

NIST SME Automation Challenges & Opportunities Survey

Survey Flow

Block: Block 1 company demographics (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Aerospace Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Appliance and Component Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Automotive and Transportation Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Fabricated Metal Product Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Industrial Equipment Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Robotic System Manufacturing Is Selected

Standard: Block 2a aero, appliance, auto, metals (2 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is

Selected

Or What is your current role at your company? Controls Engineer Is Selected

Or What is your current role at your company? Manufacturing Engineer Is

Selected

Block: Block 2a mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Controls Engineer Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Standard: Block 2a non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Furniture and Related Product Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Paper Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Wood Product Manufacturing Is Selected

Standard: Block 2b furniture, paper, wood (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Standard: Block 2b mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Standard: Block 2b non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Leather Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Textile and Apparel Manufacturing Is Selected

Standard: Block 2c leather, textile, apparel (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2c mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2c non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Building Materials Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Non-Metallic Mineral Product Manufacturing (e.g., gravel) Is Selected

Standard: Block 2d building materials, mineral products (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Controls Engineer Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2d mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Controls Engineer Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2d non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Food and Beverage Manufacturing Is Selected

Or What is the primary manufacturing industry of your company? (Select only the most applicable.) Pharmaceutical and Non-Electronic Medical Devices Manufacturing Is Selected

Block: Block 2e food, pharma (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2e mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2e non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Plastics, Rubber, and Industrial Chemical Products Manufacturing Is Selected

Block: Block 2f plastics, rubber, chem (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2f mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2f non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Packaging (e.g., of pre-made components or products) Is Selected

Block: Block 2g packaging (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Controls Engineer Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2g mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Controls Engineer Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2g non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Consumer Electronics and Parts Manufacturing Is Selected

Block: Block 2h electronics (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Electronics Engineer Is Selected

Or What is your current role at your company? Controls Engineer Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2h mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Electronics Engineer Is Not Selected

And What is your current role at your company? Controls Engineer Is Not Selected
And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2h non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) System Integration Is Selected

Block: Block 2i integration (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected
Or What is your current role at your company? Front Line Manager Is Selected
Or What is your current role at your company? Controls Engineer Is Selected
Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2i mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected
And What is your current role at your company? Front Line Manager Is Not Selected
And What is your current role at your company? Controls Engineer Is Not Selected
And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2i non-mgmt (4 Questions)

Branch: New Branch

If

If What is the primary manufacturing industry of your company? (Select only the most applicable.) Other (please specify): Is Selected

Block: Block 2j other (2 Questions)

Group: mgmt/not conditions

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Selected

Or What is your current role at your company? Front Line Manager Is Selected

Or What is your current role at your company? Controls Engineer Is Selected

Or What is your current role at your company? Electronics Engineer Is Selected

Or What is your current role at your company? Integrator Is Selected

Or What is your current role at your company? Manufacturing Engineer Is Selected

Block: Block 2j mgmt (6 Questions)

Branch: New Branch

If

If What is your current role at your company? Executive Manager Is Not Selected

And What is your current role at your company? Front Line Manager Is Not Selected

And What is your current role at your company? Controls Engineer Is Not Selected

And What is your current role at your company? Electronics Engineer Is Not Selected

And What is your current role at your company? Integrator Is Not Selected

And What is your current role at your company? Manufacturing Engineer Is Not Selected

Block: Block 2j non-mgmt (4 Questions)

Block: Block 3 short answer (9 Questions)

EndSurvey:

Page Break

Start of Block: Block 1 company demographics

1.1 The National Institute of Standards and Technology (NIST) is seeking inputs from industry to document the current state of modern manufacturing, and to better understand the needs and opportunities of manufacturers in the U.S. The Manufacturing Robotics program is specifically looking for information to assist emerging technologies that are expected to enable advancements in manufacturing capabilities, improve existing processes, increase product quality, and increase the economic competitiveness of U.S. industries. Your responses will assist in these efforts and help inform us about the needs of your industry.

