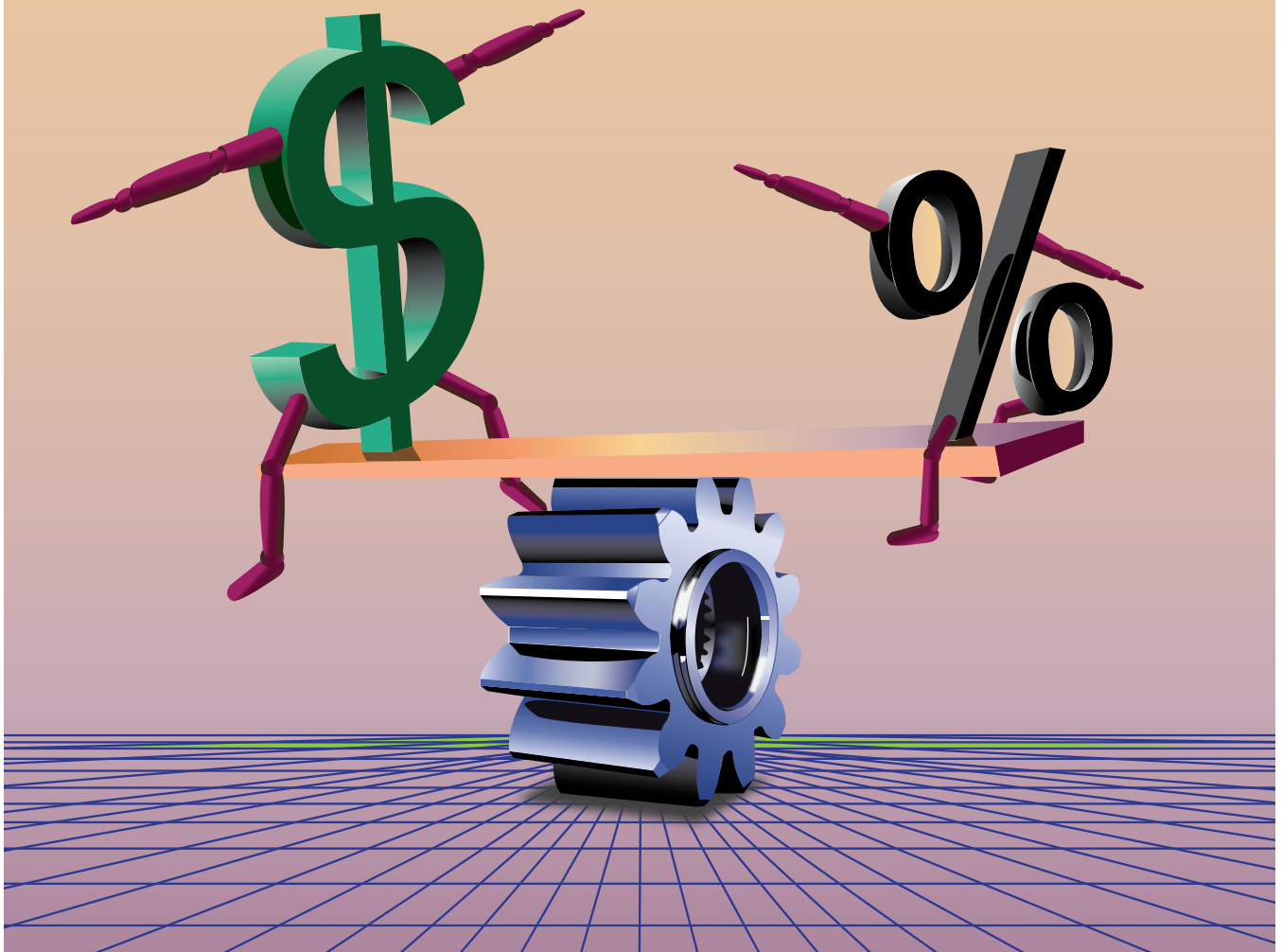


State of the Gear Industry 2010

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 (39 percent), captive shops at OEMs (60 percent) and shops manufacturing gears for maintenance, spares and their own use (1 percent).

