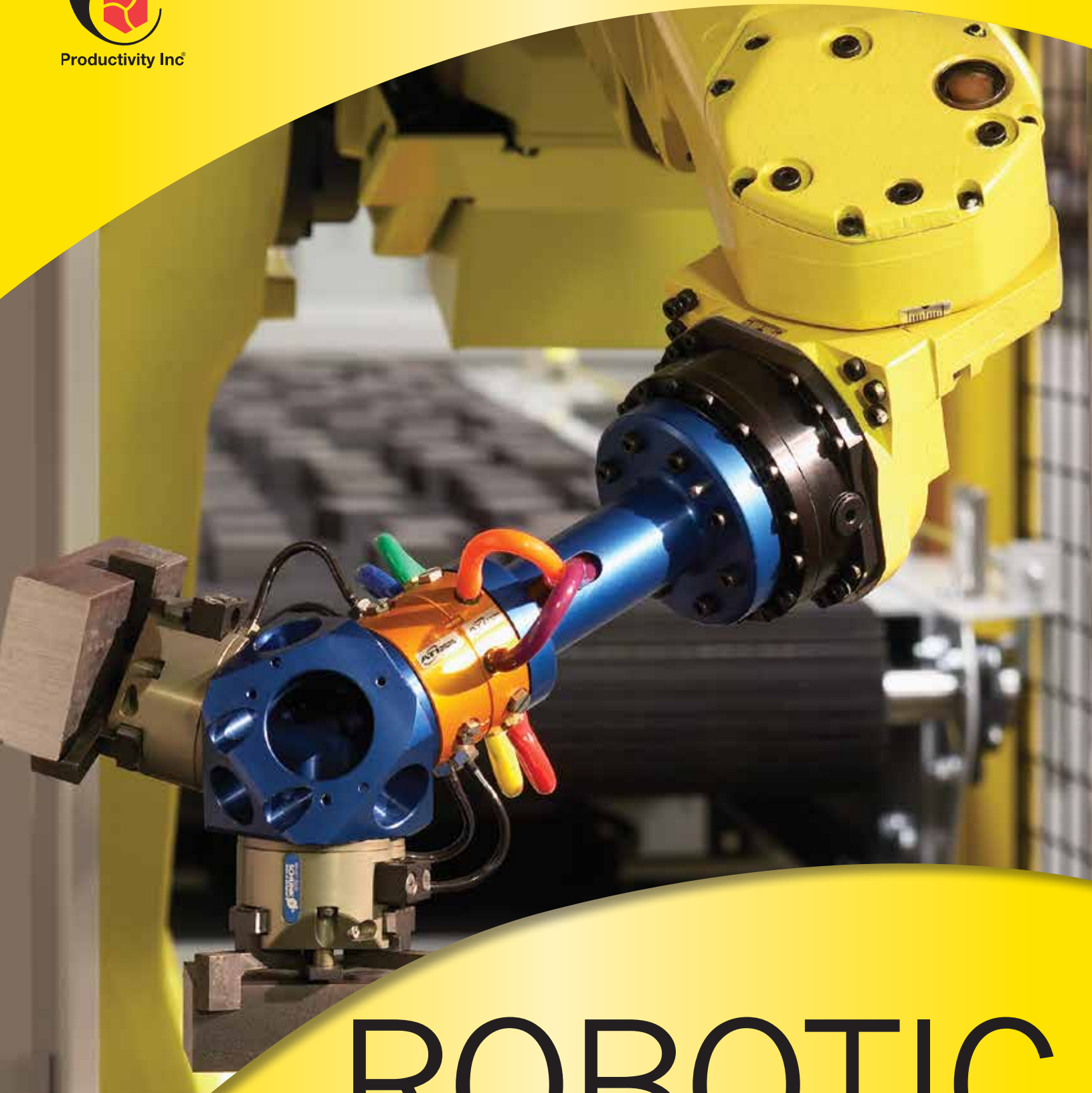




Productivity Inc<sup>®</sup>



# ROBOTIC



SuccessStories

# OEM Pump Manufacturing



## Products Used

- FANUC M16iT top loader robot
- Servo-driven door operators
- Robotic 2D vision system
- Automatic end-effector changer
- Dual zone operator guarding

## Challenge

This OEM pump manufacturer needed to improve a manufacturing process, lower costs, and improve part quality.

