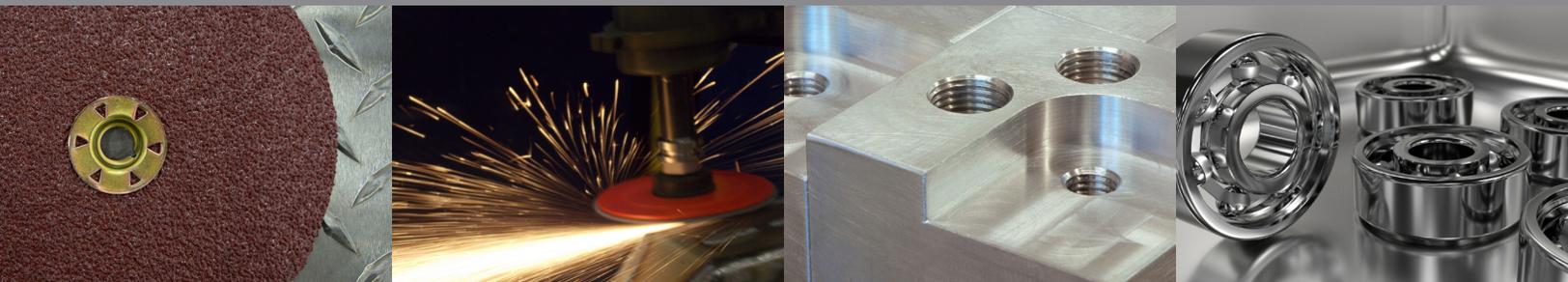




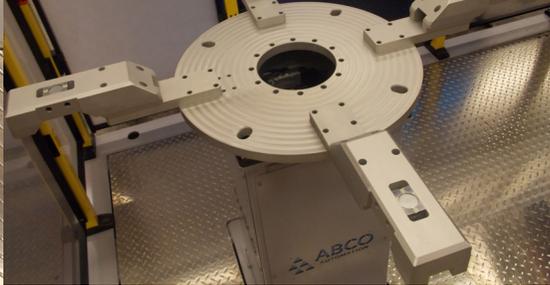
SmartForce  
Automated Grinding, Deburring, and Polishing System



Designing Competitive Advantages



ABCO Toolstand



ABCO Part Infeed Table



PushCorp End-of-Arm Tool with  
3M™ Abrasive Pad

## SMARTFORCE

### Delivers Accurate Grinding, Deburring, and Polishing

SmartForce is a semi-automatic grinding, deburring, and polishing robotic cell that combines minimal operator involvement with robotic functions. ABCO's turnkey system offers manufacturers a complete package that bundles ABCO's unique design with high-end "off-the-shelf" components, such as a KUKA Robot, 3M Abrasives, PushCorp End-of-Arm Tool, cooling system, metal skid base, and part infeed table.



SmartForce is pre-engineered and pre-built, allowing manufacturers to use the cell without delay—there is minimum installation for the initial setup. SmartForce is easy to use and requires nominal plant resources or operator training—and it's available through ABCO's quick ship program.

## ABCO's Robotic Cell is Mobile, Flexible, and Modular

With a compact footprint that is less than 100 square feet, SmartForce is mobile and flexible. The cell is pre-assembled and installed on a metal skid base, allowing simple integration into existing manufacturing facilities as well as easy movement within the site. Encompassing a modular design, SmartForce can integrate with other components, such as conveyors and post-process inspection equipment, to further automate the cell. The cell's key features include:

- KUKA KR 60-3 F Robot
- 3M Abrasives (discs are dependent on type of material removal)
- PushCorp End-of-Arm Tool (EOAT) gives the robot a "human" touch
- ABCO plate/pin combination mounted on EOAT enables the robot to index the dial table
- Safety guarding with 7' Lexan™ panels, door, and lock
- Coolmate™ Coolant System reduces temperature at the spindle
- Metal base for the robotic cell foundation serves to protect airline hoses and wiring
- Part infeed table with one set of tooling to hold parts
- Tool stand with multiple tool holders

# How SmartForce Works

SmartForce employs a recipe-based control system; the operator selects a pre-set program that instructs the robot on its path and operations. Recipes can include individual tasks for grinding, deburring, and polishing or any combination of the three. To load parts, the operator simply opens the cell door, removes a finished part, and places a new workpiece on the part infeed table. The robot performs the grinding task first, then completes the part with deburring and polishing. When a part is finished, the robot rotates the dial table and indexes to the next position, allowing the robot to process the next workpiece.