OMB Control #0693-0043, Expiration Date: 06/30/2025

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995 unless the information collection has a currently valid OMB Control Number. The approved OMB Control Number for this information collection is 0693-0043. Without this approval, we could not conduct this survey/information collection. Public reporting for this information collection is estimated to be approximately 10 minutes, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. All responses to this information collection are voluntary. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the National Institute of Standards and Technology at 100 Bureau Dr, Stop 8230, Gaithersburg MD 20899, Attn: Shelly Bagchi; or at Shelly.Bagchi@nist.gov

1.2 How many employees are in your company?

- 1 to 10 (1)
- 11 to 50 (2)
- 51 to 100 (3)
- 101 to 500 (4)
- 501 and above (5)

1.3 How would you describe your company's role(s) in the manufacturing industry? (Select multiple if applicable.)

Facility Monitoring / Control (8)

Integrator (4)

Logistics (e.g., product distribution, imports/exports) (1)

Producer (2)

Product Customization / Modification (7)

Product Design (6)

Strategic Planning (5)

Vendor (3)

Other (please specify): (9)

1.4 What is the **primary** manufacturing industry of your company? (Select only the most applicable.)

- Aerospace Manufacturing (1)
- Appliance and Component Manufacturing (2)
- Automotive and Transportation Manufacturing (3)
- Fabricated Metal Product Manufacturing (4)
- Industrial Equipment Manufacturing (5)
- Robotic System Manufacturing (20)
- Furniture and Related Product Manufacturing (6)
- Paper Manufacturing (7)
- Wood Product Manufacturing (8)
- Leather Manufacturing (9)
- Textile and Apparel Manufacturing (10)
- Building Materials Manufacturing (11)
- Non-Metallic Mineral Product Manufacturing (e.g., gravel) (12)
- Food and Beverage Manufacturing (13)
- Pharmaceutical and Non-Electronic Medical Devices Manufacturing (14)
- Plastics, Rubber, and Industrial Chemical Products Manufacturing (15)
- Packaging (e.g., of pre-made components or products) (16)
- Consumer Electronics and Parts Manufacturing (17)

System Integration (18)

Other (please specify): (19)

End of Block: Block 1 company demographics

Start of Block: Block 2a aero, appliance, auto, metals

2.1 What is your current role at your company?

Executive Manager (1)

Front Line Manager (2)

Chemist / Chemical Engineer (3)

Controls Engineer (4)

Machine Operator (5)

Maintenance (6)

Manufacturing Engineer (7)

Product Research & Design (11)

Quality Control (8)

Tradesman (9)

Other (please specify): (10)

2.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	0	0	0	0	0
Electrical/ Electronics Assembly (2)	0	0	0	0	0
Inspection (3)	0	0	0	0	0
Machine Tending (4)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (5)	0	0	0	0	0
Mechanical Assembly (6)	0	0	0	0	0
Painting (7)	0	0	0	0	0
Packaging/ Palletizing (8)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (9)	0	0	0	0	0
Welding (10)	0	0	0	0	0
Other (please specify): (11)	0	0	0	0	0

End of Block: Block 2a aero, appliance, auto, metals

Start of Block: Block 2a mgmt

3.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

Carry Forward Unselected Choices from "2.2"

3.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "2.2"

3.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

Carry Forward Unselected Choices from "2.2"

3.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

3.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

- Additive Manufacturing (1)
- Chemical Processing (2)
- Electrical/Electronics Assembly (3)
- Inspection (4)
- Machine Tending (5)
- Material Handling (e.g. forklift operation, picking) (6)
- Mechanical Assembly (7)
- Painting (8)
- Packaging/Palletizing (9)
- Surface Modification (surface finishing, grinding, cutting, etc.) (10)
- Welding (11)
- Other (please specify): (12)

3.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (7)
- Don't know (6)

End of Block: Block 2a mgmt

Start of Block: Block 2a non-mgmt

Carry Forward Unselected Choices from "2.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

4.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

Carry Forward Unselected Choices from "2.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

4.2 How many hours per day (on average) do you do these tasks **using automation?**

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

4.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

4.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

5.1 What is your current role at your company?

- Executive Manager (1)
 - Front Line Manager (2)
 - Chemist / Chemical Engineer (3)
 - Controls Engineer (4)
 - Machine Operator (5)
 - Maintenance (6)
 - Manufacturing Engineer (7)
 - Product Research & Design (8)
 - Quality Control (9)
 - Tradesman (10)
 - Other (please specify): (11)
-



5.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspection (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Machine Tending (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Material Handling (e.g. forklift operation, picking) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical Assembly (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Painting (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaging/Palletizing (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surface Modification (surface finishing, grinding, cutting, etc.) (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welding (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify): (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2b furniture, paper, wood

