Honda Reduces Manufacturing Costs By 87 Percent With Prototype Biological Manufacturing System

One of the largest and perhaps most successful projects started under the Intelligent Manufacturing Systems (IMS) international R&D program has completed its first phase of research with some stupendous results. The Next Generation Manufacturing Systems (NGMS) project, one of 14 IMS-sanctioned programs, has demonstrated a manufacturing system based upon biological concepts that reduces the operational cost of a production line by almost 90 percent. Given the successes achieved over the past five years, participants have agreed to start phase two, which will be a three-year effort expected to consume $140 million.

In one NGMS project, Honda Engineering and Fujitsu replaced a traditional automobile assembly line with a simulation of one based upon biological concepts of learning and evolving. Honda designed an automobile welding operation capable of producing 1,000 vehicles per day of 20 different body styles based upon a concept of repulsion fields and attraction fields. Intelligent mobile welding robots are attracted to an automobile body that is mounted onto its own automatic guided vehicle (AGV) capable of moving around the shop floor. Both dock up to each other and the welder performs its hundreds of welds as the AGV moves through the plant.

"As you run the comparison and look at the shop floor, the welder availability, the number of welders required and the productivity that is achieved, and do a side-by-side comparison with the existing process, there was an 87 percent reduction in the operation cost of that part of the automobile manufacturing facility," says Honda

Manufacturers Tell Microsoft Its System Is ‘Hell’

The Microsoft Manufacturing User Group is fighting Microsoft's tendency to screw up manufacturing applications by constantly updating its operating system in such a way that makes old applications not work. Microsoft's manufacturing offerings tend to be "hell," says the user group in its first feedback report to Microsoft.

"Rapid release of new versions of the Windows operating systems plus numer-

ASME Scoops Up engineering.org For A Record Domain Name Price

The American Society of Mechanical Engineers has reportedly set a new record for the purchase of a domain name that ends with dot-org. The professional society has purchased www.engineering.org for $199,000. The sale was completed via an Internet bidding process on Easter Sunday.

"We are one of the largest engineering societies and deal with engineers around the world," says ASME manager of public affairs Phillip Hamilton. "We're trying to position ourselves as a premier source of information for engineers, not just in the traditional ways but in the electronic media."

The domain name should give ASME a leg up in the extremely competitive world of engineering Web sites. "We think a broad engineering presence is important on the Internet," says Hamilton. ASME has been looking at buying various domain names and reacted to the opportunity when it arose. It is not currently pursu-
New Methane Hydrate Energy Source To Be Investigated

President Clinton has signed a bill that authorizes a new $47.5 million, five-year program to research the potential for developing methane hydrates, potentially one of the most abundant and clean burning fuels on the planet. Methane hydrates are an ice-like substance found in deep ocean sediments and in the Arctic permafrost that contain methane in a highly concentrated form.

"Recent estimates made by the U.S. Geological Survey are that the total methane resources in hydrates exceeds the energy content of all other fossil fuel resources such as coal, oil and conventional gas," says the House Science Committee. "If only a fraction of the hydrate resource can be made available, utilization of this cleanest burning of all fossil fuels could play a key role in mitigating global warming concerns and improving air quality."

The bill (H.R. 1753) was introduced by Mike Doyle (D-Penn.).

Asia Is Embracing E-Commerce

Japan, Taiwan, Singapore and Malaysia are electronics powerhouses and are rapidly developing new capabilities that exploit the Internet and electronic commerce, say two researchers with the Center for Research on Information Technology and Organizations at the University of California, Irvine. U.S. companies such as Yahoo, Amazon, Dell, Compaq, Gateway and Apple are all active in Asian markets. Their involvement there "should provide Asia with the technology, capital and business experience that it needs to ramp up quickly in e-commerce," say Jason Dedrick and Kenneth Kraemer.

But many U.S. internet companies "are so focused on the domestic [U.S.] market that they have paid little attention to Asia, especially during the financial crisis there," say the two researchers. "This needs to change or those companies will find themselves left behind in Asia and perhaps even facing competition from Asia in the U.S. market."

After visiting the four countries, Dedrick and Kraemer found that Asian entrepreneurs and investors "are in a frenzy to start new companies and take them public." Established Asian companies are scrambling to adopt their own Internet strategies. "Governments are loosening restrictions on IPOs, promoting e-commerce, trying to attract new investment into the Internet sector, and introducing competition into the critical telecommunications sector," say Dedrick and Kraemer.

Japan is a hotbed of Internet activity. One of the country's most revered businessmen is Internet billionaire Masayoshi Son, founder of Softbank, which has invested heavily in Internet companies. (Softbank owns a 24 percent stake in Yahoo in the U.S. and 50 percent of Yahoo in Japan.) Son is helping create a new stock market in Japan that is similar to the Nasdaq.


Venture Capitalists Are Pouring Billions Into New Companies

The venture capital industry is booming. During the first quarter of this year, $22.7 billion was invested in new companies, a 266 percent increase over the $6.2 billion invested during the same quarter of last year. A total of 1,557 companies received venture funding during the first quarter, up from 851 companies during the same quarter of 1999.

