

A close-up photograph of a robotic arm in a manufacturing setting. The arm is yellow and black, with a grinding wheel at the end. It is positioned over a metal workpiece. The background is slightly blurred, showing other industrial equipment.

WALTER AUTOMATION

A Roadmap to Implementing Robotic or Automated
Material Removal in Metalworking Operations

CANWELD 2024

Who is the audience

If you are an **end user, manufacturer**, or are here because you are **curious about deploying automated material removal (MR)** in your process, please raise your right hand.

If you are a **solution provider, system integrator or automation OEM**, please raise your left hand.

A close-up photograph of an industrial robotic arm, specifically a grinding head, in operation. The arm is painted a dark, industrial grey. It features a large, cylindrical motor housing and a long, polished metal shaft that terminates in a large, circular grinding wheel. The wheel is positioned just above a metal workpiece, which has a distinct diamond-plate texture. To the left, another part of the machine, possibly a base or a different tool head, is visible, showing more of the grey paint and some wiring. The background is slightly blurred, showing more of the industrial environment. The overall lighting is somewhat dim, with a focus on the mechanical components.

Understanding the benefits of automated material removal

17,315

The number of new welding apprentice registrants required in Canada over the next 5 years to eliminate the risk of a labour shortage

(Canadian Occupational Projection System)

35,781

2020 reported occupational injuries and illnesses in the manufacturing sector. 137 of these were fatal.

(Association of Workers' Compensation boards of Canada)



Benefits


Enhanced efficiency

Improved precision

Increased worker safety

Operational cost savings

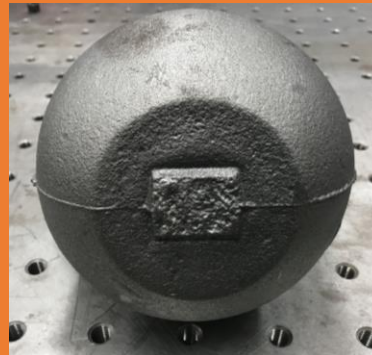
**Resistance to workforce
fluctuations**

A close-up photograph of an industrial robotic arm, likely a Walter Bormag model, equipped with a grinding wheel. The arm is positioned over a workpiece on a metal table. The background is slightly blurred, showing other industrial equipment. The overall color scheme is dominated by the metallic tones of the machinery and the blue of the grinding wheel.

Defining process requirements for automated material removal

What process are you looking to automate?

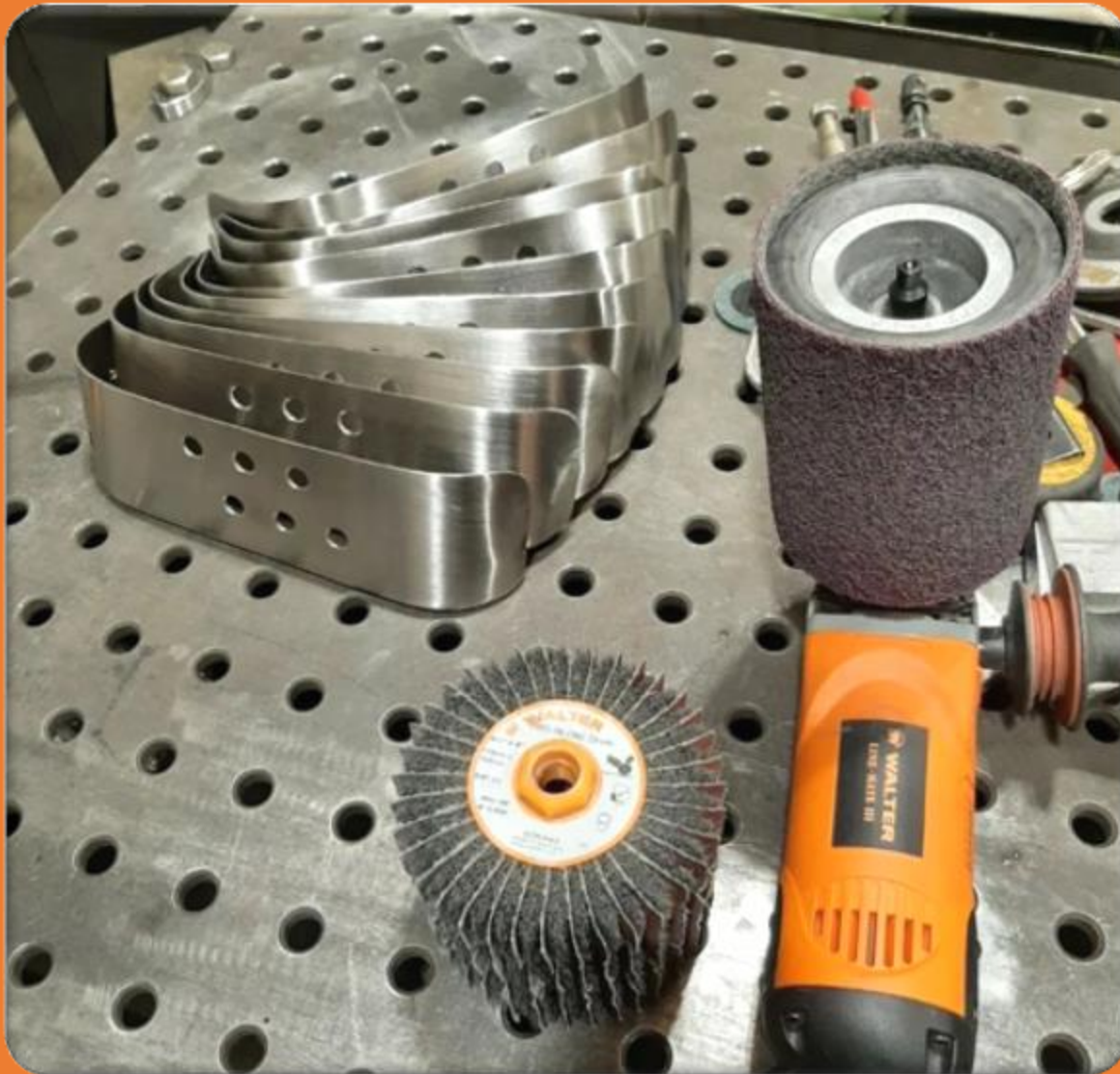
- Buffing
- Polishing
- Deburring
- Grinding
- Sanding
- Graining
- Deflashing
- Degating
- Drilling
- Milling





