



# 2014 MPI Manufacturing Study

Please answer all questions to the best of your ability and based on your manufacturing facility. **Study deadline is Nov. 19, 2014.**

## PLANT PROFILE

1. Please indicate if this plant is part of a public or private company: (check one) 1-1  Public    2  Private
2. In which state is the plant located? \_\_\_\_\_ 114
3. What is the nature of manufacturing operations for primary products at this plant? (check one)  
 3-1  Discrete (measured by numeric quantities)    2  Process (measured by weight or volume)    3  Both or hybrid
4. What is the primary product that this plant produces (e.g., axles, software)? \_\_\_\_\_ 4
5. How many years has it been since plant start-up? (check one)  
 5-1  Less than 5 years    2  5 - 10 years    3  11 - 20 years    4  More than 20 years
6. Which criterion below best describes the volume and product mix of your plant's operations? (check one)  
 115-1  High volume/High mix    2  High volume/Low mix    3  Low volume/High mix    4  Low volume/Low mix
7. What is the approximate annual revenue of the plant's corporate parent?  
 (independently owned facilities should respond for the entire company)..... \$ \_\_\_\_\_ 300
8. What is the approximate annual revenue of this plant? (if plant is a cost center, please report as the value of shipments)  
 Past year (2013) \$ \_\_\_\_\_ 601  
 This year (2014) \$ \_\_\_\_\_ 301  
 Anticipated next year (2015) \$ \_\_\_\_\_ 422
9. How much progress has the plant made toward achieving world-class manufacturing status? (check one)  
 40-1  No progress    2  Some progress    3  Significant progress    4  Fully achieved

## HUMAN RESOURCES

10. How important is human-resource management to your plant's success over the next five years? (check one)  
 423-1  Not important    2  Minor importance    3  Somewhat important    4  Important    5  Highly important
11. Approximately how many employees (all staff) are at this plant location?  
 Past year (2013) \_\_\_\_\_ 602  
 This year (2014) \_\_\_\_\_ 303  
 Anticipated next year (2015) \_\_\_\_\_ 424
12. What percentage of plant production workers are represented by a union(s)? (check one)  
 250-1  0%    2  1 - 25%    3  26 - 50%    4  51 - 75%    5  76 - 99%    6  100%
13. What is the plant's annual labor turnover rate for the most recent year?  
 (number of voluntary and involuntary separations ÷ typical staffing level)..... \_\_\_\_\_ % 10
14. What percentage of production employees participate in empowered or self-directed work teams?  
 15-1  0%    2  1 - 25%    3  26 - 50%    4  51 - 75%    5  76 - 99%    6  100%
15. What are the average annual hours of formal training received by each plant employee? (check one)  
 13-1  Less than 8 hours    2  8 - 20 hours    3  21 - 40 hours    4  More than 40 hours
16. What percentage of positions have documented skill standards supported by training aligned with those standards?  
 (check one)  
 603-1  0%    2  1 - 25%    3  26 - 50%    4  51 - 75%    5  76 - 99%    6  100%

17. What are the approximate wages for production employees? (hourly rate without overtime)

Average wage \$ \_\_\_\_\_ 16

Starting wage \$ \_\_\_\_\_ 305

18. Which of the following human-resource practices/programs are used at this plant? (check all that apply)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> 311 Formal employee training program | <input type="checkbox"/> 312 Apprenticeship program        | <input type="checkbox"/> 313 Teaming/team-building practices |
| <input type="checkbox"/> 314 Leader/supervisor development    | <input type="checkbox"/> 315 Recruiting and hiring program | <input type="checkbox"/> 316 Paid medical benefits           |
| <input type="checkbox"/> 317 Paid sick and/or personal days   | <input type="checkbox"/> 318 Formal safety/health program  | <input type="checkbox"/> 319 Paid vacation days              |
| <input type="checkbox"/> 320 Annual review and raise program  | <input type="checkbox"/> 321 Employee-ownership options    | <input type="checkbox"/> 322 Profit or revenue-sharing plan  |
| <input type="checkbox"/> 323 Bonus plan                       | <input type="checkbox"/> 324 Education reimbursements      | <input type="checkbox"/> 325 None of these                   |