"Average investments per company have risen because entrepreneurs need more capital to establish a leading market position," says Steve Lazarus, president of the National Venture Capital Association's research committee. "In addition, the Internet has broken down regional boundaries, making target markets larger. Today's young companies must also establish global leadership in their early stages of development, which require significant infrastructure investment." The average amount a company received was $14.57 million, as compared to $7.24 million during the first quarter of 1999.

Eighty-five percent of the $22.7 billion invested during the first three months of this year went into companies in the early or expansion stage of their development, up from 65 percent last year. For more information go to www.nvca.org.
Philips's Ohio Television Production Lines Can’t Make It In America

It’s virtually impossible to manufacture televisions in the United States, says Philips, which has announced that it is moving its big television production lines from Ottawa, Ohio, to an undisclosed site in north central Mexico. The Ottawa plant produces almost four million 25-inch and 27-inch sets per year on four lines. Production of 32-inch sets and larger will remain in Ohio.

Philips, based in the Netherlands, says the only way to stay competitive is to move to a low-wage cost area. The average salary with benefits for the 1,500 American workers who will lose their jobs in Ohio total between $45,000 and $50,000 per year. The same production worker in Mexico will make about $6,000 per year, which includes benefits.

“There is no way we can compete with that,” says John Benjamin, president of the company’s local 1654 International Brotherhood of Electrical Workers. “Even if you’re running at 100 percent efficiency, you’ll still have that Mexico wage battle. Everybody’s job is on the line.”

There has been significant price erosion in the cost of televisions and Philips is projecting a continuing drop over the next five years, says Dave Thompson, Philips’s manager of corporate communications. The cost of a 25-inch television has fallen from $500 five years ago to about $200 today. “We are the largest tube manufacturing company in the world and we want to remain so,” says Thompson. “Doing that requires taking strategic measures to offset the sales price erosion.”

Philips has found that 90 percent of the manufacturing customers to whom it delivers tubes have relocated to Mexico and that it makes logistical sense to be close to them. Philips cannot be competitive in the television industry by remaining in Ohio, says Thompson. “The only way we can stay in Ohio is by having a serious offset in the cost of operations to deal with the sale price erosion. The bulk of the cost of the operations is the cost of personnel.”

The labor union representing the workers at the plant is understanding of Philips’s woes, but it says the company invested little in automation technologies since it purchased the factory from GTE Sylvania almost 20 years ago.

“Everything has stayed basically the same,” says Benjamin. “Now they’re going to build a ‘Cadillac’ of a plant in Mexico.

Philips has been trying to reduce costs at the plant for the past year, but much of what it has done has backfired, says the union boss. The company laid off 74 salaried personnel, but got rid of technical people who make the lines run smoothly. “There was no one to respond to problems and the maintenance guy couldn’t do it all,” says Benjamin. “You need technicians to adjust or set up equipment and people were getting frustrated.”

Adds Thompson: “It’s a crisis for the people in this area. It’s not fun to be part of any of this.”

Manufacturing Owners, Directors Don’t Pursue E-Manufacturing

Most manufacturing companies are not being pressured by their senior managers or board of directors to come up with a cogent Internet strategy, reports the Manufacturers Alliance/MAPI. Only 29 percent of those responding to MAPI’s survey said their owners or board of directors asked for a report on the corporation’s Internet strategy. “In 71 percent of the firms surveyed, the owner or board has not requested this type of report,” says MAPI. “Twenty-nine percent are not convinced that Wall Street rewards an industrial company for its e-business initiative.” One respondent said: “Some businesses do not lend themselves to e-commerce.” For more information, go to www.mapi.net.

NOAA Reports Warmest Winter Ever

The first quarter of this year was the warmest ever recorded, says the National Oceanic and Atmospheric Administration. The average daily temperature of 41.7 degrees F. was one degree higher than the last record for the three-month period set in 1990. Temperature data show that the period from June 1999 through March 2000 was also the warmest ever for that time. "Our climate is warming at a faster rate than ever before recorded," says NOAA administrator James Baker. "Ignoring climate change and the most recent warming patterns could be costly to the nation." For a complete breakdown, go to http://www.noaanews.noaa.gov/stories/s412.htm.

DePaul’s Quality Institute To Sell Its Services

DePaul University has created a new consulting practice to train companies in ISO-9000, QS-9000 and ISO-14000 compliance tactics. These quality standards “are fast becoming the distinction between the ‘haves’ and the ‘have nots’ when it comes to supplier agreements with the auto industry, telecommunications and large manufacturing companies,” says the institute. “Many of them require suppliers to guarantee business process excellence before they sign contracts.” DePaul’s Quality Institute will provide on-site collaboration on achieving certification to the standards. For more information, call David Millunchick at 312-362-6327.
Honda...

(Continued from page one)

NGMS program director Charles Anderson of the Consortium for Advanced Manufacturing - International, which is the international coordinating partner for the NGMS program.

When the biological manufacturing systems research partners ran their financial comparisons, they found that the initial cost of facilities, conveyors, AGVs and power sources were pretty much the same as for a traditional assembly line. But the operational cost of the “line-less” system was dramatically lower, with an 80 percent reduction in the cost of personnel.