Start of Block: Block 2b mgmt

Carry Forward Selected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

6.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0	0
Welding (x9)	0	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

6.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0	0
Packaging/ Palletizing (x7)	0	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0	0	0
Welding (x9)	0	0	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.3"

6.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0
Welding (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

6.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0	0
Welding (x9)	0	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0	0

6.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Chemical Processing (1)

Inspection (2)

Machine Tending (3)

Material Handling (e.g. forklift operation, picking) (4)

Mechanical Assembly (5)

Painting (6)

Packaging/Palletizing (7)

Surface Modification (surface finishing, grinding, cutting, etc.) (8)

Welding (9)

Other (please specify): (10)

6.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2b mgmt

Start of Block: Block 2b non-mgmt

Carry Forward Unselected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

7.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0	0
Welding (x9)	0	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

7.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0	0
Welding (x9)	0	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

7.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0
Welding (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

Carry Forward Unselected Choices from "5.2"

7.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (surface finishing, grinding, cutting, etc.) (x8)	0	0	0	0	0
Welding (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

End of Block: Block 2b non-mgmt

Start of Block: Block 2c leather, textile, apparel

8.1 What is your current role at your company?

- Executive Manager (1)
- Front Line Manager (2)
- Chemist / Chemical Engineer (3)
- Machine Operator (4)
- Maintenance (5)
- Manufacturing Engineer (6)
- Product Research & Design (10)
- Quality Control (7)
- Tradesman (8)
- Other (please specify): (9)

8.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (e.g. tanning, dyeing, washing) (1)	0	0	0	0	0
Inspection (2)	0	0	0	0	0
Machine Tending (3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (4)	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (5)	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (6)	0	0	0	0	0
Packaging/Palletizing (7)	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (8)	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (9)	0	0	0	0	0
Other (please specify): (10)	0	0	0	0	0

End of Block: Block 2c leather, textile, apparel

Start of Block: Block 2c mgmt

Carry Forward Selected Choices from "8.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

9.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0	0

Other
(please
specify):
(x10)

0

0

0

0

0

0

Carry Forward Unselected Choices from "8.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

9.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0	0	0

Surface
Modificati
on (e.g.
surface
finishing,
cutting)
(x9)
Other
(please
specify):
(x10)

0

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0

0

Carry Forward Unselected Choices from "8.2"

9.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

Carry Forward Unselected Choices from "8.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

9.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0	0

Surface
Modification
(e.g.
surface
finishing,
cutting)
(x9)
Other
(please
specify):
(x10)

0	0	0	0	0	0
0	0	0	0	0	0

Carry Forward All Choices - Displayed & Hidden from "8.2"

9.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Chemical Processing (e.g. tanning, dyeing, washing) (1)

Inspection (2)

Machine Tending (3)

Material Handling (e.g. forklift operation, picking) (4)

Mechanical Assembly (e.g. sewing) (5)

Painting & Printing (e.g. screen printing, stamping) (6)

Packaging/Palletizing (7)

Product Finishing (e.g. hemming, embroidery) (8)

Surface Modification (e.g. surface finishing, cutting) (9)

Other (please specify): (10)

Carry Forward All Choices - Displayed & Hidden from "3.6"

9.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2c mgmt

Start of Block: Block 2c non-mgmt

Carry Forward Selected Choices from "8.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

10.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0	0

Other
(please
specify):
(x10)

0

0

0

0

0

0

Carry Forward Unselected Choices from "8.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

10.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0	0

Other
(please
specify):
(x10)

0

0

0

0

0

0

Carry Forward Unselected Choices from "8.2"

10.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

10.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (e.g. tanning, dyeing, washing) (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g. forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (e.g. sewing) (x5)	0	0	0	0	0
Painting & Printing (e.g. screen printing, stamping) (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Product Finishing (e.g. hemming, embroidery) (x8)	0	0	0	0	0
Surface Modification (e.g. surface finishing, cutting) (x9)	0	0	0	0	0
Other (please specify): (x10)	0	0	0	0	0