19. For the past year, how many: (total number in plant)

Job-related injuries and illnesses \_\_\_\_\_ 370

Job-related injuries and illnesses resulting in lost work days \_\_\_\_\_ 371

**OPERATIONS**

20. Please indicate which of the following improvement methodologies are followed at the plant: (check all that apply)

- |   |   |   |   |
|---|---|---|---|
| <input type="checkbox"/> 326 Agile Manufacturing      | <input type="checkbox"/> 327 Lean Manufacturing       | <input type="checkbox"/> 328 Theory of Constraints  | <input type="checkbox"/> 329 Six Sigma      |
| <input type="checkbox"/> 330 Total Quality Management | <input type="checkbox"/> 331 Toyota Production System | <input type="checkbox"/> 332 Other methodology(ies) | <input type="checkbox"/> 333 No methodology |

21. Please describe the depth and breadth of adoption of your chosen methodology(ies)? (check one)

- 604-1  None      2  Minimal      3  Moderate      4  Extensive      5  Complete

22. How important is process improvement to your plant's success over the next five years? (check one)

- 425-1  Not important      2  Minor importance      3  Somewhat important      4  Important      5  Highly important

23. What percentage of your workforce is fully engaged in your improvement methodology(ies)? ..... % 426

24. Which of these programs and/or practices occur at this plant? (check all that apply)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> 138 Benchmarking                           | <input type="checkbox"/> 140 Total productive maintenance | <input type="checkbox"/> 142 Quality certifications (e.g. ISO) |
| <input type="checkbox"/> 139 Continuous-improvement program         | <input type="checkbox"/> 173 Open-book management         | <input type="checkbox"/> 337 Strategy/policy deployment        |
| <input type="checkbox"/> 421 Waste elimination (i.e., seven wastes) | <input type="checkbox"/> 339 Value-stream mapping         | <input type="checkbox"/> 340 Kaizen events/blitzes             |
| <input type="checkbox"/> 172 PDCA problem-solving                   | <input type="checkbox"/> 144 None of these                |  |

25. Please estimate the following operation/production measures for your plant:

Measures	Current Year	3 Years Ago
<b>a. Manufacturing cycle time</b> (start of plant production to completion of primary product)	hrs 49	hrs 174
<b>b. On-time delivery rate</b> (% of goods delivered on time)	% 53	% 148
<b>c. Perfect delivery rate</b> (% of goods on time to customer-requested date, perfect quality, and to customer specifications)	% 372	% 373
<b>d. Finished-product first-pass quality yield</b> (% of product that passes final inspection)	% 46	% 147
<b>e. Scrap and rework</b> (as % of plant sales)	% 176	% 177
<b>f. Warranty costs</b> (as % of plant sales)	% 178	% 179

26. How has total production output (unit volume) changed in the past 12 months? (check one)

- 146-1  Decreased more than 20%      2  Decreased 11 - 20%      3  Decreased 1 - 10%      4  Stayed the same  
 5  Increased 1 - 10%      6  Increased 11 - 20%      7  Increased more than 20%

27. What are the plant's costs as a percentage of costs of goods sold (COGS)? (indicate % for each category)

<b>a. Labor</b>	% 41
<b>b. Overhead</b>	% 42
<b>c. Material</b>	% 43
<b>Total COGS =</b>	<b>100%</b>

28. What is the plant's cost of goods sold as a percent of plant revenue? (annual COGS ÷ annual revenue) .... % 44

29. What are the approximate sales per employee for the most recent fiscal year?

(include all employees, not just direct labor) \$ \_\_\_\_\_ per employee 60

**30. How have sales per employee changed in the past year? (check one)**

- <sup>149-1</sup> Decreased more than 10%    
  <sup>2</sup> Decreased 6 - 10%    
  <sup>3</sup> Decreased 1 - 5%    
  <sup>4</sup> Stayed the same  
 <sup>5</sup> Increased 1 - 5%    
  <sup>6</sup> Increased 6 - 10%    
  <sup>7</sup> Increased more than 10%

**31. How have per-unit manufacturing costs, excluding purchased materials, changed in the last 3 years? (check one)**

- <sup>45-1</sup> Decreased more than 20%    
  <sup>2</sup> Decreased 11 - 20%    
  <sup>3</sup> Decreased 1 - 10%    
  <sup>4</sup> Stayed the same  
 <sup>5</sup> Increased 1 - 10%    
  <sup>6</sup> Increased 11 - 20%    
  <sup>7</sup> Increased more than 20%