The total cost of running a traditional automobile welding assembly line is $35 million per year as compared to $4.3 million per year for the one based upon a biological approach. “The bottom line is there is a tremendous reduction in operating costs,” says Anderson.

Given the success of the project, NGMS participants plan on taking the research to the next phase by building a pilot plant. The NGMS program is also conducting research into autonomous distributed manufacturing systems and adaptable, flexible and reconfigurable manufacturing systems. It has completed initial projects that have relevance to six industries: aerospace, automotive, electronics, small device apparatus equipment, buildings and construction and heavy equipment.

Twenty-two companies have been involved in the effort and CAM-I plans to hold a public meeting describing the results of phase one on May 17 in Gaithersburg, Md., with speakers from Honda Engineering, Rockwell Collins, and Kawasaki Heavy Industries. A meeting describing NGMS’s proposed second phase of research will follow on May 18 and 19 at the National Institute of Standards and Technology. It is reserved for NGMS participants and those companies seriously considering joining the program. For more information on the meetings or to purchase a copy of the 500-page, $49.95 report describing the NGMS phase one accomplishments, go to www.cam-i.org.

General Accounting Office Takes A Swipe At Advanced Tech Program

The General Accounting Office has investigated three companies supported by the federal government’s Advanced Technology Program and has concluded that the program is incapable of funding unique research that is not being supported by the private sector. GAO, the congressional auditing agency, selected three of 199 completed ATP projects and concluded that it is “unlikely that ATP can avoid funding research already being pursued by the private sector in the same time period.”

The critique, prepared for ATP opponent Republican Rep. James Sensenbrenner, chairman of the House Science Committee, was not well received by the National Institute of Standards and Technology, the Commerce Department agency that runs the program, which this year will have $211 million to spend. “I disagree with both the methodology and the conclusions reached in this report,” says NIST director Ray Kammer. “The implied argument is that the federal government should not fund research that shares the same overall goal as research funded outside the government. By that doubtful criterion we would shut down federal research on cures for cancer, AIDS and a host of other diseases; wireless communications; computing technology; manufacturing, etc.”

GAO says Kammer’s argument is wrong. The law creating ATP “states that ATP program administrators should ensure that they are not funding existing or planned research that would be conducted in the same time period in the absence of ATP financial assistance,” retorts Gary Jones, GAO’s associate director of Energy, Resources and Science Issues.

GAO makes little or no mention about the successes of the program, says Kammer. Numerous projects have resulted in the development of promising products. “In the 10 years that ATP has been in operation, if there was concern that ATP was funding research which duplicated that performed by other organizations, ATP would have received numerous complaints from those organizations,” Kammer points out. “This is not the case.”


GAO Lukewarm Toward PNGV

The U.S. federal government has spent $1.25 billion since 1995 on its Partnership for a New Generation of Vehicles program, and the results to date are not so bad, but not so great either, says the General Accounting Office, a normally harsh critic.

“Overall, the partnership is making progress toward its goals, but obstacles remain,” says the GAO in its assessment of the program. The automobile companies say they welcome the joint research initiative because of its focus on technologies and manufacturing techniques that are much longer term in nature than they are willing to fund.

But some of the goals of the program may not be achievable. “While the partnership is making progress toward developing an 80-mile-per-gallon production prototype vehicle by 2004 (the focus of the program), according to senior industry representatives, such a vehicle is unlikely to be manufactured for the general public at a cost that is competitive with conventional vehicles in the near future,” says the assessment. “Second, the federal funding attributed to the partnership may overstate federal support of its goals because 45 percent of the reported funding for the activities of the partnership is either only indirectly relevant to its goals or is not coordinated through the partnership so that the technical merits of the research can be considered by the partners.”
The Internet Will Not Have Dramatic Impact On Steel Productivity

Selling steel via the Internet is not going to result in huge productivity gains for the steel industry, says one of the country’s largest producers of steel. The steel industry has come through a period of massive restructuring, whereby just over a decade ago it took 10 man-hours to produce a ton of steel. Today, it takes about three man-hours.

“The [productivity] bell curve is flattening out,” says Alan McCoy of Middletown, Ohio-based AKSteel. Most productivity savings will continue to come from such things as predictive and preventative maintenance because downtime can cost a company tens of thousands of dollars per minute.

The Internet will help streamline the supply chain, allowing all companies to view demand information in real time and make adjustments. This will be an evolutionary process, however, because the industry has gone from using the telephone, to fax, to EDI and now the Internet. “If everybody is looking at that data simultaneously, then that will increase the manufacturing flexibilities and we’ll be able to react much quicker as a first tier or a second-, third- or fourth-tier supplier,” says McCoy.

“There has been a lot of hoopla about e-commerce but we’ve been with EDI with our major customers for years and the Web is the next logical step.”

For AK Steel the online steel marketplaces will represent only a small percentage of its sales because a great preponderance of the company’s products are sold on multi-year contracts. The exchanges are basically serving the spot market for sales.