What Information is available?

- Existing process or new process?
- List of current tools/consumables
- Pictures/videos
- Drawings
- Physical sample parts
- Before finishing
- After finishing
- Finish requirements



What Information is available?

- Material type
 - Hardness
 - Process
 - Safety concerns
- Grinding welds
 - Applied robotically or manually?
 - What weld process?
- Special constraints
 - Floor space
 - Approved product list



Establishing business needs

- What level of automation is acceptable?
- How soon do they need it?
- When is floor space available?
- Critical to know who this person is up front.
- What makes a good part?
- Finish
- Dimension
- Subjective/"Golden Part"

A close-up photograph of an industrial robotic arm with a white and orange body, equipped with a grinding wheel, working on a metal plate. The scene is dimly lit with a warm, orange-brown color cast. The text is overlaid on the left side of the image.

Technology selection & system design

(How do I get help processing the information I gathered?)



PUSHCORP



ABB FANUC


KUKA

YASKAWA



Who can help me?

- There is a community of industry experts who can help you!
- Abrasive manufacturers, like WALTER
- MR OEMS
- Robot OEMS
- A3 - Ask the Experts

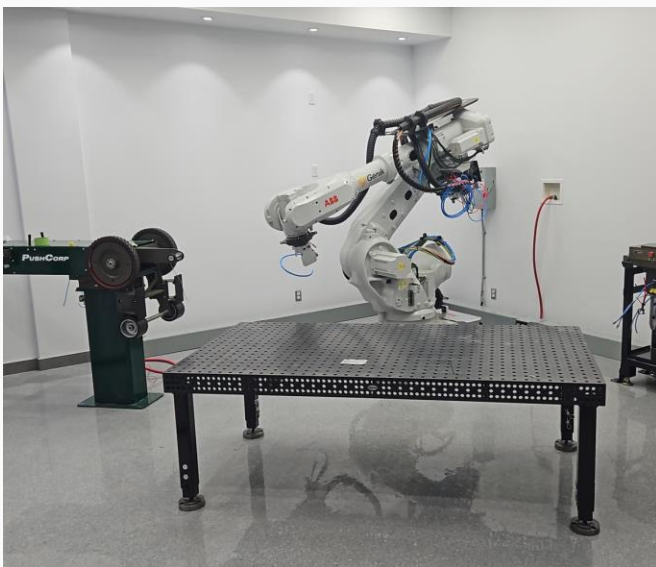
A close-up photograph of an industrial robotic arm with a yellow body and a grey grinding wheel, positioned over a metal plate. The background is a blurred industrial setting. The text is overlaid on the left side of the image.

Testing & Integration

(How do I get help processing the information I gathered?)



PushCorp De-Risking Center - TX



New Lab at WALTER HQ in Pointe-Claire, QC

De-risk your project with an expert!

- Engage one of the material removal labs around the country.
- Work hand in hand with an industry expert
- Use actual parts
- Leave with a recipe for success
- Save weeks/months of time on your floor developing a process



What output can you expect?