**32. Which of the following practices are used to manage inventory? (check all that apply)**

- <sup>180</sup> One-piece flow techniques    
  <sup>181</sup> Pull systems with kanban signals    
  <sup>182</sup> Parts/goods supermarkets  
 <sup>183</sup> Quick equipment changeovers    
  <sup>184</sup> RFID and computerized inventory tracking    
  <sup>185</sup> Production leveling/heijunka  
 <sup>186</sup> Just-in-time supplier deliveries    
  <sup>187</sup> Vendor-managed or -owned inventories    
  <sup>188</sup> None of these

**33. What are the plant's inventory turn rates for the following categories of material?**

(If your plant has no inventory for a category because goods move just-in-time, report as 365 turns)

<b>a. Raw material</b> (annual COGS ÷ average value of raw material on hand)	turns per year <sup>55</sup>
<b>b. Work-in-process material</b> (annual COGS ÷ average value of WIP on hand)	turns per year <sup>56</sup>
<b>c. Finished goods</b> (annual COGS ÷ average value of finished goods on hand)	turns per year <sup>57</sup>
<b>d. Total inventory</b> (annual COGS ÷ average value of total inventory on hand)	turns per year <sup>58</sup>

**34. Approximately what percentage of the plant's total inventory is obsolete? ..... % <sup>341</sup>**

**35. How has the total inventory turn rate changed in the last three years? (check one)**

- <sup>59-1</sup> Decreased more than 20%    
  <sup>2</sup> Decreased 11 - 20%    
  <sup>3</sup> Decreased 1 - 10%    
  <sup>4</sup> Stayed the same  
 <sup>5</sup> Increased 1 - 10%    
  <sup>6</sup> Increased 11 - 20%    
  <sup>7</sup> Increased more than 20%

**SUPPLY CHAIN**

**36. How important is supply-chain management to your plant's success over the next five years? (check one)**

- <sup>427-1</sup> Not important    
  <sup>2</sup> Minor importance    
  <sup>3</sup> Somewhat important    
  <sup>4</sup> Important    
  <sup>5</sup> Highly important

**37. Which of the following best describes your relationship with suppliers and customers? (check one for each column)**

	Suppliers	Customers
<b>Buy and sell</b> (e.g., cost and quality focus)	<input type="checkbox"/> <sup>374-1</sup>	<input type="checkbox"/> <sup>375-1</sup>
<b>Certification</b> (e.g., broad qualifications established)	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>2</sup>
<b>Cooperation</b> (e.g., sharing product ideas, best practices)	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>3</sup>
<b>Partnership</b> (e.g., sharing resources, intellectual property, cost savings)	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>4</sup>

**38. Which of the following criteria are assessed and documented for material/component suppliers? (check all that apply)**

- <sup>605</sup> Quality/reliability    
  <sup>606</sup> Delivery (to schedule)    
  <sup>607</sup> Productivity    
  <sup>608</sup> Total cost  
 <sup>609</sup> Adherence to specifications    
  <sup>610</sup> Service/responsiveness    
  <sup>611</sup> Labor practices    
  <sup>612</sup> Ethics  
 <sup>613</sup> Environmental performance    
  <sup>614</sup> Criteria of supplier's suppliers    
  <sup>615</sup> Other    
  <sup>616</sup> No criteria

**39. How have the following (on a per unit basis) changed in the past 12 months? (check one in each row)**

	Decreased more than 10%	Decreased 6-10%	Decreased 1-5%	No change	Increased 1-5%	Increased 6-10%	Increased more than 10%
<b>a. Price for your products</b>	<input type="checkbox"/> <sup>154-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>
<b>b. Component/material costs</b>	<input type="checkbox"/> <sup>342-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>
<b>c. Employee wages</b>	<input type="checkbox"/> <sup>343-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>
<b>d. Employee benefits</b>	<input type="checkbox"/> <sup>344-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>
<b>e. Logistics/transport costs</b>	<input type="checkbox"/> <sup>345-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>
<b>f. Utilities/fuel</b>	<input type="checkbox"/> <sup>346-1</sup>	<input type="checkbox"/> <sup>2</sup>	<input type="checkbox"/> <sup>3</sup>	<input type="checkbox"/> <sup>4</sup>	<input type="checkbox"/> <sup>5</sup>	<input type="checkbox"/> <sup>6</sup>	<input type="checkbox"/> <sup>7</sup>