End of Block: Block 2c non-mgmt

Start of Block: Block 2d building materials, mineral products

11.1 What is your current role at your company?

- Executive Manager (1)
 - Front Line Manager (2)
 - Chemist / Chemical Engineer (3)
 - Controls Engineer (4)
 - Machine Operator (5)
 - Maintenance (6)
 - Manufacturing Engineer (7)
 - Product Research & Design (11)
 - Quality Control (8)
 - Tradesman (9)
 - Other (please specify): (10)
-

11.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspection (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Machine Tending (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Material Handling (e.g., forklift operation, picking) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaging/Palletizing (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Painting (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surface Modification (e.g., surface finishing, grinding, cutting) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welding (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify): (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2d building materials, mineral products

Start of Block: Block 2d mgmt

Carry Forward Unselected Choices from "11.2"

12.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

12.2 To the best of your knowledge, how many hours per day **per person or** machine does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

12.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

12.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward All Choices - Displayed & Hidden from "11.2"

12.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Chemical Processing (1)

Inspection (2)

Machine Tending (3)

Material Handling (e.g., forklift operation, picking) (4)

Packaging/Palletizing (5)

Painting (6)

Surface Modification (e.g., surface finishing, grinding, cutting) (7)

Welding (8)

Other (please specify): (9)

Carry Forward All Choices - Displayed & Hidden from "3.6"

12.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2d mgmt

Start of Block: Block 2d non-mgmt

Carry Forward Unselected Choices from "11.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

13.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

13.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

13.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "11.2"

13.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (6)	Somewhat easy (7)	Neither easy nor difficult (8)	Somewhat difficult (9)	Extremely difficult (10)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Packaging/Palletizing (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

End of Block: Block 2d non-mgmt

Start of Block: Block 2e food, pharma

14.1 What is your current role at your company?

- Executive Manager (1)
- Front Line Manager (2)
- Chemist / Chemical Engineer (3)
- Machine Operator (4)
- Maintenance (5)
- Manufacturing Engineer (6)
- Product Research & Design (10)
- Quality Control (7)
- Sanitizer (8)
- Other (please specify): (9)

14.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	0	0	0	0	0
Inspection (2)	0	0	0	0	0
Machine Tending (3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (4)	0	0	0	0	0
Mechanical Assembly (5)	0	0	0	0	0
Painting (6)	0	0	0	0	0
Packaging/Palletizing (7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (8)	0	0	0	0	0
Other (please specify): (9)	0	0	0	0	0

End of Block: Block 2e food, pharma

Start of Block: Block 2e mgmt

Carry Forward Unselected Choices from "14.2"

15.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

15.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

15.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

15.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward All Choices - Displayed & Hidden from "14.2"

15.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Chemical Processing (1)

Inspection (2)

Machine Tending (3)

Material Handling (e.g., forklift operation, picking) (4)

Mechanical Assembly (5)

Painting (6)

Packaging/Palletizing (7)

Surface Modification (e.g., surface finishing, grinding, cutting) (8)

Other (please specify): (9)

Carry Forward All Choices - Displayed & Hidden from "3.6"

15.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2e mgmt

Start of Block: Block 2e non-mgmt

Carry Forward Unselected Choices from "14.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

16.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

16.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0	0
Painting (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

16.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "14.2"

16.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Mechanical Assembly (x5)	0	0	0	0	0
Painting (x6)	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

End of Block: Block 2e non-mgmt

Start of Block: Block 2f plastics, rubber, chem

17.1 What is your current role at your company?

- Executive Manager (1)
- Front Line Manager (2)
- Chemist / Chemical Engineer (3)
- Machine Operator (4)
- Maintenance (5)
- Manufacturing Engineer (6)
- Product Research & Design (10)
- Quality Control (7)
- Sanitizer (8)
- Other (please specify): (9)

17.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspection (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Machine Tending (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Material Handling (e.g., forklift operation, picking) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Painting (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaging/Palletizing (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surface Modification (e.g., surface finishing, grinding, cutting) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welding (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify): (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2f plastics, rubber, chem

Start of Block: Block 2f mgmt

Carry Forward Unselected Choices from "17.2"

18.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0	0
Packaging/ Palletizing (x6)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

18.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

18.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

18.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward All Choices - Displayed & Hidden from "17.2"

18.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Additive Manufacturing (1)

Chemical Processing (2)

Inspection (3)

Machine Tending (4)

Material Handling (e.g., forklift operation, picking) (5)

Painting (6)

