

STATE OF THE GEAR INDUSTRY



Results of Research
on Trends in
Employment, Outsourcing,
Machine Tool Investment
and Other Gear Industry
Business Practices

In October, Gear Technology conducted an anonymous survey of gear manufacturers. Invitations were sent by e-mail to thousands of individuals around the world. More than 300 individuals responded to the online survey, answering questions about their manufacturing operations and current challenges facing their businesses.

The respondents considered here all work at locations where gears, splines, sprockets, worms and similar products are manufactured. They work for gear manufacturing job

shops (44 percent), captive shops at OEMs (52 percent) and shops manufacturing gears for maintenance, spares and their own use (4 percent).

The survey covers gear manufacturing around the world, with 54 percent of respondents working in the United States, and 46 percent outside the United States.

A full breakdown of respondents can be found at the end of this article.

continued

What Factors Are Presenting Significant Challenges to Your Business?

"Availability of raw material, production to meet targets."

—Manufacturing engineer at a manufacturer of gear machines in India

"Average age of the workforce is pretty high."

—Design engineer at a U.S. manufacturer of gas turbines

"Bad management."

—Design engineer at a U.S. manufacturer of overhead trolley cranes

"Bargaining agreement."

—Manufacturing engineer at a U.S. manufacturer of light and medium duty driving axles

"Change in technology in auto industry. Capability to afford modernization of infrastructure."

—Manufacturing engineer at a manufacturer of inspection and testing equipment in India

"Changing customer expectations, shortening product development time, meeting cost targets with increased features."

—Design engineer at a manufacturer of agricultural tractors in India

"Competition quoting prices lower than the cost to produce the products in order to maintain or increase market share."

—Corporate executive at a U.S. gear manufacturing job shop

"Concerns about tax liability exposure if we enlarge our facilities. Also, the type of young people that society (schools, parents, media, etc.) sends in the direction of industry are not the ones that are smart enough to do well in my business."

—Corporate executive at a U.S. gear manufacturing job shop

"Cost."

—Design engineer at a manufacturer of linear actuators in Taiwan

"Cost competition with intact quality."

—Corporate executive at manufacturer of particleboard

"Cost of new equipment for gear grinding."

—Manufacturing engineer at a U.S. gear manufacturing job shop

"Currency changes making it more difficult to export."

—Corporate executive at a gear manufacturing job shop in Denmark

"Current administration in D.C. will destroy the mining industry, and hence a large portion of our customers."

—Corporate executive at a U.S. gear manufacturing job shop

"Customer demand for lower prices."

—Corporate executive at a U.S. gear manufacturing job shop

"Customer demands for price decreases."

—Corporate executive at a U.S. designer and manufacturer of custom gears and gear assemblies

"Develop business in Middle and Far East."

—Sales manager at a manufacturer of marine and industrial transmissions in Italy

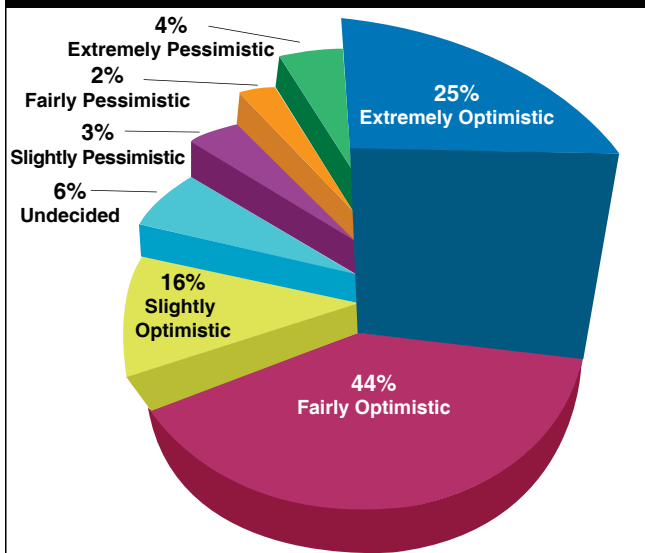
"Economic uncertainty being promulgated by D.C. politicians is impacting capital investment."

—Corporate executive at a U.S. manufacturer of gearmotors

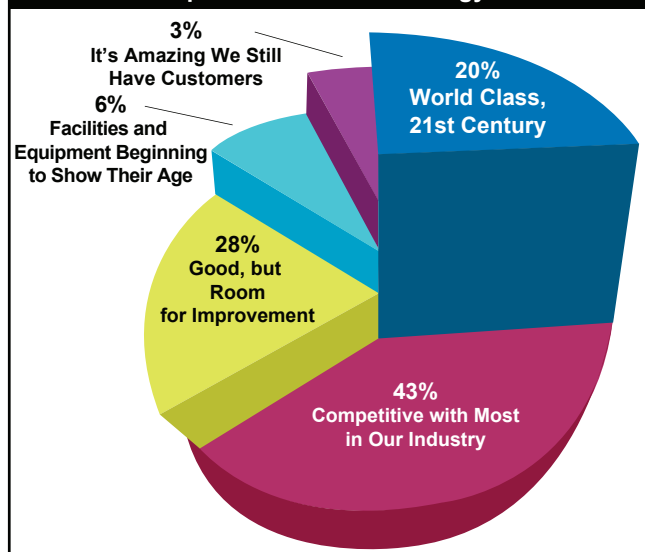
"Energy crisis is the major challenge."