**40. Please estimate the following customer and supplier measures for your plant:**

Measures	Current Year	3 Years Ago
<b>a. Customer reject rates</b> (parts per million)	ppm <sup>208</sup>	ppm <sup>209</sup>
<b>b. Customer retention rate</b> (% customers retained from previous year)	% <sup>210</sup>	% <sup>211</sup>
<b>c. Overseas sales</b> (as % of total dollar volume)	% <sup>212</sup>	% <sup>213</sup>
<b>d. Imported material/components</b> (% of dollar volume purchased outside home country)	% <sup>153</sup>	% <sup>214</sup>

**41. Which of the following supply-chain programs and/or practices are in place? (check all that apply)**

- <sup>389</sup> Certification of major suppliers     
  <sup>70</sup> Supplier-management program     
  <sup>390</sup> Sharing forecasts with suppliers  
 <sup>391</sup> Collaborative design with suppliers     
  <sup>71</sup> Customer-satisfaction surveys     
  <sup>392</sup> Kitting/preassembly for customers  
 <sup>393</sup> Collaborative design with customers     
  <sup>72</sup> Access to customer forecasts     
  <sup>394</sup> None of these

**42. Please indicate where your company's production volume (by percentage) is located.**

	Current year	3 Years Ago
<b>a. This plant</b>	% <sup>701</sup>	% <sup>706</sup>
<b>b. Other corporate plant(s) in United States</b>	% <sup>702</sup>	% <sup>707</sup>
<b>c. External contractor plant(s) in United States</b>	% <sup>703</sup>	% <sup>708</sup>
<b>d. Corporate plant(s) outside of the United States</b>	% <sup>704</sup>	% <sup>709</sup>
<b>e. External contractor plant(s) outside of the United States</b>	% <sup>705</sup>	% <sup>710</sup>
<b>Total =</b>	100%	100%

**CAPACITY / EQUIPMENT / IT**

**43. Please estimate the following capacity/equipment measures for your plant:**

Measures	Current Year	3 Years Ago
<b>a. Production volume</b> (as % of designed plant capacity)	% <sup>78</sup>	% <sup>217</sup>
<b>b. Machine availability</b> (as % of scheduled uptime)	% <sup>79</sup>	% <sup>218</sup>
<b>c. Overall equipment effectiveness</b> (% machine availability X % quality yield X % of optimal rate that equipment operates)	% <sup>80</sup>	% <sup>156</sup>
<b>d. Percentage of unplanned maintenance as a percentage of total maintenance</b> (% based on annual maintenance expenses)	% <sup>619</sup>	% <sup>620</sup>
<b>e. Return on invested capital</b> (net operating profit after taxes ÷ by capital invested)	% <sup>63</sup>	% <sup>151</sup>

**44. Please rate your plant's capability to monitor and measure the following: (check one in each row)**

	1= No capability	2	3	4	5= Real-time capability
Process-specific quality	<sup>560</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Process-specific productivity (i.e., value vs. waste)	<sup>561</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Process-specific pace or speed	<sup>562</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Process-specific safety	<sup>563</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Process-specific sustainability performance	<sup>564</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Location-specific inventory levels	<sup>565</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Individual equipment or machine performance	<sup>566</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
In-plant material-handling performance	<sup>567</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
External logistics/distribution performance	<sup>568</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>
Supplier performance	<sup>569</sup> -1 <input type="checkbox"/>	<sup>2</sup> <input type="checkbox"/>	<sup>3</sup> <input type="checkbox"/>	<sup>4</sup> <input type="checkbox"/>	<sup>5</sup> <input type="checkbox"/>

**45. Has your plant adopted an Internet of Things (IoT) strategy? (check one)**

- <sup>711</sup>-1 Yes     
  <sup>2</sup> Planning an IoT strategy     
  <sup>3</sup> No     
  <sup>4</sup> Never heard of an IoT strategy

**45b. If "yes," has the IoT strategy improved plant performances for any of the following? (check all that apply)**

- <sup>712</sup> Safety     
  <sup>714</sup> Quality     
  <sup>716</sup> Production costs     
  <sup>718</sup> Energy usage  
 <sup>713</sup> Machine uptime     
  <sup>715</sup> Machine longevity     
  <sup>717</sup> Other     
  <sup>719</sup> No improvements

46. Approximately what percentage of your plant's equipment is *intelligent* (i.e., incorporates technologies that enable machine-to-machine or machine-to-IT system communications)? ..... % <sup>720</sup>

47. To what extent is your plant able to track supplies and products in real time at the following? (check one in each row)