The survey covers gear manufacturing around the world, with 50 percent of respondents working in the United States, and 50 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?

“Capacity and capital.”

—VP of sales at a U.S. manufacturer of aerospace gears

“Capital constraints.”

—Corporate executive at an Indian manufacturer of automotive gears and shafts

“Changing political policy and related changes.”

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

“Prices in China and India.”

—Sales professional at a U.S. manufacturer of powder metal gears

“Corruption in the purchasing system of the mining industries.”

—Manufacturing engineer at a gear job shop in Africa

“Customers shipping jobs and work overseas.”

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

“Difficulty in obtaining sufficient quantities of steel for gear manufacturing.”

—Engineer at a U.S. manufacturer of construction & off-road equipment

“Distance from our main customers.”

—Production manager at an Indian manufacturer of transmission gears

“Documentation.”

—Manufacturing engineer at a U.S. aerospace & defense OEM

“Because exports are so significant, sustained export markets are key to our sustenance.”

—Corporate executive at an Indian manufacturer of automobile transmissions

“Fast delivery.”

—Owner of a European manufacturer of pumps

“Federal tax policy, excessive corporate governance, lack of tort reform and unrealistic environmental compliance requirements.”

—Corporate executive at a U.S. manufacturer of high-speed gear drives

“Finance.”

—Design engineer at a European manufacturer of automobile transmissions

“Finding enough added value.”

—Corporate executive at a European manufacturer of automotive actuators

“Frequently changing demand requirements.”

—Manufacturing engineer at an Indian automobile OEM

“Fuel economy.”

—Corporate executive at a U.S. manufacturer of truck axles

“General business confidence. As a pure jobbing shop, we depend on our customer base having the demand confidence to place orders.”

—Corporate executive at a European gear manufacturing job shop

“Getting business.”

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

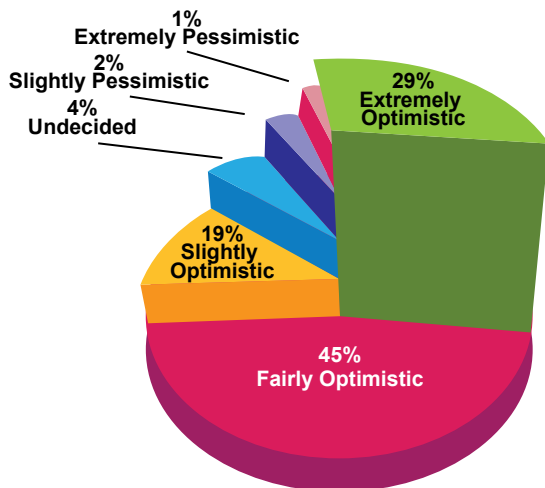
“Getting reverse engineering done and getting gears manufactured at a reasonable cost.”

—Owner of a U.S. manufacturer of racing transmissions

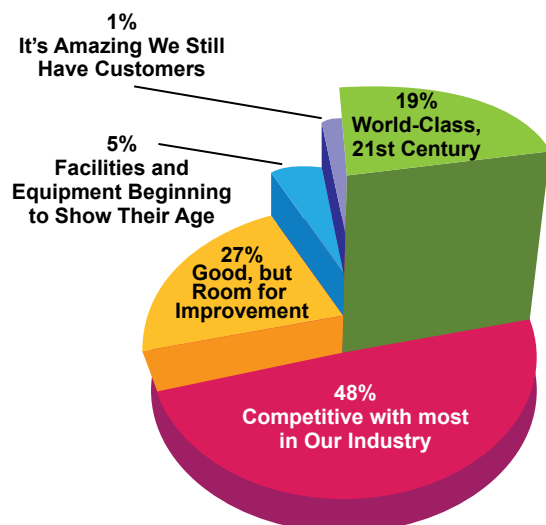
“Increasing demand.”

—Corporate executive at an Indian gear manufacturing job shop

93% 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?