—Corporate executive at a manufacturer of gears and splined shafts in Pakistan

85% of Gear Industry Respondents are Optimistic About Their Ability to Compete Over the Next Five Years



How Do Respondents Describe their Manufacturing Operations and Technology?



What Factors Are Presenting Significant Challenges to Your Business?

“Export demand drop-off.”

—Design engineer at a U.S. manufacturer of grinding equipment

“Financing.”

—Corporate executive at a U.S. manufacturer of aerospace gears

“Foreign ownership and plant closures to transfer manufacturing work out of the U.S.A.”

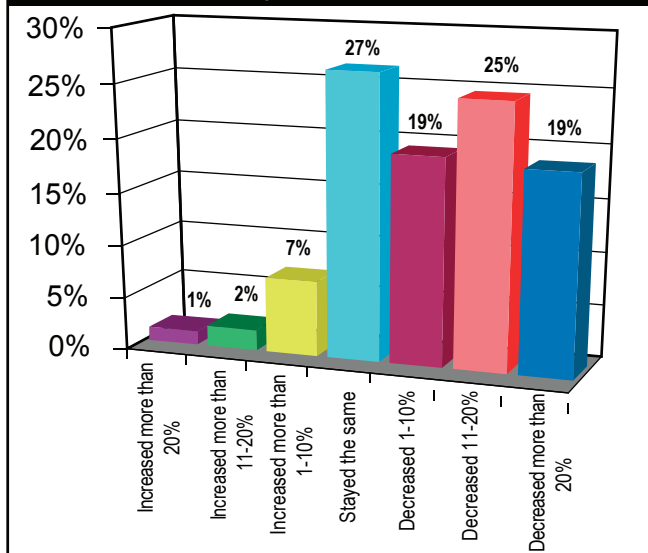
—Manufacturing engineer at a U.S. manufacturer of 4WD transfer cases

“Funding from banks difficult.”

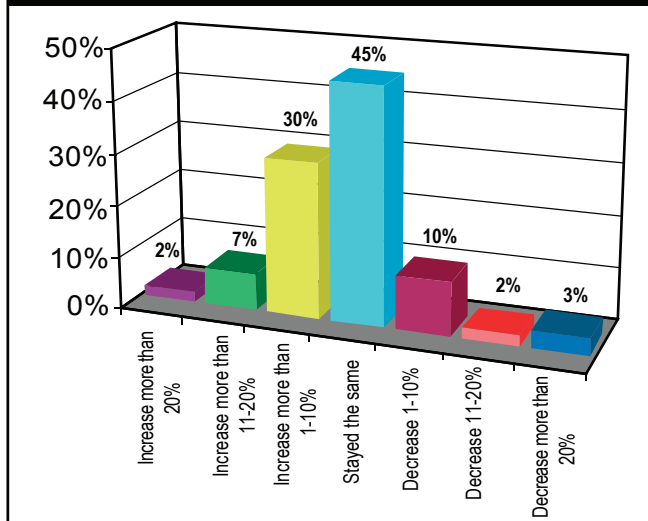
—Employee at a U.S. manufacturer of milling equipment

continued

63% of Gear Industry Respondents Work at Locations Where Employment Decreased in 2009