Packaging/Palletizing (7)

Surface Modification (e.g., surface finishing, grinding, cutting) (8)

Welding (9)

Other (please specify): (10)

Carry Forward All Choices - Displayed & Hidden from "3.6"

18.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2f mgmt

Start of Block: Block 2f non-mgmt

Carry Forward Unselected Choices from "17.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

19.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

19.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Inspection (x2)	0	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0	0
Welding (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

19.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "17.2"

19.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Inspection (x2)	0	0	0	0	0
Machine Tending (x3)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x7)	0	0	0	0	0
Welding (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

End of Block: Block 2f non-mgmt

Start of Block: Block 2g packaging

20.1 What is your current role at your company?

- Executive Manager (1)
- Front Line Manager (2)
- Controls Engineer (3)
- Machine Operator (4)
- Maintenance (5)
- Manufacturing Engineer (6)
- Product Research & Design (10)
- Quality Control (7)
- Tradesman (8)
- Other (please specify): (9)

20.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Inspection (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Machine Tending (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Material Handling (e.g., forklift operation, picking) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical Assembly (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Painting (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaging/ Palletizing (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify): (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2g packaging

Start of Block: Block 2g mgmt

Carry Forward Unselected Choices from "20.2"

21.1 To the best of your knowledge, how many hours per day **per person** does your company expect these tasks to be done **manually** (with no automation), on average?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Inspection (x1)	0	0	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

21.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Inspection (x1)	0	0	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

21.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Inspection (x1)	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

21.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Inspection (x1)	0	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0	0

Carry Forward All Choices - Displayed & Hidden from "20.2"

21.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Additive Manufacturing (1)

Inspection (2)

Machine Tending (3)

Material Handling (e.g., forklift operation, picking) (4)

Mechanical Assembly (5)

Painting (6)

Packaging/Palletizing (7)

Other (please specify): (8)

Carry Forward All Choices - Displayed & Hidden from "3.6"

21.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2g mgmt

Start of Block: Block 2g non-mgmt

Carry Forward Unselected Choices from "20.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

22.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Inspection (x1)	0	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/ Palletizing (x6)	0	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

22.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Inspection (x1)	0	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0	0
Painting (x5)	0	0	0	0	0	0
Packaging/ Palletizing (x6)	0	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

22.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Inspection (x1)	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0

Carry Forward Unselected Choices from "20.2"

22.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Inspection (x1)	0	0	0	0	0
Machine Tending (x2)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x3)	0	0	0	0	0
Mechanical Assembly (x4)	0	0	0	0	0
Painting (x5)	0	0	0	0	0
Packaging/Palletizing (x6)	0	0	0	0	0
Other (please specify): (x7)	0	0	0	0	0

End of Block: Block 2g non-mgmt

Start of Block: Block 2h electronics

23.1 What is your current role at your company?

- Executive Manager (1)
 - Front Line Manager (2)
 - Chemist / Chemical Engineer (3)
 - Electronics Engineer (4)
 - Controls Engineer (5)
 - Machine Operator (6)
 - Maintenance (7)
 - Manufacturing Engineer (8)
 - Product Research & Design (12)
 - Quality Control (9)
 - Tradesman (10)
 - Other (please specify): (11)
-
-

23.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	0	0	0	0	0
Electrical/ Electronics Assembly (2)	0	0	0	0	0
Inspection (3)	0	0	0	0	0
Machine Tending (4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (5)	0	0	0	0	0
Mechanical Assembly (6)	0	0	0	0	0
Packaging/ Palletizing (7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (8)	0	0	0	0	0
Other (please specify): (9)	0	0	0	0	0

End of Block: Block 2h electronics

Start of Block: Block 2h mgmt

Carry Forward Unselected Choices from "23.2"

24.1 How many hours per day on average **per person** does your company expect these tasks to be done **manually** (with no automation)?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

24.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

24.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Packaging/ Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

24.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

24.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

Additive Manufacturing (1)

Chemical Processing (2)

Electrical/Electronics Assembly (3)

Inspection (4)

Machine Tending (5)

Material Handling (e.g., forklift operation, picking) (6)

Mechanical Assembly (7)

Packaging/Palletizing (8)

Surface Modification (e.g., surface finishing, grinding, cutting) (9)

Other (please specify): (10)

Carry Forward All Choices - Displayed & Hidden from "3.6"