"International presence, Asia customs duties, availability of a new facility."

—Corporate executive at a European gear manufacturing job shop

"Lack of demand."

—Manufacturing engineer at a European gear manufacturing job shop

"Lack of skilled labor is an enormous problem!"

—Manufacturing engineer at a U.S. manufacturer of aerospace gearboxes

"Lead time for low-cost countries."

—Design engineer for a U.S. manufacturer of agricultural components

"Legacy information technology and business software stifles innovation."

—Manufacturing engineer at a U.S. manufacturer of enclosed gear drives

"Local and state regulations."

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

"Machine availability."

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

"Management decisions."

—Design engineering manager at a U.S. manufacturer of gears and drives

"Material cost."

—Corporate executive at a Far East manufacturer of automotive components

"The development of new technologies."

—Production worker at a European gearbox manufacturer

"OEM consolidation."

—Sales professional at a U.S. manufacturer of couplings

"Offshore quality issues."

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

"President Obama."

—Design engineer at a U.S. manufacturer of satellites

"Rapid price changes of materials."

—Manufacturing engineer at a U.S. manufacturer of plastic film

"Retention of skilled people as other industries' business improves and people are in demand."

—Manufacturing engineer at a U.S. manufacturer of truck axles

"Rising costs of all employee benefits in addition to health care, i.e. 401K plans, auto, etc. Also, corporate taxation rates discourage savings for offsetting future business climate weakness."

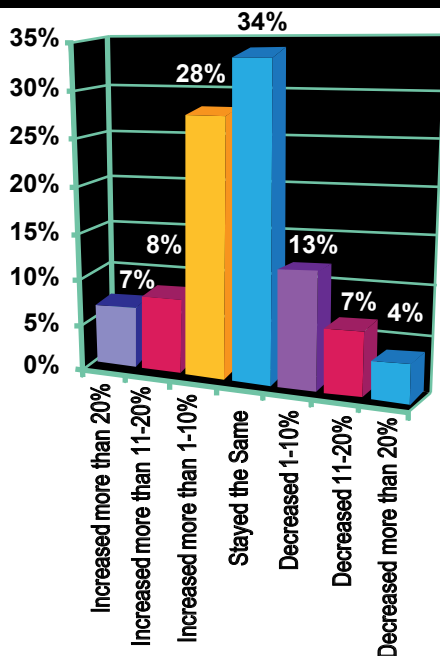
—Corporate executive at a U.S. manufacturer of enclosed gear drives

"Running out of factory space, where we are now in the process of looking for larger premises or additional space."

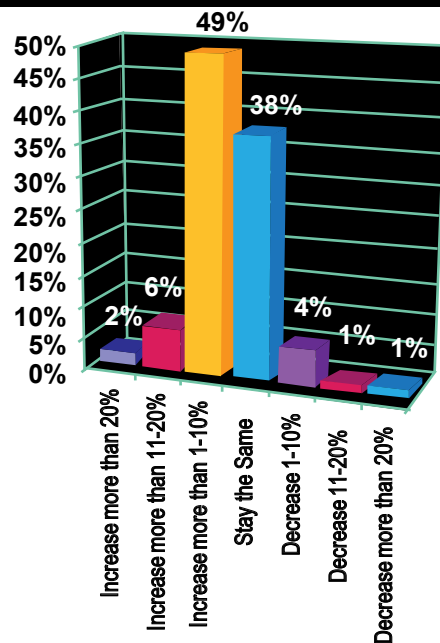
—Design engineer at a European manufacturer of gearboxes

continued

43% of Gear Industry Respondents Work at Locations where Employment Increased in 2010



Most Gear Industry Respondents Expect Employment to Increase in 2011



What Factors Are Presenting Significant Challenges to Your Business?

"Seasonal changes in order placement."

—Design engineer at a U.S. gearbox repair facility

"Shortage of steel and anti-friction bearings."

—Design engineer at a U.S. manufacturer of off-highway transmissions

"Steel prices."

—Technical manager at a European manufacturer of agricultural drives

"Still a buyers market. We need oil at \$90 a barrel."