- What equipment to use
 - Motor size and type
 - Compliance unit size and type
- Which abrasive to use
- Process parameters
 - RPM/Travel speed
 - Force applied
 - Grit
- Understanding of robot size
 - Hands on experience the equipment and abrasives



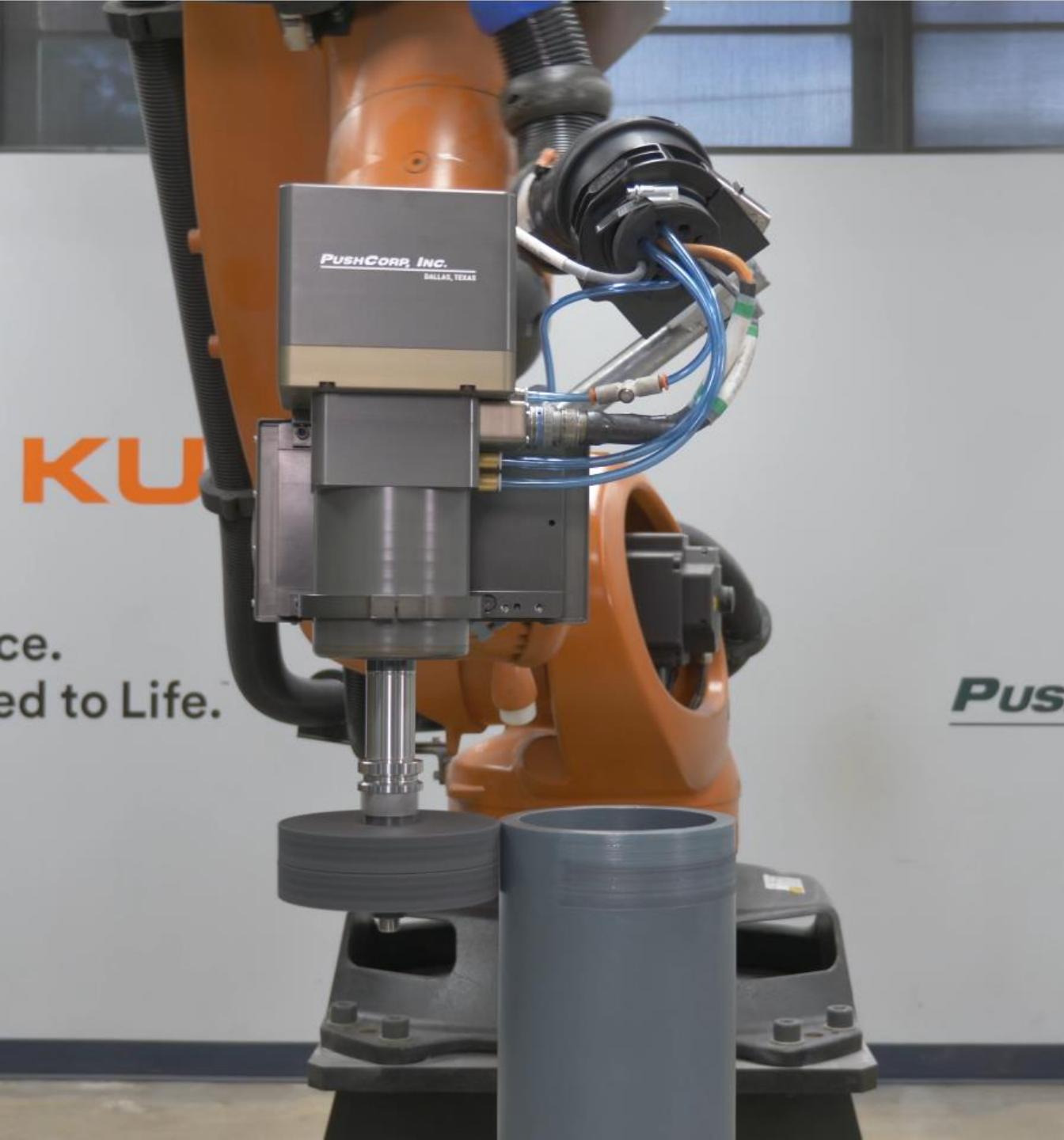
Abrasive Flex Drum

Key Considerations



Points to consider

- Running a project through one of the labs will:
 - Launch the project sooner
 - Reduce risk of unknowns
 - Provide first hand knowledge of process
- MR cells generally
 - Extend the life of abrasives
 - Allow for the use of larger more aggressive abrasives
 - Increase safety and reduce lost production days due to injuries
- Part to process or Process to part?



Points to consider

- Address staffing challenges
 - Robotic process programming jobs it's better to promote within
 - Allow existing employees to focus on less intensive jobs where they will be happier and stay longer
- 70/30, 80/20, 90/10 or 100
 - Automation vs manual
 - Risk vs reward
- Industrial robots
 - Process MR jobs faster
 - Robust to withstand the rigors of continuous production

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