The company is supplying Toyota’s Georgetown, Kentucky, and Princeton, Indiana, plants with steel on a just-in-time basis. “Not to exclude our other good customers, but in Georgetown, you see a Sienna van going down the line followed by a Camry, followed by an Avalon, followed by a van all day long,” says McCoy. “It’s just amazing to have the parts stage for that kind of difference in product mix.”

AK Steel has opened warehouses near Toyota’s plants because the company’s window of delivery is often less than an hour. “If it’s outside of that, they don’t want to talk to you,” says McCoy. “We are now printing directions to give to truck drivers that say if you’re 15 minutes early, pull off here and get a cup of coffee at Joe’s and then it’s exactly 12.7 minutes from there to Toyota’s delivery door.” AK Steel has had to pick up Toyota’s inventory costs, but that is the cost of doing business.

AK Steel, which employs 11,000 workers, is raising prices for the first time in years, due to strong demand. The price of hot- and cold-rolled products will increase $20 per ton and by $25 per ton on all coated steel products.

Half of the company’s shipments go to the automotive industry, and the automotive industry is booming. “We used to think of 12 million or 13 million units as a great year and 15 million as outstanding,” says McCoy. “But we’ve had 15 million and up and when we go back below 15 million, people will think the bottom has fallen out of the market, but that will still be a very good year.”

Analysts have asked the company why it doesn’t diversify out of the automobile industry because when the sector takes a downturn, the company will follow in its wake. “When autos go down, there is no place to hide if you’re selling steel, glass, rubber or any number of other components in our economy,” says McCoy.

Rockwell Puts Together An Internet Strategy

Rockwell says it is fully ensconced in the Internet economy. The company has spent $70 million so far on 300 company Internet initiatives and plans on spending an additional $15 million to $20 million each year to leverage its supply chain and improve operations through the use of Internet applications. “Our e-business initiatives are opening new market opportunities that have the potential to provide revenue growth of 2 percent to 4 percent by 2004,” says CEO Don Davis. For full details on the company’s Internet strategy, go to www.rockwell.com.

Corning Grows With The Glass Market

Corning says it will spend nearly $130 million to double the manufacturing capacity of its Japanese plant that produces glass for liquid crystal displays. The Shizuoka facility is having a difficult time keeping up with demand for its glass used in notebook computers, flat panel desktop computer monitors, Internet devices and LCD televisions. Demand has skyrocketed by 45 percent over the past year, and the company’s net income from its Information Display group was 2.5-times higher in the first quarter of this year as compared to the same quarter in 1999, and 50 percent greater than the fourth quarter of 1999.

“We expect the glass market to triple over the next several years and we are increasing our capacity to keep pace with this growth,” says Peter Volanakis, vice president in charge of the division. The company will also spend $50 million to construct a new flat-panel glass facility in Taiwan; $66 million to expand capacity at its Harrodsburg, Ky., facility; and $200 million to quadruple its LCD glass capacity that it produces with Samsung in Korea.
Cargill Dow To Build Corn Plastics Plant

Cargill Dow, a 50/50 joint venture between Dow Chemical and Cargill Inc., has broken ground on a new plant in Omaha, Neb., which the two companies say is the first in the world that will produce plastics out of corn. The "several hundred million dollar" plant will be on stream by 2002 and will use 40,000 bushels of corn per day to make a polymer that can be used in consumer goods, clothing, furniture, food containers and candy wrappers. The plant will produce 300 million pounds of plastic per year.

"The development of a manufacturing plant that can make commercially available plastic and natural-synthetic fibers out of an agricultural crop is a significant milestone for U.S. farmers," says Lee Klein, president of the National Corn Growers Association.

Cargill Dow says that by using a simple process of fermentation, distillation and polymerization of natural plant sugar, the company is able to harvest the carbon that plants remove from the air during photosynthesis and use it as the basis for a polymer resin called polylactide.

Cargill Dow says there is already tremendous interest in the plastic. "We anticipate that our plant could be well on its way to being fully sold out when it comes on line," says company CEO Jim Stoppert.

The polylactide polymer can also be used in injection blow molded bottles, foams, emulsions and chemical intermediaries. The concept was funded by the National Corn Growers Association, the U.S. Grains Council and the National Institute of Standards and Technology's Advanced Technology Program.

GE Elevates Its Online Sales Activities

General Electric is hoping to substantially boost online sales. Last year, the company booked $1 billion in new business over the Internet. The company has revamped its Web site to enable all of its divisions to sell directly to customers.

"GE has made it a priority to migrate its traditional 'brick and mortar' businesses to new e-business models," says the company. Last year e-business "became an official GE initiative, joining Six Sigma, Globalization and Services as the key growth strategies for the company," says GE.

The company is requiring that every GE business unit has a "customer Web center," and that they are all migrating internal procurement and supplier resources to the Web. The company's site is at www.ge.com.

Nortel Sells Off Semiconductor Manufacturing

Nortel Networks is unloading its semiconductor manufacturing capability to STMicroelectronics. The two companies have signed an agreement for STM to produce $2 billion worth of product for Nortel over the next three years.