—Purchasing manager at a U.S. manufacturer of centrifugal pumps

"The Obama uncertainty factor makes our customers' industries hesitate, making it tough for us to gain projects that are right now non-existent."

—Sales professional at a U.S. engineering consultancy

"To sustain and improve the quality levels of our product."

—Design engineer at an Indian manufacturer of two- and three-wheel vehicles

"Tough competition, cost reduction, worker demand."

—Production worker at an Indian gear manufacturing job shop

"Understanding the ramp-up of our customers and their future inventory demands."

—Sales professional at a U.S. gear manufacturing job shop

What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"1. Inconsistency in government policies. 2. Law and order situation 3. Fluctuation in currency exchange rate. 4. Rising energy costs. 5. Volatile political situation."

—Production manager at a Middle East manufacturer of motorcycle gears

"Ability to continue quality improvements."

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

"Ability to cut production costs on a continuous basis to retain the competitive edge."

—Corporate executive at an Indian manufacturer of agricultural transmissions

"Being competitive in Asia."

—Quality manager at a U.S. manufacturer of transmissions and axles

"Can't find skilled aerospace gear engineers. We have to train them, and that takes a lot of time."

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

"Capability of manufacturing at low cost."

—Manufacturing engineer at an Indian automobile OEM

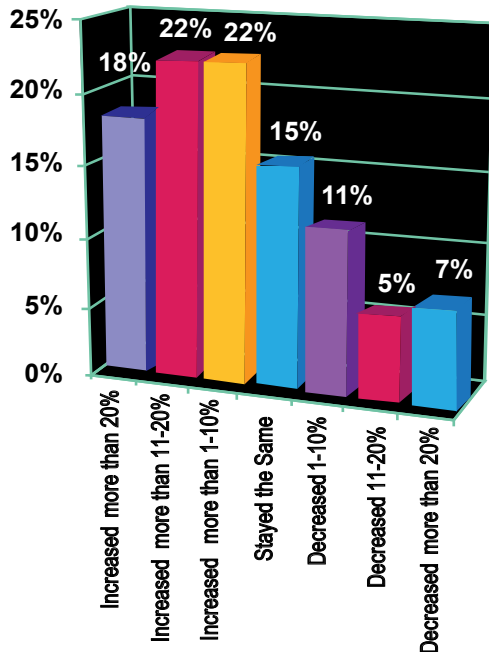
"Competing with Chinese product."

—R&D manager at a European manufacturer of wind turbines

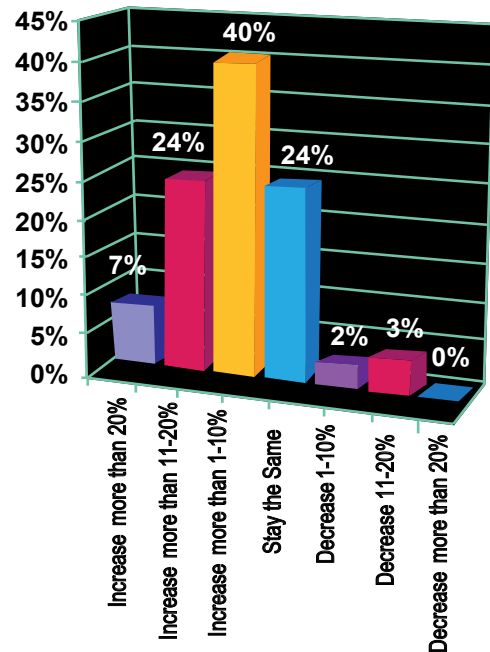
"Climate Change and the following switch in technologies."