Most Gear Industry Respondents Expect Little Change in Employment in 2010



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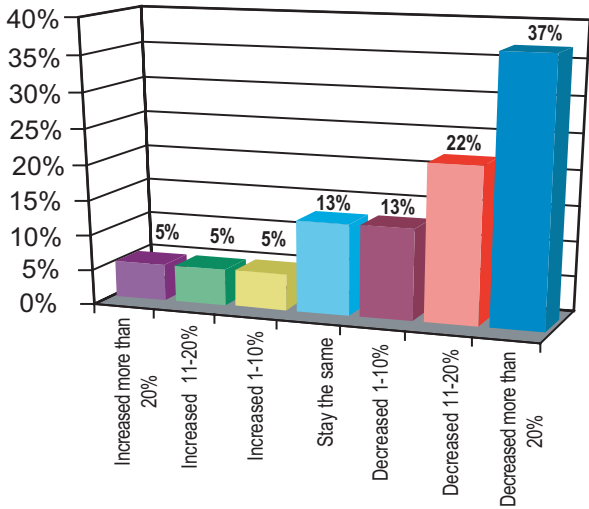
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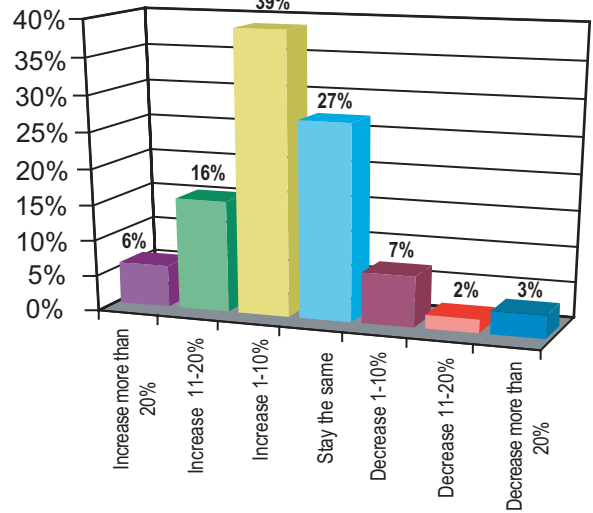
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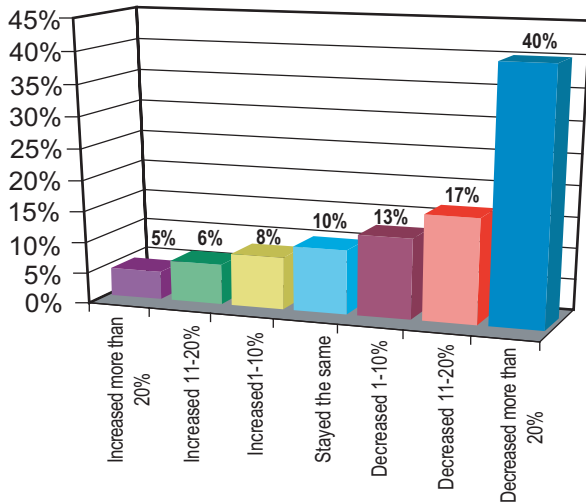
72% of Respondents Saw Production Volumes Decrease



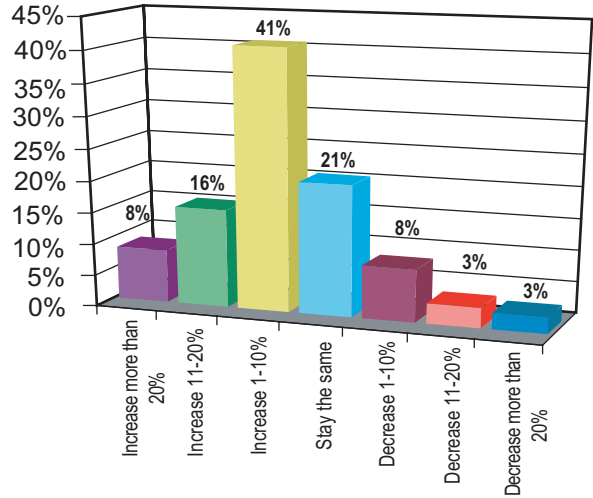
61% Expect Production Volume to Increase in 2010



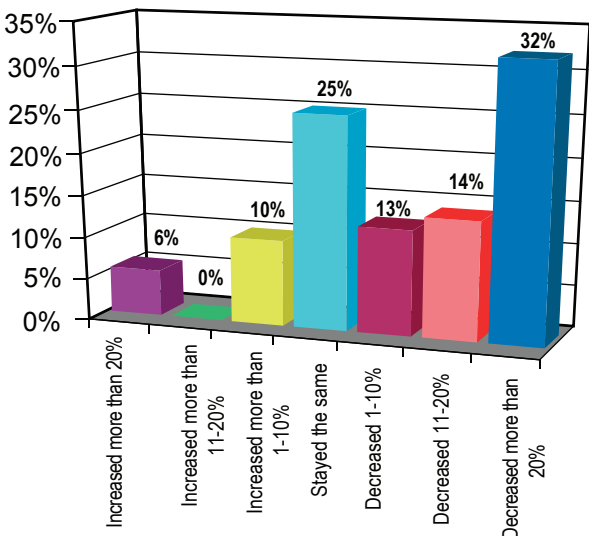
70% Saw Sales Volume Decrease in 2009



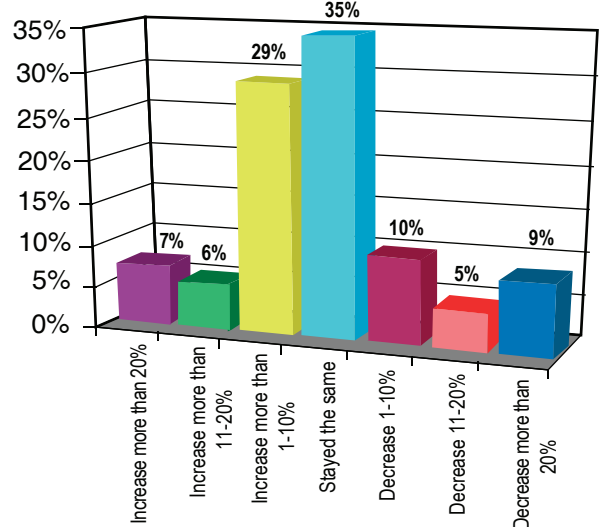
65% Expect Sales Volume to Increase in 2010



59% Work at Locations where Capital Spending Decreased in 2009



42% Expect Capital Spending at their Locations to Increase in 2010



What Factors Are Presenting Significant Challenges to Your Business?

