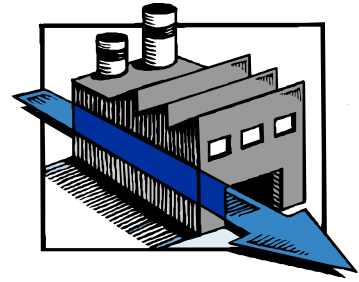


# The Georgia Manufacturing Survey 1999



- Survey questions refer to this facility.
- All individual firm and facility information will be kept confidential.
- We understand you do not always keep exact records of all activities—estimates are fine.
- In return for completing this survey, we will send a customized report with industry comparisons.

Please return this survey in the enclosed postage-paid envelope within 10 days to:

Jan Youtie  
Economic Development Institute  
Georgia Institute of Technology  
P.O. Box 7340  
Atlanta, Georgia 30359-9936  
Tel: 404/894-6111 • Fax: 404/894-0069  
E-mail: [jan.youtie@edi.gatech.edu](mailto:jan.youtie@edi.gatech.edu)

Please confirm your name and address and make any changes.

*THANK YOU FOR YOUR HELP.*

1. In which of the following areas does your facility have the most significant problems or needs?

(Check all boxes that apply.)

- Plant layout, expansion planning
- Manufacturing process, setup, scrap
- Product development/design
- Material failure, wear patterns, and other material-related issues
- Computer hardware/network systems (e.g., operating systems, CPU, communications, computer networks)
- Computer-based business and process systems (e.g., accounting, order entry, scheduling, inventory, CAD/CAM, barcoding, electronic commerce)
- Quality assurance (e.g., ISO 9000, QS-9000, Malcolm Baldrige)
- Marketing, niche marketing, market planning, exporting
- General business analysis, planning
- Basic skills (e.g., reading, writing, math, keyboard skills)
- Technical skills (e.g., quality control, preventive maintenance)
- Management skills, team-based improvement, problem-solving skills
- Energy costs, conservation
- Waste management
- Environmental, health, and safety compliance
- Other (please describe) \_\_\_\_\_

## *PRODUCTS AND PRODUCTION*

2. The main product or product group manufactured at this facility is: (Please check one box.)

- |                                                            |                                                             |
|------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Food, beverages, feed             | <input type="checkbox"/> Stone, clay, glass, or concrete    |
| <input type="checkbox"/> Textiles                          | <input type="checkbox"/> Primary metals                     |
| <input type="checkbox"/> Apparel                           | <input type="checkbox"/> Fabricated metals                  |
| <input type="checkbox"/> Lumber and wood, except furniture | <input type="checkbox"/> Industrial machinery               |
| <input type="checkbox"/> Furniture                         | <input type="checkbox"/> Electrical or electronic equipment |
| <input type="checkbox"/> Paper and paper products          | <input type="checkbox"/> Transportation equipment           |
| <input type="checkbox"/> Printing and publishing           | <input type="checkbox"/> Instruments                        |
| <input type="checkbox"/> Chemicals and allied products     | <input type="checkbox"/> Other (please describe)            |
| <input type="checkbox"/> Rubber and plastics               |                                                             |
- 

3. a. Which of the following categories best describes how this main product or product group is produced at your facility? (Please check one box.)

- New parts or products made one at a time to individual order
- New parts or products made in small production runs (less than 20 pieces a month)
- New parts or products made in medium production runs (20 to 1,000 pieces a month)
- New parts or products made in large production runs (more than 1,000 pieces a month)
- Process materials
- Remanufacture or refurbish old machines or parts

b. Once your facility receives customer orders, how does your production system respond? (Please check one box.)

- Full production on receipt of customer's order
- Pre-fabrication of stored parts, final assembly on receipt of customer's orders
- Shipped to customer from pre-made inventory
- Other

4. Does your facility use the following manufacturing technologies and techniques?  
If use, please indicate the year use began, and check box if you plan to expand use to other areas in next 2 years.  
If not use, please indicate whether you plan to use it in the next 2 years. If not, check why not.

	<u>Use</u>			<u>Not use</u>			
	Currently use	Year use began	Plan to expand use	Do not currently use	Plan to use	Do not plan to use— not economically feasible	Do not plan to use— not applicable
<b><u>Design And Manufacturing Technologies</u></b>							
CAD (computer-aided design)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CNC controlled machines	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CAD data to create machine instructions (CAD/CAM)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software for production planning and control of orders, scheduling, inventories (e.g., MRP II, ERP)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automated bills of materials via CAD-MRP	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product data management (PDM) systems to integrate product, process, and management data	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automated assembly systems	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rapid prototyping	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><u>Information Technologies</u></b>							
Electronic mail communication with customers or suppliers	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worldwide web site for information and marketing	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online ordering and selling (electronic commerce) to customers	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online purchasing from suppliers	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CAD product data exchange in electronic form with other firms (e.g., via disk or internet)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teleservice – electronic monitoring by vendor of your installed machinery and equipment (to aid maintenance, ensure uptime)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in online supply-chain management (e.g., electronic sharing and integration of production schedules)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distance learning (e.g., satellite delivery of training, video conferencing)	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><u>Management Methods</u></b>							
Cellular manufacturing	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teamwork in manufacturing planning and production	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee continuous improvement and problem-solving teams	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Just-in-time (JIT) to customers	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concurrent or simultaneous engineering	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ISO 9000, QS-9000 certification	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ISO 14000 environmental management certification	<input type="checkbox"/> → 19__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Continued

5. For the main product or product group at this facility, please describe the following characteristics of a typical order.