## Why SmartForce is a Safe, Smart Solution

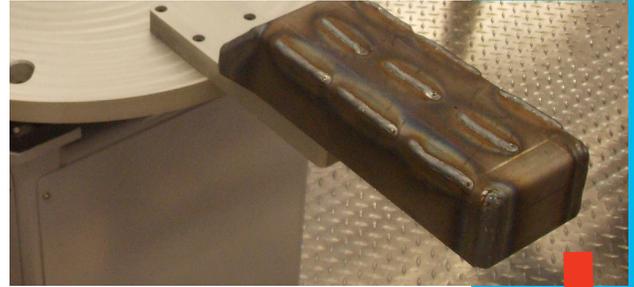
Whether protecting personnel from coming into direct contact with metal swarf, the robot, or end-of-arm tooling, SmartForce's perimeter of safety guarding helps keep the working environment safe. Housed within the safety guarding is the hub of the cell: a KUKA KR 60-3 F Robot. This robot works with a range of metals, including the most intricate light alloy components to large-format steel parts. And, with protective coatings and special seals, the robot resists heat as well as corrosion from alkalis, acids, and abrasive particles, allowing it to safely work in harsh environments.

Working in sync with the robot is PushCorp's End-of-Arm Tool with a tool holder mounted on an actively-compliant tool. The compliant tool is programmable and uses an internal closed-loop feedback system with internal force acceleration and position sensors to accurately apply the desired force to the part. The tool enables the robot to have human-touch capabilities that can grind, deburr, or polish in any orientation, even over contours. The tool's unique capabilities in conjunction with ABCO programming provides ABCO's grinding, deburring, and polishing solution its "SmartForce."

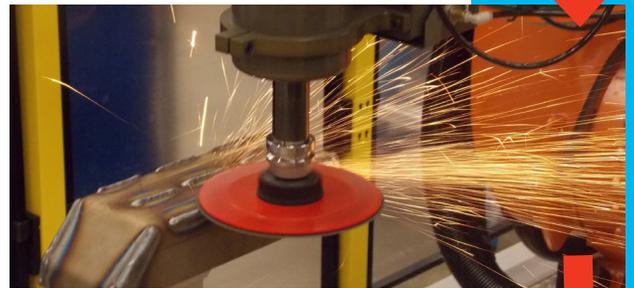
## SmartForce Provides Benefits:

- Eliminates time-consuming manual processes; increases throughput, improves efficiencies
- Provides more consistent quality; reduces waste
- Reduces health risks associated with airborne metal dust, noise, and vibrations
- Minimizes part changeover time
- Enables automatic tool changing
- Adapts to flexible automation; readily handles new parts
- Accommodates MES integration and remote support
- Yields a quick return on investment

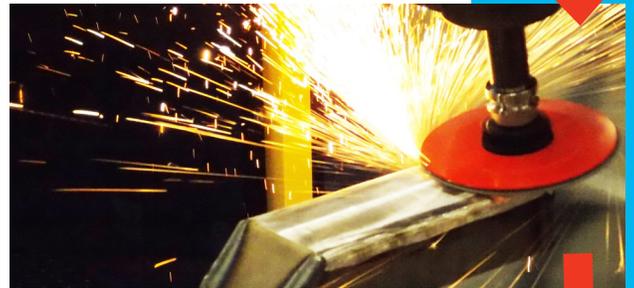
## Creating a Finished Part One Step at a Time



Welded Workpiece



Grinding



Polishing



Finished Workpiece

### Industries ABCO Serves

- Agriculture
- Automotive
- Consumer products
- Food / beverage
- Medical devices
- Pharmaceutical
- Tobacco
- Wire and cable





## ABOUT US

ABCO Automation designs and builds custom turnkey factory automation systems for manufacturers across the globe.

With a strong repeat client base, we've proven that we deliver highly dependable, highly effective solutions. Our clients not only reduce costs, realize efficiencies, increase productivity, they gain a competitive advantage.

ABCO designs and builds systems that helps companies achieve excellence.

ABCO is a preferred automation partner with 3M and KUKA.

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