"Global pricing in China and Europe. Due to the economic crisis, Europe's pricing has become more competitive than the U.S. local pricing, but we believe this to be very temporary."

—Purchasing professional at a U.S. assembler of wind turbine gearboxes

"Higher quality standards versus lower cost prices."

—Manufacturing engineer at a manufacturer of engine timing gears in Belgium

"Increased competition from other countries, high tooling costs, lengthy procurement process for quality tooling."

—Manufacturing production employee at gear manufacturing job shop in India

"Increased taxes."

—Design engineer at a U.S. machinery manufacturer

"Knowledge management process and organization-wide process quality."

—Design engineer at a German manufacturer of automobile differentials

"Lack of engineering expertise at customer end is leading to delays in development."

—Corporate executive at a hydraulic equipment manufacturer in India

"Lack of financing to build in U.S.A."

—Purchasing professional at a U.S. manufacturer of planetary gearboxes

"Lack of sales."

—Corporate executive at a U.S. manufacturer of overhead electric cranes

"Long design cycle time."

—Corporate executive at a U.S. sales office

"Low capital."

—Manufacturing engineer at a U.S. manufacturer of rack and pinion steering components

"Low cost, high quality, fast delivery."

—Manufacturing engineer at a manufacturer of automatic transmissions in India

"Major concern is dollar volatility and world over-concern for alternate world currency."

—Corporate executive at a manufacturing company in India

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What Factors Are Presenting Significant Challenges to Your Business?

"Many assemblies that we make gears for are being made overseas, so we no longer get a chance to quote the gears. Our U.S. customers are facing tough foreign competition and are always asking for price decreases. Quality, 100 percent on-time delivery and a fair price is not good enough any more."

—Corporate executive at a U.S. manufacturer of spline shafts and hydraulic pump gears

"Non-manufacturing/gearing people running business."

—Manufacturing engineer at a U.S. manufacturer of power transmission equipment

"Protectionism in other countries."

—Design engineer at a U.S. manufacturer of custom gear units

"Quality and cost."

—Manufacturing engineer at a manufacturer of gearboxes in Brazil

"Quality of supplier parts."

—Quality engineer at a U.S. manufacturer of pneumatic and turbine starter motors

"Reduced volumes and the ability to change to these volumes and make a profit."

—Sales manager at a British gear manufacturing job shop

"Skilled, dedicated manpower; competition; imports."

—Corporate executive at a manufacturer of machine tools in India

"Small lot size of orders challenges profit margin due to high setup costs."

—Corporate executive at a U.S. manufacturer of loose gearing

"Sudden spurt in the global economy, unpredictable scenario with auto majors."

—Manufacturing production employee at a manufacturer of gears and gearboxes in India

"Sustaining consistency in quality and delivery performance of suppliers. Catering to low volume products (reduction in minimum batch quantity in production). Handling variety with greater efficiency."

—Purchasing professional at a manufacturer of tractors in India

"Taxes, workmen's comp, product liability."

—Corporate executive at a U.S. manufacturer of oilfield gears

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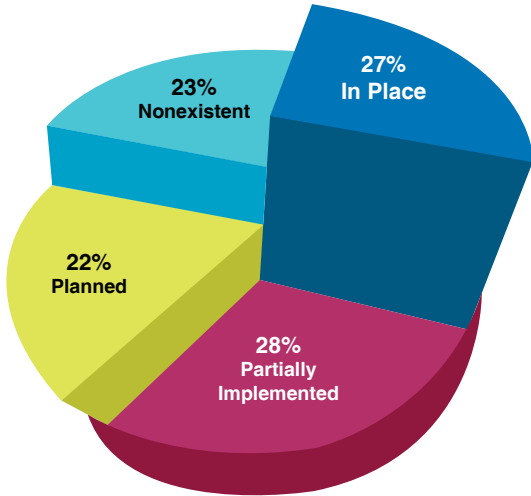
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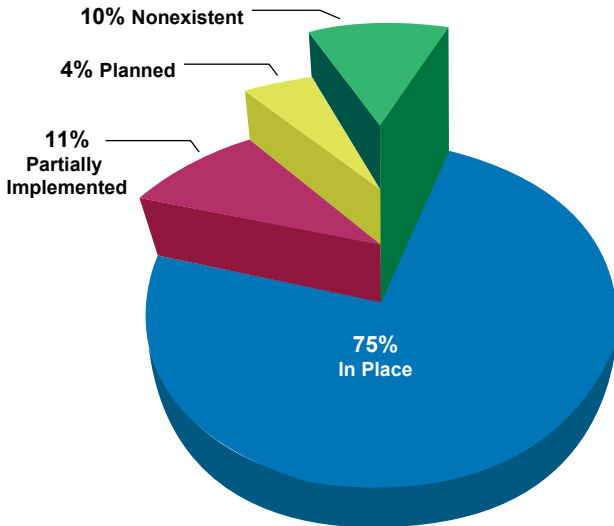
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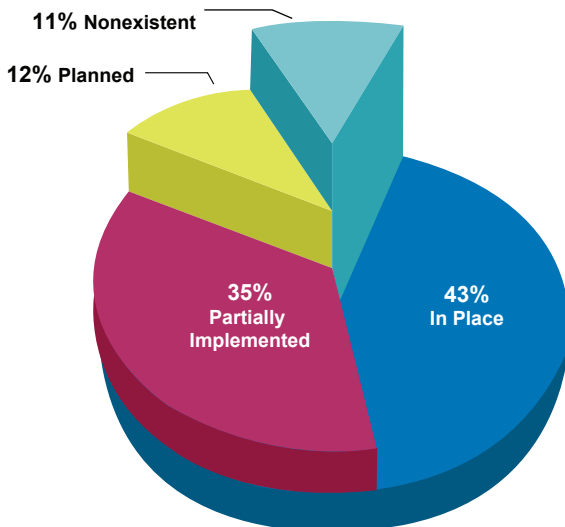
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What Factors Are Presenting Significant Challenges to Your Business?