Several different part families and part materials. Small lot sizes and low changeover time were required.

## Solution

We provided a complete production solution to this customer, which replaced more than fifty traditional machine tools, that were combined into seven different production cells. This reduced floor space requirements, part cycle time, work in process, and improved part quality. Changeover of the automation is done by selecting a different part number from the cell control's HMI touch panel. One half of this cell can be in automatic operation while the other half is being changed over to a different part.



# Medical Parts Processing



## Products Used

- FANUC M16iB/20T top loader
- 4 Citizen M-20 Swiss-style lathes
- Custom ultrasonic part cleaning
- Brown & Sharpe Profile 50 inspection
- OGP optical gaging microscope
- Heat treating equipment

## Challenge

- Lower manufacturing cost, while increasing production output.
- Part quality and traceability has very high importance.
- Part handling with little operator intervention.

## Solution

This custom system runs with one operator who primarily attends the tooling and turning process details. Raw bar stock is loaded into the 4 CNC Swiss-style turning centers where the part process is performed, while the robotic portion handles the remainder of the process. Complete parts that are ready for final inspection, reporting, and packaging are delivered to the cell operator on custom trays. Complete part traceability is achieved.

# RoboFlex® Flexible Handling System



## Products Used

- RoboFlex® VP with LR Mate 200iD/5L robot
- Haas DT-1
- Schunk KSP-160 pneumatic vise
- Drawer system dual drawer 14" x 15" part template
- Side shutter door access actuator

## Challenge

- Use existing machines and simple automation to lower manufacturing cost.
- Attain limited unattended time to allow periods of “lights-out” without the large up front investment.
- Better utilize machinery in spite of skilled labor shortage.

## Solution

RoboFlex® VP is a self-contained and limited machine tending system. It costs under \$100,000 and can be installed in a 4' x 7' space. It can front load or side load smaller VMCs and can be shipped assembled and ready to position within reach of machine loading area.

# Adding Machine Capacity



## Products Used

- RoboFlex® CS with M10iA robot
- Haas VF-2SS
- Accumulating infeed and exit conveyors
- FANUC iRVision 2D part location system

## Challenge

- Use existing machines and simple automation to lower manufacturing cost.
- Attain limited unattended time to allow periods of “lights-out” without the large up front investment.
- Better utilize machinery in spite of skilled labor shortage.

## Solution

RoboFlex® CS is a larger complete machine loading system. It can tend two machines from one robot. Easy to changeover. Vision system can rapidly locate work pieces and guide the robot to where the parts actually are. No special locating templates are required. Material can be replenished while machines are in operation.



# Hydroforming Cell



## Products Used

- RoboFlex® PT with LR Mate 200iD robot
- Haas VF-1 with custom workholding
- Custom pallets to efficiently stack work pieces
- Future expandability built-in

## Challenge

A local contract manufacturer won a large order that required additional employees if no change was to be made to the process.

Their building was too small to allow much expansion and the business felt that investing in automation might be a more practical solution than simply adding more staff.

## Solution

The system that we provided to this manufacturer allows complete machining of this part with no machine operator present. The system, when fully loaded, will run for 12-14 hours. It takes about an hour to unload, replenish, and service the machine. This can mostly be done while the equipment is in operation. Provisions were built in originally to allow a second machine and robot to this system which will allow twice as much output from the system without modifying the pallet transfer equipment.