The sell off is part of Nortel's strategy to contract out its manufacturing so that it can more quickly turn out new products. The agreement will enable Nortel "to leverage the capabilities of a world-class external manufacturing supplier," says Nortel vice president and general manager Barbara Callaghan. "This provides us with greater ability to focus on our core business of developing quality systems and services for the Internet." Nortel will transfer 460 jobs to STMicroelectronics, formerly SGSThomson Microelectronics.

New Trade Group Created For B2B Portals

A new trade association has been formed by the Internet trade exchanges. The Forum for Trust in Online Trade has opened shop in San Francisco and will "educate Internet users on the necessity of building concrete trust in the virtual world of business to business," says Hal Loewy, vice president of marketing with SGSoNSITE. "Only by increasing trust between electronic buyers and sellers and by setting confidence-building standards can B2B's promise be fully realized." For more information, go to www.thetrustforum.com.
States Must Start Planning Now For A Viable Future Transportation Network

It's going to take a long time for the United States to dig itself out of the transportation mess that has been created since the invention of the internal combustion engine, says the recently formed Center for Technical Information at the National Conference of State Legislators.

"Almost all of the current ground transportation options considered by the federal and state governments deal with ameliorating traffic problems within the next five to 10 years, but none of them have any intermediate or long-term perspective that can simultaneously deal with increased air pollution, a substantial rise in the cost of oil and growing gridlock in metropolitan areas," says the center in its comprehensive study on the transportation alternatives available for planners. "An urgent need exists to seek a comprehensive long-term approach to the transportation of goods and people in a time frame beyond the next decade."

What will it take to change the transportation infrastructure of the entire country? Probably not a huge spike in gasoline prices, even though such a spike is inevitable as the world petroleum industry reaches peak production within the next 20 years. It will likely take unbearable gridlock for people to start pressuring governments to begin building a suitable mass transit infrastructure, says the center.

"Financial support by the federal government for transportation is concentrated on highway construction and research and development to improve the efficiency and reduce the pollution emitted by single-occupancy vehicles," the study notes. "State governments often are forced to abide by and pay for federal mandates related to air pollution and use of alternative fuels."

The development of a new propulsion system for automobiles will be important to reduce air pollution, but many new technologies such as fuel cells or hybrid vehicles will require the creation of a new infrastructure and need additional technological breakthroughs. "Federal mandates that require the states to purchase alternative fuel vehicles and reach a certain percentage of alternative fuel vehicles in their fleet in the future should be revised because there are no indications that these regulations are the most effective way to improve air quality," says the center. "Moreover, dual-fuel vehicles, that are considerably more expensive than gasoline vehicles — have not lived up to their promise."

Gridlock is estimated to cost Americans $74 billion per year in lost time and wasted fuel. Adding new lanes to highways is only a short-term fix. States should encourage telecommuting and should begin planning new mass transit systems "to help reduce congestion and soften the impact of high fuel costs on low-income Americans," says the center. "The most energy efficient urban public transportation option is a well-designed light rail system."

The National Conference of State Legislators created the Center for Technical Information earlier this year with seed money provided by the United Engineering Foundation, the Foundation of State Legislatures, the American Society of Mechanical Engineers, American Chemical Society and the Institute of Electrical and Electronics Engineers. "The financial support provided by UEF was the critical factor in opening the doors of state government to objective engineering and technical counsel on a continuing and systematic basis," says the center.


Figure 24. U.S. Oil Production: 1900 - 2050

From "Ground Transportation for the 21st Century" by the National Conference of State Legislators
INTERVIEW: J.D. POWER IV

The Quality Revolution Is Changing

J.D. Power & Associates is perhaps one of the best known firms tracking quality in the automobile industry throughout the world. The Agoura Hills, Calif.-based marketing information firm has just released its latest Initial Quality Study and it found that Toyota is hard to beat. The company captures the top spot in eight of 14 automobile segments with the Lexus LS400 leading all other models for the fourth year in a row.

Manufacturing News editor Richard McCormack interviewed James D. Power IV about the results of the latest survey and trends in quality. For a complete breakdown of the automobiles that rank the best in each class, go to the company's Web site at www.jdpa.com.

Q: How much better are automobiles today than they were 20 years ago?
Power: In the traditional ways of looking at quality, the automobile industry has gotten tremendously better. The question is how is the definition of quality changing. What was regarded as the foundation of quality is very different today and will be different 20 years from now.

Q: How is the definition of quality changing?
Power: It is moving away from the idea of things gone wrong. It will be a strike against you — and a major strike against you — if you are not performing up to a certain level of quality. But it’s not going to be a particular advantage to be best in class.

Where we see the new frontier of quality is in the softer side of things that have gone right — the dimensions of how a particular product feels or looks to a customer. It’s a much more subjective level of quality.

Q: So are the statistics you put together becoming less important?
Power: They’re giving the industry — the engineers and assembly plant managers — something to focus on so that they can be measuring how well they are or are not improving. It is significant. You go to different plants throughout the world and you see references on how they want to improve their J.D. Power score.