—Sales manager at a European manufacturer of turbo gearbox units

62% of Respondents Saw Production Volumes Increase



71% Expect Production Volume to Increase in 2011



What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"Conclude site expansion toward 2011-2014 demands."
 —Production manager at a European gearbox manufacturer

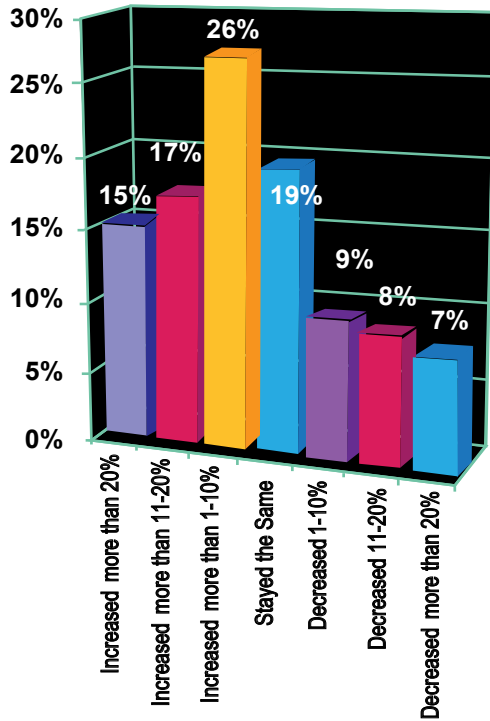
"Consolidations to control cost."
 —Manufacturing engineer at a U.S. manufacturer of aerospace and defense components

"Developing new products."
 —Design engineer at a U.S. manufacturer of bearings

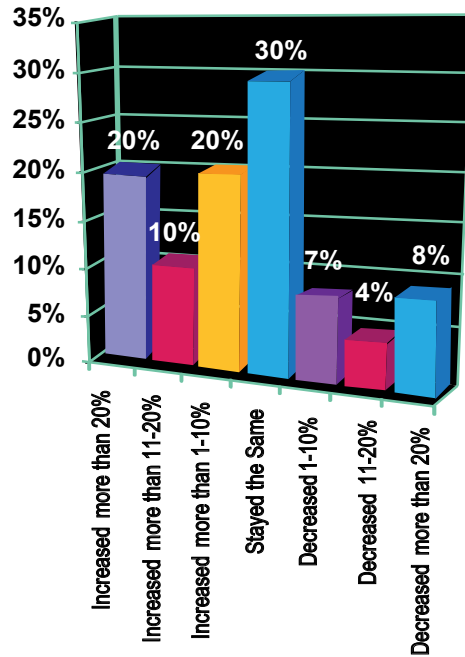
"Do more with less."
 —Design engineer at a U.S. manufacturer of off-highway transmissions

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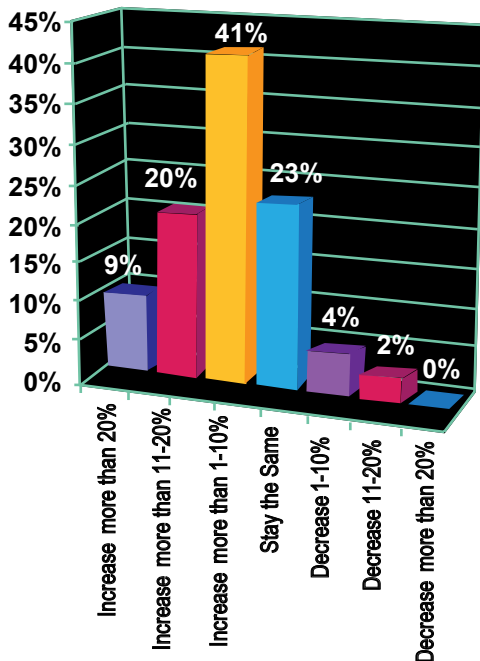
58% Saw Sales Volume Increase in 2010