Average number of calendar days between receipt of customer's order and delivery (delivery time)	Calendar days
Percentage of orders delivered on schedule	%
Time needed to manufacture—average number of calendar days between production start and end (lead time), assuming all materials are available.	Calendar days
Percentage of products made in your facility that have to be re-worked as a result of quality control or scrapped due to errors	%
Machine utilization time—Attended running hours less time for setups, maintenance, repair, and failure <u>as a percent</u> of regular working hours.	%

**COMPETITIVE STRATEGY**

6. For the plant's main product or product group, please RANK the order of importance of the following factors in how you compete in the market for customer sales? 1 = Highest importance; 6 = Lowest importance. (Please do not give the same ranking to more than one factor.)

Low price	High quality	Innovation, new technology	Quick delivery	Adapting product to customer needs	Value-added customer and product services
_____	_____	_____	_____	_____	_____

7. How important are the following to improve your plant's competitiveness?

<b>Strategies</b>	<b>Very important</b>	<b>Important</b>	<b>Less important</b>	<b>Not important</b>
Development of new or improvement of existing products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Complementing products with value-added services (e.g., training of Customer staff, maintenance)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improvements in marketing and selling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improvements in manufacturing processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Methods</b>				
Investments in new machinery and plant equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investments in information technology systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organizational strategies (team-based manufacturing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personnel strategies (workforce training, cross-training, pay-for-Skills)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Do you offer value-added services to your customers such as training for your product, software development for your product, maintenance of your products, arrangement of financing, or other services?

- Yes
- No, plan to offer
- No, do not plan to offer

<p>If <u>yes</u>, approximately what percentage of your annual sales is from value-added services. (If you don't charge customers for value-added services, enter "0")</p> <p style="text-align: right;">_____ %</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9. a. In the past 3 years, have you introduced new products or existing products that contained significant technical improvements (e.g., use of new materials or improvements in function, performance or operation, not changes to details.)?  
 No  Yes What percentage of total plant sales did these products have last year (1998)? \_\_\_\_\_ %  
 How long does it take on average to develop a new product, from conception to commercialization? \_\_\_\_\_ Months
- b. Were any of these new products new to the market?  
 No  Yes What percentage of total plant sales did these products have last year (1998)? \_\_\_\_\_ %

**MANUFACTURING PRODUCTIVITY AND PERFORMANCE**

10. One important characteristic in assessing changes in Georgia manufacturing is value-added per employee, which is used as a measure of productivity. It is obtained from sales revenue less the total cost of purchased materials and services. If you don't know the approximate number, just give an estimate. All estimates should be for this facility.

	1998	1996
What were your total annual sales or gross value of shipments at this plant in fiscal year 1998? In 1996?	\$	\$
Approximately how much did you spend at this location on purchased materials, parts, and services in fiscal year 1998? In 1996?	\$	\$

11. Please estimate the following performance indicators for your facility.
- Approximate inventory turns per year (annual sales divided by value of inventory typically on hand) \_\_\_\_\_
  - Approximate number of months required to recover investments in manufacturing equipment \_\_\_\_\_ (Months)
  - Approximate number of product lines produced at this facility \_\_\_\_\_
  - Approximate average annual return on sales (pre-tax) for this plant over the last three years (Circle the number closest to your facility's return on sales.)

**Negative return**
**Positive return**

-25% or more    -15%    -9%    -6%    -3%    **0%**    +3%    +6%    +9%    +15%    +25% or more

**WORKFORCE AND TRAINING**

12. Now, we would like to ask a few questions about your work force. If you don't know exact numbers, just give an estimate.

	1998	1996
On average, how many employees worked at this location? (Include temporary workers and convert part-time and contract labor to full-time equivalents.)	Full-Time Equivalent Employees	Full-Time Equivalent Employees
What was your total payroll at this location in fiscal year 1998? In 1996? (Please include direct payroll plus indirect fringe benefit payroll expenses. Include payments to agencies for temporary workers.)	Payroll \$	Payroll \$

13. Approximately what percentages of the employees at this facility have:

University or college (four year) degrees \_\_\_\_\_%

2 or more years of industrial-related training, through any combination of apprenticeship, technical college or vocational school, or formal training provided by your company, outside trainers, or another firm \_\_\_\_\_%

14. In total, approximately how many hours of formal training was provided to employees in fiscal year 1998? \_\_\_\_\_

15. Approximately what percent of employees at this location used a computer or programmable machine controller at least once a week as part of their job? \_\_\_\_\_%