Q: The automobile industry seems to be incredibly good at quality compared to other industries, especially the computer industry. Power: We have done work for the computer industry measuring customer satisfaction — and we’re defining satisfaction broadly with a component of it being quality. What we found is that the industry is so enamored with technology and the changes in technology that they don’t want to wait; they don’t want to look back. They’re always looking forward. There is a danger in that. Some of the companies — like Apple — that have tried to make the customer more of a focus of its plans are destined to do better from a marketplace standpoint.

Q: What has been the primary lesson over the past 20 years with regard to the quality movement in the automobile sector?
Power: I would say making the customer more of an integral part of the quality evaluation. In the past, guys would pride themselves on being the quality inspector and they could count how many paint swirls there were in the finish of a car. Their definition of quality was engineering driven, not customer driven. In the last 20 years, the automobile industry has gotten more focused on what it means to the end customer, especially as the industry is looking to rationalize costs. Using customers and their perceptions as a focus has been the biggest step forward.

Q: Do customer perceptions of quality constitute a majority of companies’ quality focus now or is it still the engineers?
Power: It depends on the corporate culture of a manufacturer.

Q: Why are the Japanese manufacturers so much better than the Americans?

(Continued on next page)
J.D. Power... (Continued from previous page)

Power: The issue really isn’t a country of origin any more. It’s more of an issue of what is the corporate culture. Just because you’re a Japanese company doesn’t mean that you are guaranteed success. Toyota and Honda have better quality than Mazda and Mitsubishi.

One great success story is Jaguar, which many had written off. Ford has done a tremendous job and this year we had Jaguar as the top ranked gold award winner for cars that are coming out of Europe. When you talk to the people at Jaguar, they’ll tell you it was Ford coming in.

I was in Shanghai last month and GM has been transformed with their new assembly plant there. It’s not the country of where the factory is. It’s how the corporation is empowering people to do what they need to do.

Q: How did Ford turn Jaguar around?
Power: Maybe I’m being a little too philosophical, but it has to start with leadership: getting the people to believe they can do it and then encouraging and challenging them to do it. Leadership comes into play in getting the people the resources needed to update and upgrade their equipment. That is what Ford did.

Then they worked to make sure the unions and the line workers really understood what they were doing and got them to focus on the right things. They listened to them, which was a remarkable thing. The guys who were putting the vehicles together for years had known where the problems were but nobody in management was listening to them.

It might be trite, empowerment is important in some ways, but leadership — the more modern definition of leadership [is the key].

Q: What makes Toyota so good?
Power: What really sets Toyota apart from a traditional manufacturer like Chrysler, GM or Ford is that it has built a tremendous system and a process so you can interchange leaders within its plants. You can transfer them to new plants; have them retire; have them go to competitors. The plant still continues to build vehicles and the system allows it to build great quality vehicles.

With GM, it’s almost like the plants take on the personality of the leader or the management team and if you upset that balance, your production capability and quality goes up or down. That’s what the challenge would be for an organization like GM, which is to instill a greater sense of systematization and processes.

Q: GM has worked with NUMMI and Toyota. Don’t you think they’ve known this for a long time?
Power: It’s hard to change cultures. You see GM building new plants in Thailand and Shanghai, and they’re able to apply those new principles. It’s not that they don’t know how to do it.

Q: Would GM be better off shutting down its old production plants and opening new ones in Tennessee and elsewhere?
Power: I don’t know if that necessarily solves all of their problems.

Q: Whenever I talk to the people at Toyota, they say they’re not very good and that they’ve got to improve. They’re a moving target. Will the Americans ever catch up with Toyota?
Power: They have had 30 years of work on this and constant improvement is what they’re moving towards. What might not have been a target area for improvement 15 years ago is today. They’re moving to that next level. GM has improved at the same time, but it’s tough to catch up without Toyota slipping. That’s a testament to the great job that Toyota has done in creating a system and a process.

Q: Is there anything revolutionary happening today in the quality arena?
Power: I think that the focus of quality being defect elimination and eliminating waste is still going to be a foundation, but what we’re seeing is that the more progressive companies are moving to this new definition of quality, meaning things that have gone right. The very progressive organizations don’t have their arms completely around it yet, but they are trying to forecast and...
James Power... (From page nine)
understand the customer needs in a different way.

Q: Can you give me an example of this new quality definition?
Power: If you are a tire manufacturer, because your tires make noise on a certain stretch of concrete highway might not be a problem as in a defect. But designing tires that produce a minimal amount of noise could be a lot more rewarding to a customer. This is a revolution in outlook and the very progressive companies are now trying to focus on this.

Q: Listen to the customer is the message. Hasn't it always been that way?
Power: You might argue that it's always been that way, but I don't think they've always listened to what the customer has had to say.

Q: I remember the former Compaq Computer chairman Eckhard Pfeiffer said that when he arrived the company was in a tailspin because new product development was being driven by engineers. He threw out all the engineers and put the marketing and customer relations people in charge of new product development. They started to produce products that customers wanted, not what the engineers thought they wanted.
Power: A similar example we had was with a European car manufacturer. In the early days when we were measuring [initial quality], squeaky brakes kept coming up as a problem [among U.S. consumers] for this manufacturer. We were making a presentation at their headquarters with their senior engineers and manufacturing people and one of the guys jumped out of his chair and said: “That's wrong. That can't be. Those are the best brakes in the industry and squeakiness has nothing to do with performance.”