"Timely service of imported equipment, upgrade in suppliers, availability of people eager to work with own hands."

—Manufacturing engineer at a gear manufacturing job shop in India

"Vendor lead times."

—Manufacturing production employee at a manufacturer of space robotics in Canada

"Volatility of raw materials."

—Corporate executive at a U.S. manufacturer of worm gear blanks

"World economy has many of my defense programs on hold. Don't see this changing until the end of 2010."

—Corporate executive at a U.S. manufacturer of aerospace gears

What are Your Company's Greatest Manufacturing/Engineering Challenges for 2010?

"Ability to re-invest."

—Corporate executive at a U.S. gear manufacturing job shop

"Being a quality supplier globally."

—Corporate executive at a grinding wheel manufacturer in India

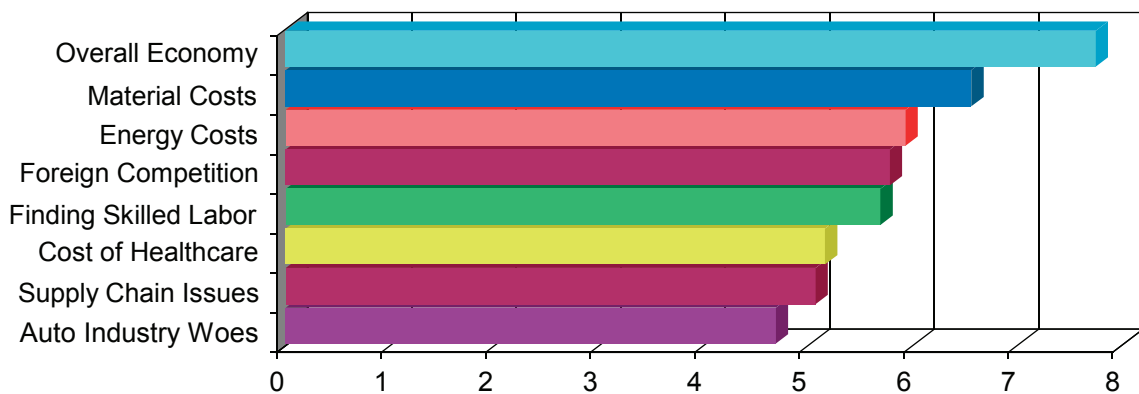
"Bring our new Mexico plant up to speed."

—Manufacturing engineer at European manufacturer of engine timing gears

"Closing down manufacturing plants in the U.S.A."