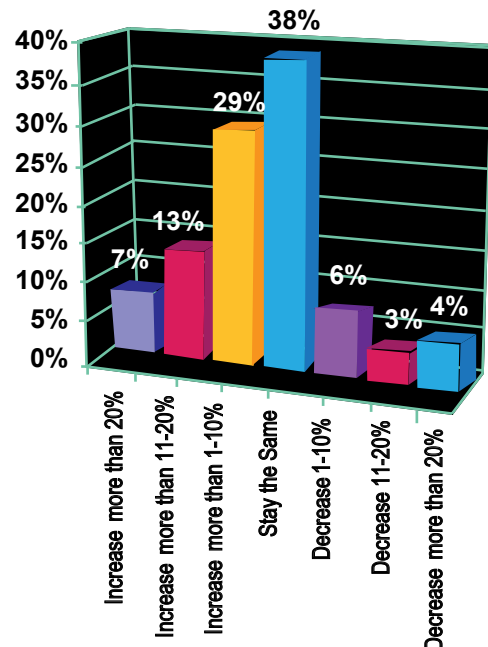
50% Work at Locations where Capital Spending Increased in 2010



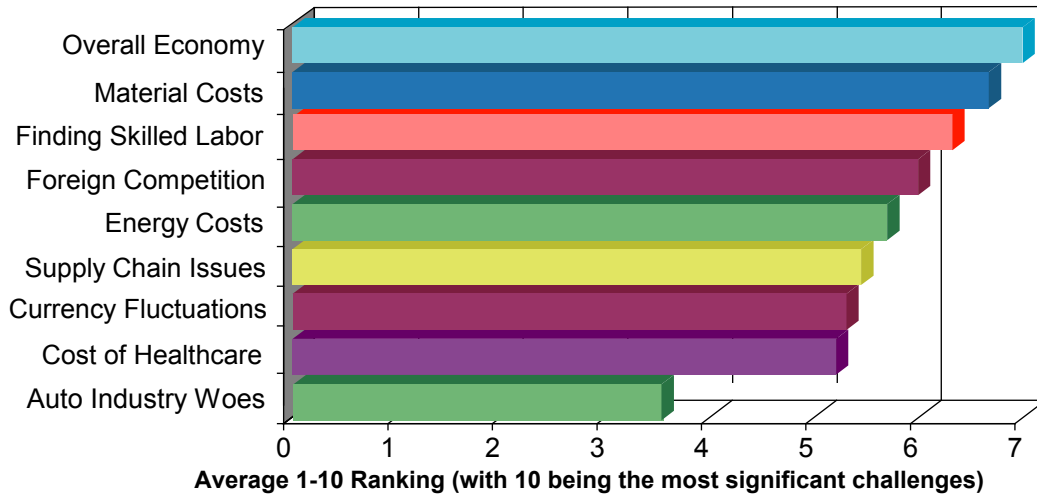
70% Expect Sales Volume to Increase in 2011



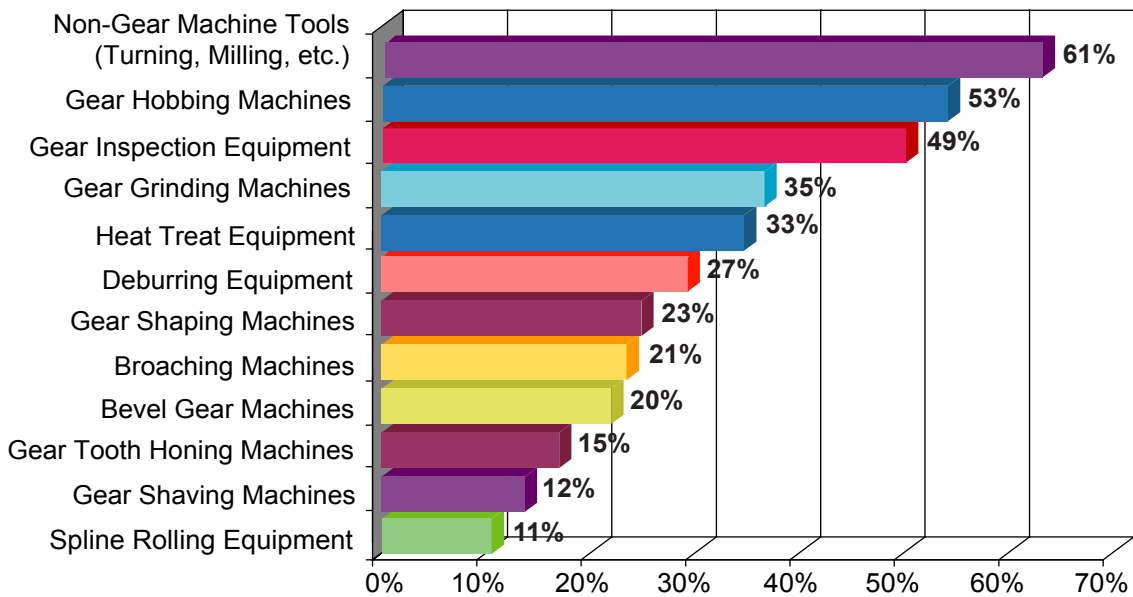
49% Expect Capital Spending at their Locations to Increase in 2011