We pointed out to the guy that from an American consumer’s perspective, squeaky brakes are not good. It's taken a long time for some of these corporate cultures to really understand and listen to this.

Today, the new Lexus near-luxury vehicle has different specifications between the vehicle in the U.S. and in Europe. They've taken different brake pads to accommodate the American customer versus the European customer. (European drivers like to hear their brakes.) A company like Toyota doesn’t argue about it, they do it, whereas the Swedish company wanted to argue about it.

Q: Don't the automakers have to produce really high quality vehicles now because driving is so unsafe? If you drive around the Washington, D.C. area, there are major freeways with no shoulders on them. If your car breaks down, it's pretty scary because you could soon be dead. You can't buy a car that breaks down.
Power: Back in the days of the original dealership network system, you needed a dealer in every county to service the vehicles. In today's age, the vehicles are so reliable, you don't need 50,000 dealers to service the vehicles.

Q: Does the Internet change the quality equation at all?
Power: Only in the sense that it brings more information to consumers. It will make it harder for the poor performing manufacturers to hide whether you're in India or Korea or Europe or North America. We're seeing that now.

Q: What do you think about the J.D. Power's latest statistic that shows an average of 158 defects per 100 automobiles?
Power: Compared to the past that's pretty good. Compared to the future, there is a lot of work to go.

Airlines Jump On B2B Bandwagon

The airline industry is the latest to create its own Internet trading exchange. Six carriers from around the world have teamed up to create an Internet company that will handle about $32 billion a year in purchases from suppliers, including engine components, fuel, avionics and services. The company does not yet have a name. The six founding members are Air France, American Airlines, British Airways, Continental Airlines, Delta Air Lines and United Airlines.

The partners see significant value for all participating airlines and suppliers "through lower transaction, processing and inventory costs," say the six airlines. British Airways expects to shift 80 percent of its purchases to the online company by 2002. It expects to cut individual transaction costs from $150 to $20 and reduce the number of its suppliers from 14,000 to 2,000. The company expects to save $360 million yearly by using the system.

Aerospace Industry Agrees To Common Quality Standard

The world aerospace industry has a new single quality standard. The International Aerospace Quality Group meeting in Tokyo has approved a plan to combine all existing quality standards into the year 2000 revision of ISO 9001. Included in the consolidation are the AS9100, PrEN 9100 and SJAC 9100 standards.

The group decided to retain the existing version of the 9100 standard until November 2003 because it was released as an identical document in the United States, Japan and Europe. The 9100 standard includes the aerospace specific additions to ISO 9001. The revision of the ISO 9001 standard is expected to be complete by November.

The group has also created an international team to align the specific industry requirements contained within 9100 to the revised content and format of ISO 9001. “We hope that by rapidly aligning the 9100 standard with ISO 9001, while at the same time retaining the existing version of 9100 for concurrent use during the next three years, that we can minimize the impact of this revision upon the using organizations,” says Gary Baker, of Boeing and chair of the IAOG.
Nike is running into big public relations problems over its relationships with universities and the Worker Rights Consortium, a group that monitors abuses in overseas factories. Nike has decided not to fund athletic programs at the University of Oregon and the University of Michigan because of those schools' involvement with the student-run consortium.

Nike, which has licensing deals with more than 200 colleges and universities, says the decision "is about possibly subjecting our company to standards that neither we, nor our competitors or even the University of Michigan and its vendors can honestly adhere to," says Nike director of college sports marketing Kit Morris.

The University of Oregon, "despite its unique relationship with Nike and [Nike CEO] Phil Knight, is free to align itself with the Worker Rights Consortium," says Nike.

However, it does not mean that we are required to support those efforts with which we have fundamental disagreements.

A student leader at U. of Oregon, Randy Newnham, told the New York Times that Knight "keeps claiming that his company is socially responsible and they don't use sweatshop labor. If that's the case, why is he so upset that we joined this monitoring group? It kind of implies that something isn't quite up to par." The Worker Rights Consortium is now active in 45 universities.

Supply Chain Council Releases Latest Model

The Supply Chain Council, a group that includes more than 650 companies working on supply chain integration, has released its latest "Supply-Chain Operations Reference" model that acts as a standard for measuring relations with customers and suppliers through software systems and processes.

The model measures supply chain reliability, flexibility and responsiveness, cost and asset management. For more information about the model, go to www.supply-chain.org.

Recent General Accounting Office Reports

All of the reports below are available for free by calling GAO at 202-512-6000.

Human Capital: Key Principles From Nine Private Sector Organizations (GAO/GGD-00-28), 31 pages.

World Trade Organization: China's Membership Status and Normal Trade Relations Issues (GAO/NSIAD-00-94), 21 pages.

Superfund: Analysis of Costs at Five Superfund Sites (GAO/RCED-00-22), 61 pages.

Port Infrastructure: Financing of Navigation Projects at Small- and Medium-Sized Ports (GAO/RCED-00-58), 30 pages.