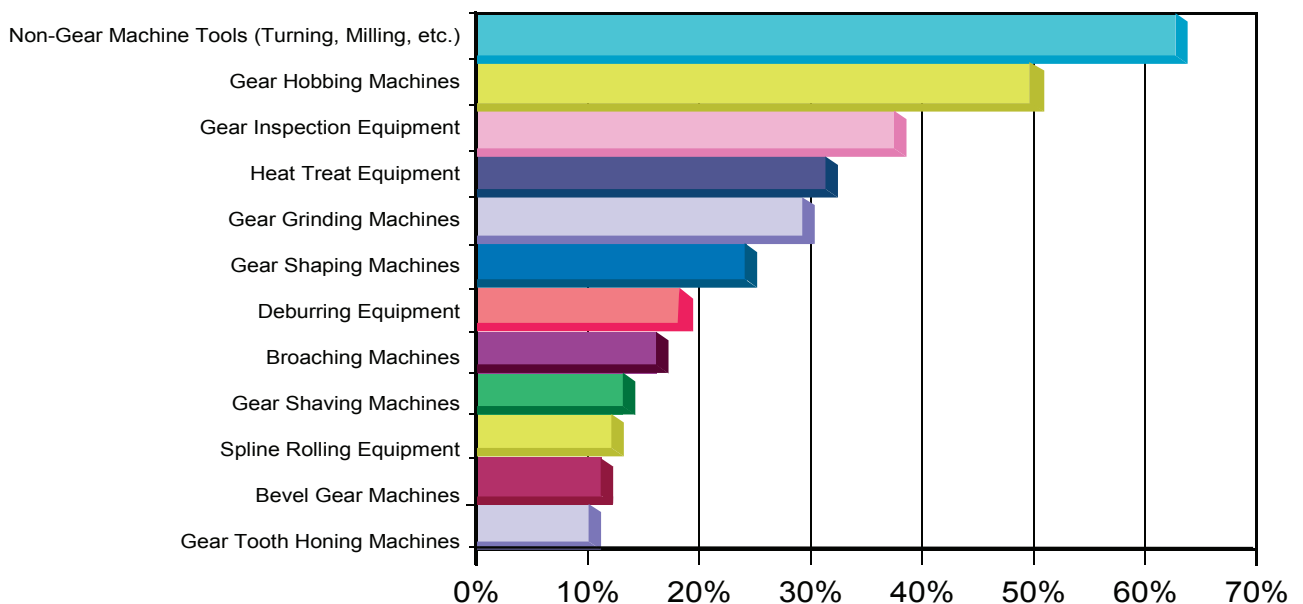
—Design engineer at a U.S. manufacturer of overhead trolley cranes

What are the Most Significant Challenges Facing Gear Industry Companies?



Average 1-10 Ranking (with 10 being the most significant challenges)

Machine Tool Purchase Plans 2010



Of those planning to purchase capital equipment, the percentage planning to purchase in each category

What are Your Company's Greatest Manufacturing/Engineering Challenges for 2010?

"Continuing with developing product in a low volume year is most challenging."

—Design engineer at a U.S. manufacturer of construction equipment

"Cost competitiveness."

—Manufacturing engineer at a manufacturer of automatic transmissions in India

"Cost containment."

—Design engineer at a U.S. machinery manufacturer

"Customers are pressed for sales, so when they do get an order they want things in unrealistic delivery times."

—Corporate executive at a U.S. manufacturer of aerospace gears

"Customers are requiring more engineering assistance since they have downsized their organizations."

—Sales engineer at a U.S. manufacturer of gears and machined components

"Cutting warranty costs and delivery time; forcing standardization; launching new production technologies; maintaining process stability."

—Design engineer at a manufacturer of automobile transmissions in Germany

"Decrease costs. Decrease size and weight on the type of units we produce."

—Design engineer at a manufacturer of all-wheel-drive systems in Sweden

"Demand for specialty type products."

—Corporate executive at a U.S. manufacturer of speed reducers

"Develop expertise."

—Manufacturing engineer at a manufacturer of gearboxes in the United Kingdom

"Development of lower cost, lighter, highly robust mechanical power transmission components in a crushed industry and recessive economy."

—Design engineer at a U.S. automotive supplier

"Development of new materials and processes."

—Corporate executive at a U.S. manufacturer of gearmotors

"Environmental issues."

—Manufacturing engineer at a manufacturer of automobiles in India

"Fast response to customer requirements."

—Manufacturing engineer at a manufacturer of inspection and testing equipment in India

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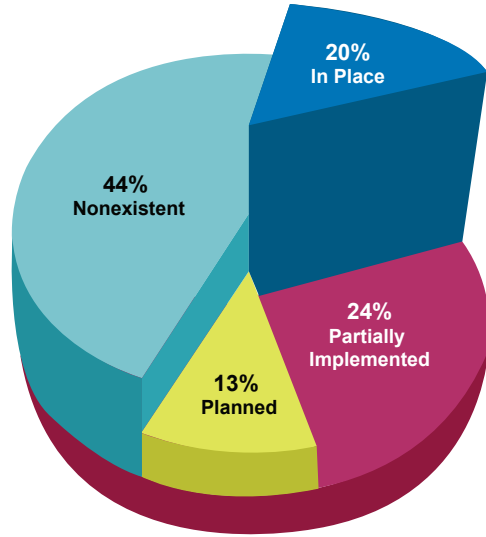
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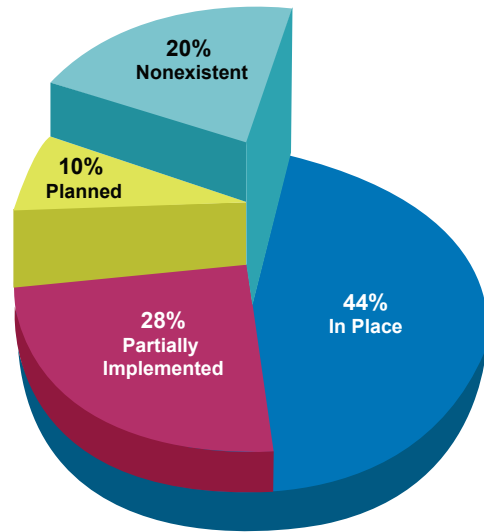
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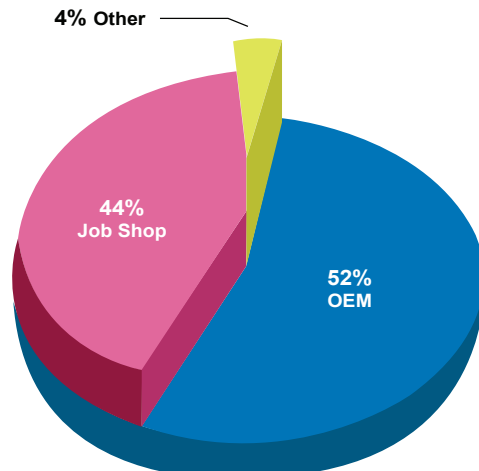
Six Sigma Implementation