# Flexible Multiple Operation Cell



## Products Used

- 6 FANUC 6-axis robots
- 4 FANUC RoboDrills with 4<sup>th</sup> axis FANUC indexers
- 4 FANUC RoboDrills with 5<sup>th</sup> axis Tsudahoma indexers
- 8 servo-driven door openers
- Tsune TK5C cold saw
- 60' NL conveyor
- 3 pin markers
- 4 part regrip stations
- 4 part dunk tanks & air blow off stations



## Challenge

A local OEM wanted to decommission two dated large inline transfer machine for manufacturing steel manifolds of about 100 part numbers.

## Solution

The system we supplied manufactures four part numbers simultaneously, starting from bar stock to bin packing, with the part time attendance of an operator. Raw stock is loaded into the cold saw and cut to proper length. A robot unloads saw and loads a four-lane conveyor, which conveys cut stock to each of four, two VMC machine cells. Each cell consists of an OP10 VMC, a OP20 VMC and a robot between both VMCs. When manifolds are machined complete, the robot places manifolds onto the four-lane conveyor and conveys parts to pin marking and bin loading. A packing robot at the end, stamps the part ID and loads it into wooden crates.



# High Accuracy/Volume Manufacturing



## Products Used

- RoboFlex® VP with LR Mate 200iD/5L robot
- Matsuura LV-500 linear motor, high precision VMC & custom workholding
- Custom pallets to hold several different styles of parts

## Challenge

A hydraulic component manufacturer needed a production machine to process an extremely tight tolerance pump body in high volumes.

The custom machine that was in production had a high maintenance requirement and was down a lot of the time.

## Solution

The system that we provided to this manufacturer allows complete machining of this part with no machine operator present. The system, when fully loaded, will run for 4-5 hours. It takes about an hour to unload, replenish, and service the machine. This can mostly be done while the equipment is in operation. The simple single nest fixture has replaceable nests for quick and easy part changeover. Standard machine and fewer mechanical components allow high machine uptime, and better part quality.



# Random Part/Pallet Processing



## Products Used

- FANUC R-2000iB  
6-axis robot
- Haas UMC-750 5-axis  
VMC
- 3 pallet work stations
- RFID embedded pallets

## Challenge

Contract manufacturer received an order to machine heavy cast iron parts in single part lots.

They wanted a short cycle time with no manual change over required.

## Solution

The system that we provided allows flexible operation and the ability to easily add new parts to this system.

The part pallets/fixtures have unique RFID tags embedded into them, allowing the VMC CNC control to automatically change part programs when robot passes the pallet by the RFID scanner. This allows the system to run a large number of parts with little or no changeover.

# OEM Manufacturing



## Products Used

- FANUC M710iC robot
- Custom servo actuated tray handler
- Custom vacuum individual part lifting cups
- Part pattern handling

## Challenge

High volume part handling to insert parts mid process into a production line of custom machines.

## Solution

Custom robotic system to transfer parts from handling racks into the overhead line that feeds a group of production machines. Custom End of Arm Tool to handle individual part patterns, as well as individual trays, that are all carried by an overhead part transport system.



# Custom Non-CNC Industrial Equipment



## Products Used

- FANUC LR Mate 200
- Custom two-jaw servo-driven part gripper
- FOBA laser marker
- FOBA Intelligent Mark Position
- Custom laser enclosure
- Flexible part location
- Cognex DM8100 barcode reader

## Challenge

Flexible custom marks on repeatable blank parts are needed to allow information to be read via a barcode scanner and marked on individual production marks.

## Solution

A custom Laser Class 1 enclosure that contains a FOBA marking laser, a FANUC robot, and raw material drawer shelves in one compact footprint. A barcode scanner was integrated in this cell so the marking operator can scan the customized text strings directly from the part routing rather than keying in the "custom" marking requested by the order packet.



# ROBOTIC

## Success Stories

Every Productivity Robotic Success Story starts with a thorough evaluation of your needs, integration, installation and ongoing applications support.



**Call 763.476.8600 for your free consultation today!**

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