U.S. Infrastructure: Funding Trends and Opportunities to Improve Investment Decisions (GAO/RCED/IMD-00-35), 73 pages.

Acquisition Reform: GSA and VA Efforts to Improve Training of Their Acquisition Workforces (GAO/RCED-00-66), 35 pages.


Acid Rain: Emissions Trends and Effects in the Eastern United States (GAO/RCED-00-47), 33 pages.

Motor Fuels: California Gasoline Price Behavior (GAO/RCED-00-121), 25 pages.


Defense Acquisitions: Need to Revise Acquisition Strategy to Reduce Risk for Joint Air-To-Surface Standoff Missile (GAO/NSIAD-00-75), 18 pages.

Unmanned Aerial Vehicles: Progress of the Global Hawk Advanced Concept Technology Demonstration (GAO/NSIAD-00-78), 14 pages.

F-22 Aircraft: Development Cost Goal Achievable If Major Problems Are Avoided (GAO/NSIAD-00-68), 26 pages.

Contract Management: Few Competing Proposals for Large DOD Information Technology Orders (GAO/NSIAD-00-56), 36 pages.

Military Capabilities: Focused Attention Needed to Prepare U.S. Forces for Combat in Urban Areas (GAO/NSIAD-00-36N1), 37 pages.

Defense Inventory: Plan to Improve Management of Shipped Inventory Should Be Strengthened (GAO/NSIAD-00-39), 36 pages.
WTO Boss Looks To United States For Guidance And Inspiration

The World Trade Organization is often viewed by U.S. trade hawks as being anti-American in its decisions regarding trade disputes. But that’s hardly the perception around the world. “I always find it ironic that everywhere I go in the world, so many people say the WTO is an instrument of U.S. commercial imperialism and financial services and agriculture,” says WTO chairman Michael Moore. “People feel that everywhere but the United States.”

The United States has a tremendous impact on the organization and on the world trading system, and it is positive. “International agreements on issues like the protection of intellectual property rights, trade and communications, financial services and agriculture actually represent an extension of U.S. values and objectives to all corners of the world,” Moore told a meeting last month of the National Press Club in Washington, D.C.

While there has been some progress on world trade issues, there are many areas that are bogged down. For instance, the U.S. position calling for a moratorium on duties and taxes on goods sold via the Internet is not embraced in most places. “U.S. officials are fighting hard to see that cyberspace remains duty-free and that a solid work program of rules is established,” says Moore. “While others agree with this position, advocacy by the United States of an open system of electronic commerce is crucial to the formation of global rules, just as it was in the negotiations for agreements on telecommunications, financial services and information technology products. Those agreements have been fundamental in establishing a constructive and open roadmap for the global economy in the 21st century.”

Moore said that the United States could only benefit from having China be a member of the WTO. China’s tariffs on agricultural products would be required to drop by 50 percent. Industrial tariffs on U.S. products would fall by more than half.

Moore, former prime minister and a union activist from New Zealand, says that thanks in part to the Internet, the world trading system is on the verge of profound change. “Goods, services, people, capital and ideas cross borders with ease that’s bewildering...Globalization is not a policy option, it’s not something a group of politicians have worked out. It’s a process, an evolution. It’s been happening ever since the first person stood upright and walked out of a cave.”

Manufacturing Executives’ Pay Isn’t So Hot In Michigan

Manufacturing executives in Michigan are having a hard time keeping their salaries up. According to a survey by the Michigan Manufacturers Association, executive compensation hasn’t kept pace with rising professional and management salaries “and may face compression.” The salaries of professionals are quickly dishing in on executive salaries. “This salary compression may lead to difficulties in attracting, motivating and retaining qualified executives,” says the association.

The average pay for manufacturing executives also isn’t that far removed from the pay of “rank and file employees,” says the association. “The survey indicates that the average Michigan manufacturing executive’s compensation package bears little resemblance to seven- and eight-figure compensation packages popularly reported.”

For instance, an “average” CEO for a manufacturing company in Michigan earns $140,000. CEOs of small manufacturing companies earn less than $90,000 per year.

The survey also found that “a vast majority” of workers in small- and medium-sized manufacturing companies receive no long-term incentive plans. “Of the 20,000 or so Michigan manufacturing workers in the companies participating in the 2000 study, no more than 500 are participants in any kind of stock plan, and typically only the senior executives participated,” says the association.

EU’s Decision On Hush Kit Aircraft Isn’t Well Received In America

The European Union’s decision to ban “hushkitted” aircraft from operations in Europe wasn’t well received by U.S. aerospace executives. “As a global enterprise, the industry has been weakened by the European Union’s implementation of a ban against American-manufactured and non-European operated aircraft that meet noise standards agreed upon by all members of the International Civil Aviation Organization,” says Aerospace Industries Association president John Douglass. “By unilaterally establishing a non-performance regional standard for aircraft noise, the EU has abrogated its commitment to comply with international noise standards it once promised to observe. It is a very sad day for the international community when a large governmental body walks away from a commitment it has made to other ICAO members and breaks the faith.” Douglass says that the EU decision could escalate tensions and “damage our trade relations.”

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