Statistical Process Control (SPC) Implementation



Type of Operation



What are Your Company's Greatest Manufacturing/Engineering Challenges for 2010?

"Faster new product development at most competitive prices to compete with global manufacturers."

—Manufacturing engineer at a manufacturer of steering gear assemblies in India

"Finding products that fill a niche that will keep U.S. moving forward. Current product line is aging."

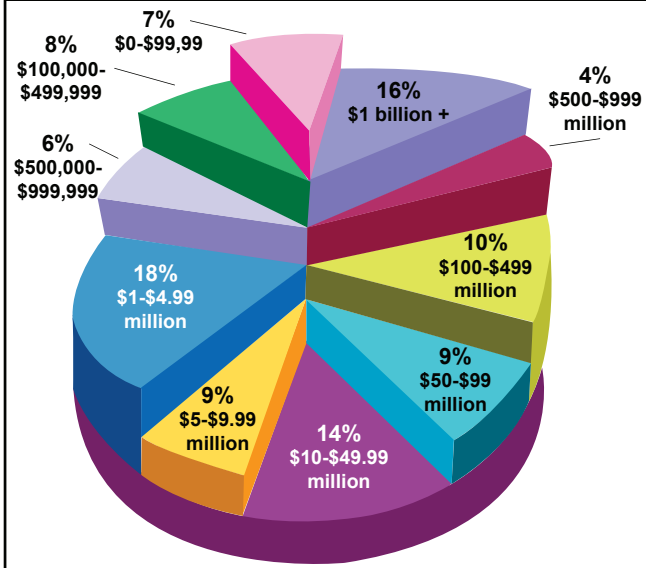
—Design engineer at a U.S. manufacturer of grinding equipment

"Foreign ownership, plant closure to transfer manufacturing work out of U.S.A."

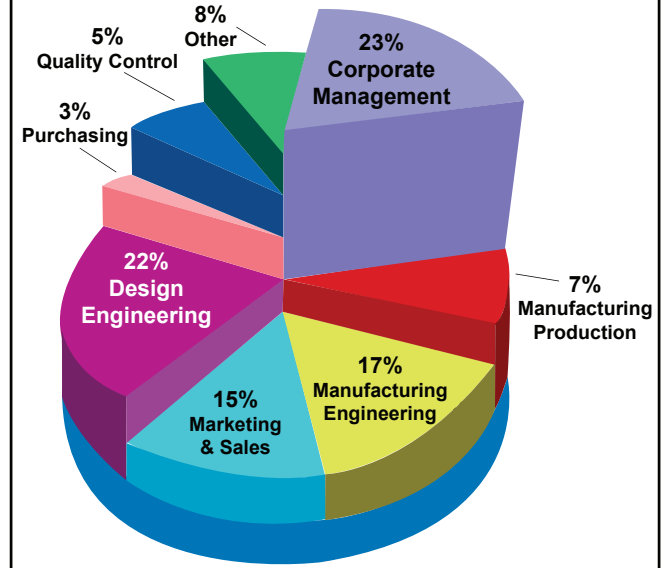
—Manufacturing engineer at a U.S. manufacturer of four-wheel-drive transfer cases

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Annual Sales Volume of Company