16. If you have introduced teamwork into the production process:

		Yes	No
What percentage of employees in production work are in teams?	%	<input type="checkbox"/>	<input type="checkbox"/>
How many employees work in a production team on average?		<input type="checkbox"/>	<input type="checkbox"/>

***AN IMPORTANT PART OF UNDERSTANDING MANUFACTURING PRACTICES CONCERNS THE RELATIONSHIP BETWEEN COMPANIES AND THEIR MARKETS. WE WOULD LIKE TO ASK SOME QUESTIONS ABOUT THESE RELATIONSHIPS.***

17. Please estimate what percentage of your materials is purchased from the following locations. Also estimate what percentage of your shipments go to the following locations.

	Sources of purchased materials	Shipments of products
Georgia	%	%
Elsewhere in the United States	%	%
Canada	%	%
Europe	%	%
Mexico, Central and South America	%	%
East Asia	%	%
Elsewhere in the world	_____%	_____%
<b>Total</b>	<b>100%</b>	<b>100%</b>

18. Does your establishment cooperate with other firms in any of the following business areas?

If yes, please indicate the type of partner.

If no, please indicate your plans for future cooperation. (Check boxes to indicate answers.)

	Yes			No					
	Currently cooperate	Types of Partners Local National Global			Do not currently cooperate	Plan to start in next 2 years	Why not Negative experiences No suitable partners Not needed		
<u>Business Areas</u>									
Marketing/sales (e.g., through trade shows)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bids on contracts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training with other firms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooperative purchasing or shared benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality or continuous improvement groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing customers value-added services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product development, process improvement or research cooperation with customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product development, process improvement, or research cooperation with suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***An important purpose of the study is to learn more about your use of business assistance resources.***

19. In the past two years, has your facility received business assistance from: (Check all that apply.)

- Georgia Tech (main campus or regional office)
- A public or non-profit business assistance source, such as a federal, state, or local government program, university (not Georgia Tech), technical institute, utility, technology transfer or training center
- A private-sector business assistance source, such as a private consultant, vendor, customer, or other private source
- Facility has not received outside assistance

20. Would your company be interested in receiving training from Georgia Tech on any of the following? (Check all that apply.)

- Lean manufacturing, continuous flow manufacturing systems
- Set up reduction, preventive maintenance, total productive maintenance
- Constraint management, theory of constraints techniques
- Supply chain management
- Electronic commerce, Internet applications to supply chain management
- MRP II, ERP, production scheduling, inventory management, accounting software
- Barcoding
- ISO 9000, QS-9000 quality certification
- ISO 14000 environmental management certification
- Human resources development, management development, team training, change management
- Safety & health, ergonomics
- Pollution prevention
- General business analysis, planning
- Marketing, niche marketing, market planning
- Product development, rapid prototyping
- Energy management
- Project management
- Other topics (please describe) \_\_\_\_\_

Please check box if you would like to receive information about Georgia Tech's services, seminars, and workshops.

***If you received Georgia Tech assistance, please go to Question 21. Otherwise thank you!***

**FOR COMPANIES RECEIVING ASSISTANCE PROVIDED BY GEORGIA TECH**

21. a. What impacts have resulted, or are expected to result, from the assistance provided by Georgia Tech? (Check box.)

	Resulted (in past 2 years)	Expected (in next 2 years)	Neither
Improved an existing product or service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved an existing process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adopted new technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved relationships with existing customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved response to market needs and trends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved profitability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe) _____			

b. What impacts on your employees/managers have resulted, or are expected to result, from the assistance provided by Georgia Tech? (Check box.)

	Resulted (in past 2 years)	Expected (in next 2 years)	Neither
Improved employee skills and know-how	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved management/owner skills and know-how	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase in employee wages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greater flexibility and/or team orientation of employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased attention to quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greater use of computers in the company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other impact on staff (please describe) _____			

c. As a direct result of the assistance received from Georgia Tech, has there been any impact on the number of people your company employs? Please enter numbers. *If no employment effects resulted or are expected, please enter "0."*

	FULL TIME EQUIVALENT JOBS	
	RESULTED (IN PAST 2 YEARS)	EXPECTED (IN NEXT 2 YEARS)
Number of jobs created		
Number of employees that your company would have been forced to lay off		
Number of jobs eliminated		

22. a. Considering all the benefits from Georgia Tech assistance you identified in Question 21, but not the costs, what is your estimate of the dollar value, to date, of the following:

APPROXIMATE TOTAL BENEFITS	
Increased sales	\$ _____
Savings in labor, materials, energy, waste, and other cost savings	\$ _____

b. What has been the approximate total costs of your facility's involvement in the project(s)? (Total costs include personnel costs, materials, travel, marketing, equipment, and other project-associated investments.)

APPROXIMATE TOTAL COSTS
\$ _____

**Your assistance is greatly appreciated!**