CAN ROBOTS SOLVE ALL YOUR PROBLEMS?

AUTOMATION AND ROBOTICS IN MANUFACTURING

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MANUFACTURING INDUSTRY CHALLENGES

WORKFORCE AVAILABILITY

2,189 Positions Available
1,477 Positions Available
417 Positions Available

The manufacturing skills gap in the U.S. could result in 2.1 million unfilled jobs by 2030, according to a new study by Deloitte and The Manufacturing Institute. The cost of those missing jobs could potentially total $1 trillion in 2030 alone.
MANUFACTURING INDUSTRY CHALLENGES

WORKFORCE AVAILABILITY

PRODUCTION RATE VOLATILITY

“Boeing announced it would temporarily halt production of the 737 Max...” - Business Insider

“Boeing aims to nearly double 737 MAX production by end of 2023” – Reuters
MANUFACTURING INDUSTRY CHALLENGES

WORKFORCE AVAILABILITY

PRODUCT DEMAND VOLATILITY

QUALITY

Rating Formula - Rationale

<table>
<thead>
<tr>
<th>SCORE</th>
<th>RATING</th>
<th>RATIONALE</th>
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<tbody>
<tr>
<td>100%</td>
<td>Gold</td>
<td>Consistent with World Class performance</td>
</tr>
<tr>
<td>93% - 99.9%</td>
<td>Silver</td>
<td>Allows a Yellow in Group 1 or 2 or a Red in Group 3</td>
</tr>
<tr>
<td>85% - 92.9%</td>
<td>Bronze</td>
<td>Allows a Red in Group 1 or 2 or 2 Yellows in Group 3</td>
</tr>
<tr>
<td>78% - 84.9%</td>
<td>Yellow</td>
<td>Would not allow a Red in Group 1 or 2</td>
</tr>
<tr>
<td>77.9% or less</td>
<td>Red</td>
<td>Default</td>
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MANUFACTURING INDUSTRY CHALLENGES

- Workforce Availability
- Product Demand Volatility
- Quality
- Delivery

OTD
MANUFACTURING INDUSTRY CHALLENGES

- WORKFORCE AVAILABILITY
- PRODUCT DEMAND VOLATILITY
- QUALITY
- DELIVERY
- EH&S - ERGONIMICS
AUTOMATION AND ROBOTIC SOLUTIONS

COBOTS ➔ FULLY AUTOMATED
WORKFORCE AVAILABILITY
AUTOMATION AND ROBOTIC SOLUTIONS

COBOTS ➔ FULLY AUTOMATED

FLEXIBILITY
PRODUCT DEMAND VOLATILITY

MOBILE ROBOTIC PLATFORM
AUTOMATION AND ROBOTIC SOLUTIONS

COBOTS → FULLY AUTOMATED

FLEXIBILITY

STABLE, ACCURATE, REPEATABLE

QUALITY
AUTOMATION AND ROBOTIC SOLUTIONS

COBOTS → FULLY AUTOMATED

FLEXIBILITY

STABLE, ACCURATE, REPEATABLE

SIZED FOR RATE – ADAPTABLE TO RATE DELIVERY
AUTOMATION AND ROBOTIC SOLUTIONS

COBOTS ➔ FULLY AUTOMATED

FLEXIBILITY

STABLE HIGH ACCURACY – HIGH REPEATABILITY

SIZED FOR RATE – ADAPTABLE TO RATE

HEAVY, HIGH FORCES, AWKWARD POSITIONS, REPETITOUS

EH&S – ERGONIMICS
KEYS TO A SUCCESSFUL AUTOMATION SYSTEM

CULTURE & BUY-IN
KEYS TO A SUCCESSFUL AUTOMATION SYSTEM

CULTURE & BUY-IN

COLLABORATION
KEYS TO A SUCCESSFUL AUTOMATION SYSTEM

CULTURE & BUY-IN

COLLABORATION

ACCOUNT VOR VARIABILITY
KEYS TO A SUCCESSFUL AUTOMATION SYSTEM

CULTURE & BUY-IN

COLLABORATION

ACCOUNT FOR VARIABILITY

AUTOMATE FOR VALUE: 85%, 95%, 100%?
KEYS TO A SUCCESSFUL AUTOMATION SYSTEM

CULTURE & BUY-IN

COLLABORATION

ACCOUNT VOR VARIABILITY

AUTOMATE FOR VALUE: 85%, 95%, 100%?

DON’T DO DEVELOPMENT IN AN ALREADY CONSTRAINED PRODUCTION ENVIRONMENT
TRENDS IN MANUFACTURING AUTOMATION

MORE AUTOMATION AND ROBOTICS – INDUSTRY 4.0
TRENDS IN MANUFACTURING AUTOMATION

MORE AUTOMATION AND ROBOTICS – INDUSTRY 4.0

FLEXIBILITY
TRENDS IN MANUFACTURING AUTOMATION

MORE AUTOMATION AND ROBOTICS – INDUSTRY 4.0

FLEXIBILITY

ONE ROBOT – MANY JOBS
TRENDS IN MANUFACTURING AUTOMATION

MORE AUTOMATION AND ROBOTICS – INDUSTRY 4.0

FLEXIBILITY

ONE ROBOT – MANY JOBS

VISION SYSTEMS: 2D & 3D
TRENDS IN MANUFACTURING AUTOMATION

MORE AUTOMATION AND ROBOTICS – INDUSTRY 4.0

FLEXIBILITY

ONE ROBOT – MANY JOBS

VISION SYSTEMS: 2D & 3D

GREENFIELD – DESIGN FOR AUTOMATION
CAN ROBOTS SOLVE ALL YOUR PROBLEMS?
TO REMAIN COMPETITIVE, AUTOMATION AND ROBOTICS SOLUTIONS SHOULD BE GIVEN SERIOUS CONSIDERATION:

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<th>BUSINESS MODEL / BUSINESS PLAN</th>
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<tr>
<td>STRATEGIC PLAN</td>
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<tr>
<td>TACTICAL EXECUTION</td>
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<tr>
<td>CONTINUOUS IMPROVEMENT</td>
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<td>VALUE STRATEGY – EXIT PLAN</td>
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THANK YOU

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