Job Title/Function of Respondent



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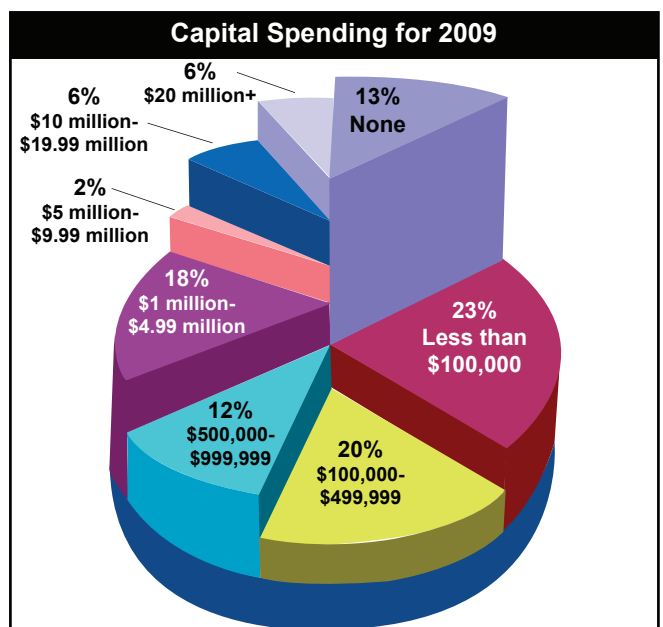
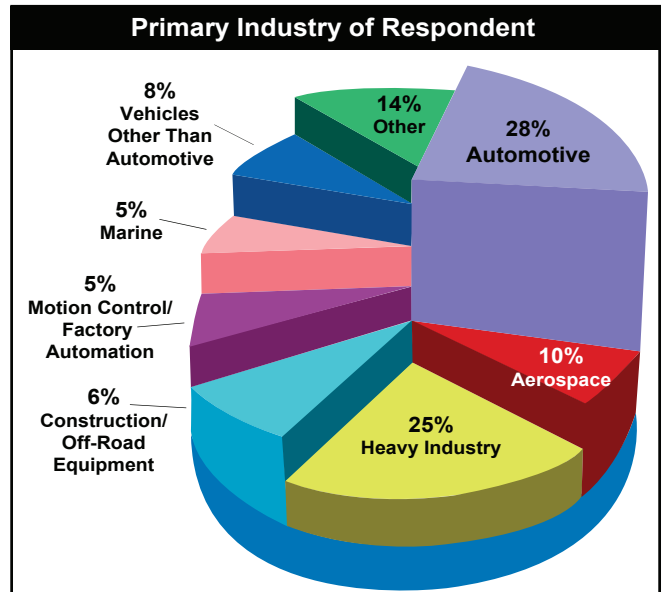
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What are Your Company's Greatest Manufacturing/Engineering Challenges for 2010?

"Gaining new customers in a significant down market."
—Corporate executive at a U.S. manufacturer of loose gearing

"Global presence."
—Purchasing manager at a manufacturer of tractors in India

"Improving efficiencies and improving throughput with existing resources."
—Corporate executive at a U.S. manufacturer of open gearing



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ROTO-GRIND Precision Rotary Inspection Tables

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fellows **BOURN & KOCH** **Barber Colman** **Roto-Tech**

"Improving efficiency of our products through improved manufacturing practices and tighter tolerances."

—Quality engineer at a U.S. manufacturer of compressors

"Improving productivity and ability to produce more variants in the same production line."

—Design engineer at a manufacturer of agricultural tractors in India

"Increase business with new customers."

—Manufacturing engineer at a U.S. gear manufacturing job shop

"Integration of the global workforce."

—Design engineer at a U.S. manufacturer of gas turbines

"Keeping the place going."

—Employee at a gear manufacturing job shop in Canada

"Launch several new lines and projects while maintaining profitability."

—Manufacturing engineer at a U.S. manufacturer of rack and pinion steering components

"Lead times."

—Corporate executive at a U.S. sales office

"Locating new aerospace engineers."

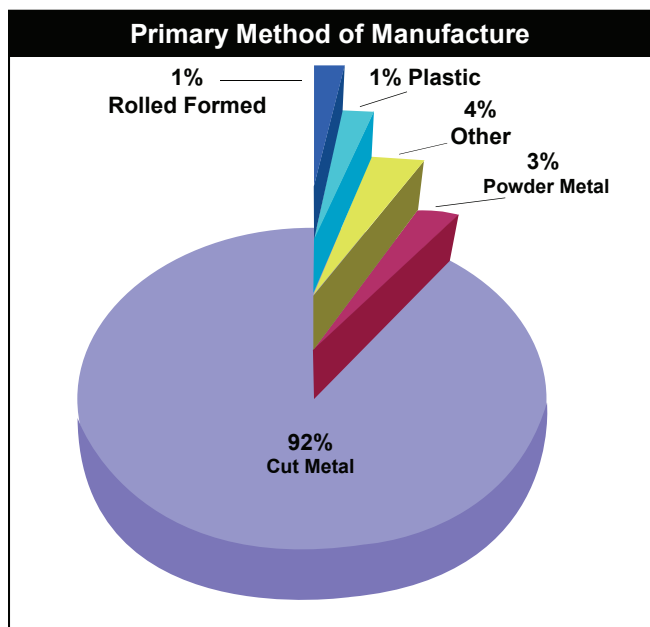
—Corporate executive at a U.S. aerospace gear manufacturer

"Low cost."

—Design engineer at a manufacturer of linear actuators in Taiwan

"Maintaining and/or improving the current workforce in terms of abilities."

—Corporate executive at a U.S. manufacturer of gear assemblies



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