	No real-time tracking	Limited real-time tracking	Adequate real-time tracking	Extensive real-time tracking
a. Original source of materials or ingredients or furthest tier of suppliers	721-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
b. At mid-tier suppliers	722-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
c. At immediate suppliers	723-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
d. Within the plant	724-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
e. En route to customers	725-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
f. At customers	726-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

48. Why does your plant use real-time tracking of suppliers and products? (check all that apply)

- 727  To ensure product quality      729  Required by regulations      731  Required by customer  
 728  To improve production      730  Other reason      732  No tracking

49. For which functions are *effective* information technology (IT) applications and/or systems *currently in place*? (check all that apply)

- 570  Enterprise management      571  Planning/scheduling      572  Design/development      573  Procurement/purchasing  
 574  Production/operations      575  Logistics/distribution      576  Human resources      577  Accounting/finance  
 578  Supply-chain management      579  Asset management      580  Customer service/support      581  None of these

50. For which functions are applications and/or systems *likely to be purchased* in the next 12 months? (check all that apply)

- 582  Enterprise management      583  Planning/scheduling      584  Design/development      585  Procurement/purchasing  
 586  Production/operations      587  Logistics/distribution      588  Human resources      589  Accounting/finance  
 590  Supply-chain management      591  Asset management      592  Customer service/support      593  None of these

51. Approximately what percentage of IT systems and applications are cloud computing (SaaS)? ..... % <sup>621</sup>

52. Which of the following functions use *cloud-based systems or applications*? (check all that apply)

- 733  Enterprise management      736  Planning/scheduling      739  Design/development      742  Procurement/purchasing  
 734  Production/operations      737  Logistics/distribution      740  Human resources      743  Accounting/finance  
 735  Supply-chain management      738  Asset management      741  Customer service/support      744  None of these

53. What are the following investments/expenses as a percentage of plant sales for the current year, and how is that percentage likely to change next year?

	Current %	Expected change next year		
		Increase	Same	Decrease
a. Capital-equipment spending	% <sup>159</sup>	401-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
b. Information technology spending	% <sup>160</sup>	402-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
c. Process improvement initiatives	% <sup>395</sup>	403-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
d. Employee costs (all wages, benefits, etc.)	% <sup>396</sup>	404-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
e. Utilities/energy	% <sup>397</sup>	405-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
f. Material and components	% <sup>398</sup>	406-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

54. How did the following affect your company's profitability in the most recent year? (check one in each row)

	Major increase	Some increase	No change	Some decrease	Major decrease	Not applicable
a. Use of improvement methodology(ies)	334-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
b. Application of new capital equipment	347-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
c. Implementation of new IT	348-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
d. Development of new products/services	419-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
e. Investments in the workforce	420-1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

**GREEN/SUSTAINABILITY**

**55. How important is green/sustainability to your plant's success over the next five years? (check one)**

- <sup>439-1</sup> Not important    
  <sup>2</sup> Minor importance    
  <sup>3</sup> Somewhat important    
  <sup>4</sup> Important    
  <sup>5</sup> Highly important

**56. Which of these Green programs and/or practices occur at this plant? (check all that apply)**

- <sup>440</sup> Energy management    
  <sup>442</sup> Recycling/reuse programs    
  <sup>444</sup> Use of renewable energies  
 <sup>441</sup> Formal Green corporate program    
  <sup>443</sup> Carbon footprinting    
  <sup>445</sup> None of these

**57. Please estimate the following green/sustainability measures for your plant:**

Measures	Current Year	3 Years Ago
<b>a. Green products</b> (% of plant products that are recyclable/reusable)	% <sup>387</sup>	% <sup>388</sup>
<b>b. Carbon footprints</b> (% of plant products with documented carbon footprint)	% <sup>446</sup>	% <sup>448</sup>
<b>c. Green components and materials</b> (% of purchased components or materials that are recycled/regrind/etc.)	% <sup>447</sup>	% <sup>449</sup>

**58. By approximately what percentage has energy per unit of product output**

**been reduced in the past year?** (indicate an increase in energy with + symbol) ..... % <sup>450</sup>

————— Thank you for completing the MPI Manufacturing Study —————

To receive your **free Executive Summary** of this year's study findings and **free online access to customizable benchmarks** from four years of the study data, go to [www.MPIBenchmarks.com](http://www.MPIBenchmarks.com) and provide the necessary contact information.

If you would like to send a hard copy of your questionnaire, please mail to MPI Manufacturing Study, P.O. Box 4330, Dublin, OH 43016, or fax the questionnaire to 614-389-3816.