I-SMART: Implementing Small Manufacturer Assistance with Robotic Technologies

Are you Prepared?

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WHAT IS I-SMART?

- A federally-funded program to support automation and robotics services for U.S. manufacturers.
- Provides manufacturers with access to MEP automation experts to:
  - *Identify automation opportunities*
  - *Develop the business case for specific applications*
  - *Connect manufacturers with additional automation resources*
  - *Assist with preparing for automation deployments*
  - *Consult on post-deployment optimization*
- Emphasis on helping manufacturers get “quick-wins” (fast payback)

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What CAN I-SMART DO FOR ME?

- Start with a free automation implementation evaluation
  - *Remote or on-site visit by MEP/industry experts*
  - *Evaluate suitability of potential applications*
  - *Determine business case for best option(s):*
    - Cost/savings
    - Return on investment and payback period
  - *Provide written report to company on findings*
- Identify options for solution providers, assist with RFPs

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WHAT CAN I-SMART DO FOR ME?

- Provide pre-deployment assistance
  - *Help plant leaders prepare workers for automation*
  - *Assist with redesign of process using Lean*
- Offer post-deployment support
  - *Replicate success of "quick-wins"*
  - *Generate additional business cases*
  - *Help optimize process*

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WHAT CAN I-SMART DO FOR ME?

- Typical Process
  - *Schedule date/time for site visit*
  - *Complete pre-visit questionnaire*
  - *Meet with key stakeholders*
  - *Tour shop floor and gather information on potential applications*
  - *Calculate financials*
  - *Provide written report on findings*

Application Information Form			Date: 7/31/18	
Company: [redacted]	Location: [redacted], IN		Contact: [redacted]	
Necessary Reach: Est URe 3 or 5	Line Identifier/Description: Deburr		Rating: (A) (B) (C) (X)	
Shifts: Currently 8hrs per day/5 days a week. Bottleneck.	Part Size: 5 springs for high volume	Part Weight: grams	Throughput/ Cycle: 150-200 per hr	Pick multiples? possible

Automation Driver(s):
- ☐ Repetitive Motion Injury or other hazards
- ☐ Ergonomics Improvement
- ☐ Hiring difficulties
- ☐ Retention/Turnover issues & training
- ☑ Quality/Consistency issues
- ☑ Labor costs
- ☐ Other

Considerations/Challenges:
- ☐ Bin pick
- ☐ Dexterity
- ☐ Visual inspection
- ☑ Precision/Tolerance
- ☐ Low % able to automate w/Robot
- ☐ Complex grippers
- ☐ Environment
- ☐ Reach
- ☑ Push/Pull force
- ☐ Changeover time
- ☑ Ability to integrate

Image/Notes:

Notes:
- Integration Note –
  - 8 total grinding stations
  - Likely 2-4 stations at new facility
  - Could isolate parts to always have at same deburr station
  - Cart / Array Tray system to be developed
- Pick parts out of an array
  - If in well for picking – 1/8" each - in well / grip / above
- Likely pick by OD in center of part
  - Gripping force could be several hundreds of newtons due to strength of spring
- Part deburred on leading & back edge – OD & ID – 2 orbital rotations each
- Force Torque Sensor (embedded in e-Series) to apply constant force
- Track part counts to determine changing/maintenance of bit
  - Currently avg 1000 parts per bit change
- TBD if parts go back in same pick position vs. into tumbler tote

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QUESTIONS? WANT MORE INFORMATION?

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