24.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2h mgmt

Start of Block: Block 2h non-mgmt

Carry Forward Unselected Choices from "23.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

25.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Packaging/ Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

25.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Packaging/Palletizing (x7)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

25.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Packaging/ Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

Carry Forward Unselected Choices from "23.2"

25.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Packaging/ Palletizing (x7)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x8)	0	0	0	0	0
Other (please specify): (x9)	0	0	0	0	0

End of Block: Block 2h non-mgmt

Start of Block: Block 2i integration

26.1 What is your current role at your company?

- Executive Manager (1)
- Front Line Manager (2)
- Controls Engineer (3)
- Machine Operator (4)
- Maintenance (5)
- Manufacturing Engineer (6)
- Product Research & Design (10)
- Quality Control (7)
- Tradesman (8)
- Other (please specify): (9)

26.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	0	0	0	0	0
Electrical/ Electronics Assembly (2)	0	0	0	0	0
Inspection (3)	0	0	0	0	0
Machine Tending (4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (5)	0	0	0	0	0
Mechanical Assembly (6)	0	0	0	0	0
Painting (7)	0	0	0	0	0
Packaging/ Palletizing (8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (9)	0	0	0	0	0
Welding (10)	0	0	0	0	0
Other (please specify): (11)	0	0	0	0	0

End of Block: Block 2i integration

Start of Block: Block 2i mgmt

Carry Forward Unselected Choices from "26.2"

27.1 How many hours per day on average **per person** does your company expect these tasks to be done **manually** (with no automation)?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "26.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

27.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "26.2"

27.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

Carry Forward Unselected Choices from "26.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

27.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

27.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

- Additive Manufacturing (1)
- Chemical Processing (2)
- Electrical/Electronics Assembly (3)
- Inspection (4)
- Machine Tending (5)
- Material Handling (e.g., forklift operation, picking) (6)
- Mechanical Assembly (7)
- Painting (8)
- Packaging/Palletizing (9)
- Surface Modification (e.g., surface finishing, grinding, cutting) (10)
- Welding (11)
- Other (please specify): (12)

27.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2i mgmt

Start of Block: Block 2i non-mgmt

Carry Forward Unselected Choices from "26.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

28.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

Carry Forward Unselected Choices from "26.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

28.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

28.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

28.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

End of Block: Block 2i non-mgmt

Start of Block: Block 2j other

29.1 What is your current role at your company?

- Executive Manager (1)
 - Front Line Manager (2)
 - Chemist / Chemical Engineer (3)
 - Controls Engineer (4)
 - Electronics Engineer (5)
 - Integrator (6)
 - Machine Operator (7)
 - Maintenance (8)
 - Manufacturing Engineer (9)
 - Product Research & Design (14)
 - Quality Control (10)
 - Sanitizer (11)
 - Tradesman (12)
 - Other (please specify): (13)
-
-

29.2 Which of the following tasks are currently being performed at your company, and in what way (e.g., manually or via automation)?

	manually only (1)	mix of manual and automation (2)	automated only (3)	this task is performed but don't know the method (4)	N/A (don't do this task) (5)
Chemical Processing (1)	0	0	0	0	0
Electrical/ Electronics Assembly (2)	0	0	0	0	0
Inspection (3)	0	0	0	0	0
Machine Tending (4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (5)	0	0	0	0	0
Mechanical Assembly (6)	0	0	0	0	0
Painting (7)	0	0	0	0	0
Packaging/ Palletizing (8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (9)	0	0	0	0	0
Welding (10)	0	0	0	0	0
Other (please specify): (11)	0	0	0	0	0

End of Block: Block 2j other

Start of Block: Block 2j mgmt

Carry Forward Unselected Choices from "29.2"

30.1 How many hours per day on average **per person** does your company expect these tasks to be done **manually** (with no automation)?

	0-3 (1)	4-7 (2)	8-11 (3)	12-16 (4)	17+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "29.2"

Carry Forward All Answers - Displayed & Hidden from "3.2"

30.2 To the best of your knowledge, how many hours per day **per person or machine** does your company expect the tasks listed below to be done using **automation** (or a mix of manual and automation), on average?

