Manufacturing: The Revenue Source You Forgot You Needed

LA Manufacturing, Workforce Development & Climate Action

Ricardo Vazquez, City of Los Angeles, Mayor’s Office
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The State of Manufacturing in the LA Region

- 13,000 manufacturing businesses throughout the Greater LA Area
- 667,075 jobs
- 90% of LA manufactures have fewer than 100 employees
- Second only to Texas in total # of manufacturers
- 60% automation potential in manufacturing, highest in all sectors
Understanding the Challenges

**Energy & Waste Footprint**
- Consumed over 772,000,000 kwh of power in 2018
- High energy use common in manufacturers that use heat in their processes
- Too much waste to landfill, particularly in the food and beverage & garment and apparel sectors

**Mayor Garcetti’s Green New Deal**
- 15% Energy Reduction
- Zero Waste by 2050
- Carbon Neutral Buildings

**Challenges**
- Complex supply chains with little transparency
- Zero waste is not perceived as a better bottom line
- Significant cost in transitioning to purely electrical processes
- Impact of Automation on Workforce
- Small manufacturers have little awareness
City of LA’s Solution: LA Made 4.0
Democratizing Smart Manufacturing will help us improve the *standard of living* for everyone.

MORE productive sustainable

**Manufacturing**
- Safer, more accessible food supply
- More efficient wastewater treatment
- More productive and connected workforce

**Resources**
- Sustainable Product Design, Operation, Maintenance
- Less waste in production processes
- More accurate & efficient emissions monitoring
- Safer, more cost-effective mining

**Infrastructure**
- Better energy management in production facilities
- More affordable oil & gas production
## Smart Manufacturing
Energy/Environment Immediate Improvement Reachability

### Operational Focus
Line & Supply Chain Productivity
Process in situ Precision
Unit Operation Performance

### Data and Modeling Focus
Model, Analyze, Diagnose, Control
Predict, Optimize

10% Adoption & 15% Economic
$200 Billion & 1.5 million jobs
10 years

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<tr>
<th>Energy Improvement</th>
<th>Operational Focus</th>
<th>Smart Manufacturing Focus</th>
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<tbody>
<tr>
<td>Paper 15 – 20%</td>
<td>Line operation</td>
<td>Process sensing, control, prediction, optimization</td>
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<tr>
<td>Steel 20 – 25%</td>
<td>Line operation</td>
<td>Property sensing, control, fidelity modeling, optimization</td>
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<tr>
<td>Metals 20 – 30%</td>
<td>Line operation</td>
<td>Property sensing, control, machine modeling, fidelity modeling</td>
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<tr>
<td>Glass 5 – 15%</td>
<td>Precision, supply chain, line operation</td>
<td>Process/property sensing, analytics, prediction, optimization</td>
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<td>Food 15 – 20%</td>
<td>Supply chain, line operation, chain of custody</td>
<td>Property sensing, prediction, diagnostics, enterprise</td>
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<td>Micro Electronics 20 – 30%</td>
<td>Precision, line operation, tool/machine supply chain</td>
<td>Diagnosis, prediction</td>
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<td>Oil Gas Chemical 5 – 10%</td>
<td>Performance, line operation</td>
<td>Process/property sensing, fidelity modeling, control, diagnosis, prediction</td>
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<td>Coatings 20-25%</td>
<td>Precision operation, line operation, supply chain</td>
<td>Image sensing, analytics, fidelity modeling, control, optimization</td>
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<td>Plastics/composites 20 – 25%</td>
<td>Precision, line operation</td>
<td>Property sensing, control, diagnostics, prediction, optimization</td>
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<td>Aerospace</td>
<td>Precision, supply chain, chain of custody</td>
<td>Supply chain data, chain of custody</td>
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<td>Utilities 15 – 20%</td>
<td>Demand response, renewables, distributed generation</td>
<td>Ecosystem management</td>
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Important to Los Angeles
One of Our Local Manufacturers