	0-3 (2)	4-7 (3)	8-11 (4)	12-15 (5)	16+ hours (6)	don't know (7)	N/A (8)
Chemical Processing (x1)	0	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0	0

Carry Forward Unselected Choices from "29.2"

30.3 How challenging are these tasks **for your employees**? If you don't know for a particular task, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

Carry Forward Unselected Choices from "29.2"

Carry Forward All Answers - Displayed & Hidden from "3.4"

30.4 How often do these tasks result in process bottlenecks? If you don't know for a particular task, please skip the row.

	2-3 times a month or less (1)	Once a week (2)	2-4 times a week (3)	Daily (4)	2-4 times a day (5)	5-7 times a day or more (6)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

30.5 Which tasks are you considering introducing or increasing automation to address in the next 5 years? Select multiple if applicable.

- Additive Manufacturing (1)
 - Chemical Processing (2)
 - Electrical/Electronics Assembly (3)
 - Inspection (4)
 - Machine Tending (5)
 - Material Handling (e.g., forklift operation, picking) (6)
 - Mechanical Assembly (7)
 - Painting (8)
 - Packaging/Palletizing (9)
 - Surface Modification (e.g., surface finishing, grinding, cutting) (10)
 - Welding (11)
 - Other (please specify): (12)
-

30.6 What is your company's estimated budget (% of total annual budget) for new technologies to support manufacturing processes?

- 0% to 5% (1)
- 6% to 10% (2)
- 11% to 20% (3)
- 21% to 50% (4)
- 51% or above (5)
- Prefer not to say (6)
- Don't know (7)

End of Block: Block 2j mgmt

Start of Block: Block 2j non-mgmt

Carry Forward Unselected Choices from "29.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

31.1 How many hours per day (on average) do you do these tasks **manually**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

Carry Forward Unselected Choices from "29.2"

Carry Forward All Answers - Displayed & Hidden from "3.1"

31.2 How many hours per day (on average) do you do these tasks **using automation**?

	0-3 (1)	4-7 (2)	8-11 (3)	12+ hours (5)	don't know (6)	N/A (7)
Chemical Processing (x1)	0	0	0	0	0	0
Electrical/Electronics Assembly (x2)	0	0	0	0	0	0
Inspection (x3)	0	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0	0
Painting (x7)	0	0	0	0	0	0
Packaging/Palletizing (x8)	0	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0	0
Welding (x10)	0	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0	0

31.3 How challenging are these tasks for you **physically**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

31.4 How challenging are these tasks for you **mentally**? If you don't do a particular task personally, please skip the row.

	Extremely easy (1)	Somewhat easy (2)	Neither easy nor difficult (3)	Somewhat difficult (4)	Extremely difficult (5)
Chemical Processing (x1)	0	0	0	0	0
Electrical/ Electronics Assembly (x2)	0	0	0	0	0
Inspection (x3)	0	0	0	0	0
Machine Tending (x4)	0	0	0	0	0
Material Handling (e.g., forklift operation, picking) (x5)	0	0	0	0	0
Mechanical Assembly (x6)	0	0	0	0	0
Painting (x7)	0	0	0	0	0
Packaging/ Palletizing (x8)	0	0	0	0	0
Surface Modification (e.g., surface finishing, grinding, cutting) (x9)	0	0	0	0	0
Welding (x10)	0	0	0	0	0
Other (please specify): (x11)	0	0	0	0	0

End of Block: Block 2j non-mgmt

Start of Block: Block 3 short answer

32.1 *This is the last page of the survey. The following open-ended questions are optional; please feel free to write as much or as little as you want. If you wish to provide additional details or feedback, please contact SMEAutomationSurvey@nist.gov.*

32.2 Generally, what are your current manufacturing challenges?

32.3 What opportunities for potential growth (for example, in manufacturing productivity/capability) would be most beneficial to your operation?

32.4 What kinds of automation do you currently use? What platforms (machines, robots, etc.) do you have for this?

32.5 What automation technologies do you think would most directly benefit your operation?

32.6 What are the biggest challenges or barriers for adoption when automating an operation?

32.7 What specifications and/or requirements do you look at when adopting an automated solution?

32.8 Where does your production facility need additional standardized methods (e.g., standardized measurement procedures, equipment specifications, common software/hardware interfaces)? In other words, which areas are currently lacking standards?



Q139 Thank you for taking this survey. Please click the 'next' button to submit your answers.

End of Block: Block 3 short answer