What are the Most Significant Challenges Facing Gear Industry Companies?

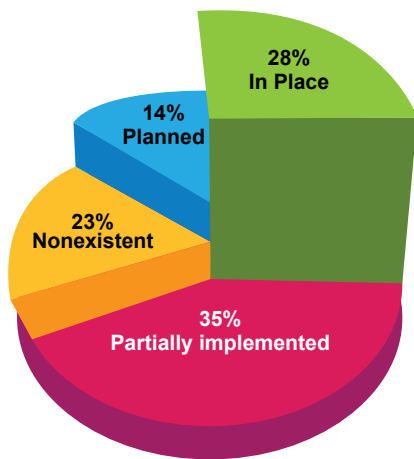


Machine Tool Purchase Plans 2011

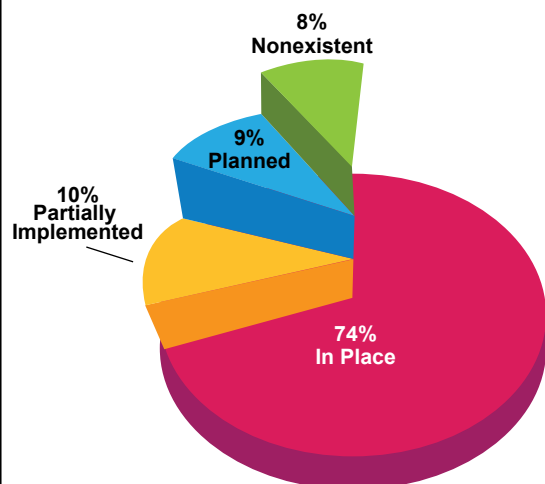


Of those planning to purchase capital equipment, the percentage planning to purchase in each category

Green or Sustainable Manufacturing Implementation



ISO 9000 Implementation



What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"Enhancing capacity while reducing manpower."

—Corporate executive at an Indian gear manufacturing job shop

"Finding R&D support for solving gear distress associated with new technologies."

—Corporate executive at a U.S. manufacturer of enclosed gear drives

"Finding a solution to controlling price and reducing our lead times and order quantities."

—Design engineer at a U.S. manufacturer of agricultural components

"Finding qualified engineers."

—Marketing manager at a U.S. manufacturer of gears and gear drives

"Finding skilled labor."

—Engineering manager at a European manufacturer of agricultural transmissions

"Getting more involved in automotive industry."

—Purchasing manager at a European manufacturer of gearboxes

"Getting business."

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

"Getting new product started and funded."

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

"Government funding."

—Design engineer at a U.S. manufacturer of satellites

"Implementing a zero-defect mindset."

—Manufacturing engineer at a South American manufacturer of automotive transmission parts

"Implementation of newer technology."

—Sales manager at a U.S. gear manufacturing job shop

"Improving quality consistency."

—Corporate executive at a European manufacturer of speed reducers

"Improved materials for lower product cost. Advanced analytic modeling."

—Corporate executive at a U.S. manufacturer of high speed gear drives

"Improving quality levels and going green."

—Corporate executive at a Far East manufacturer of sprockets

"Increasing car axle manufacturing business."

—Corporate executive at a U.S. manufacturer of truck axles

continued

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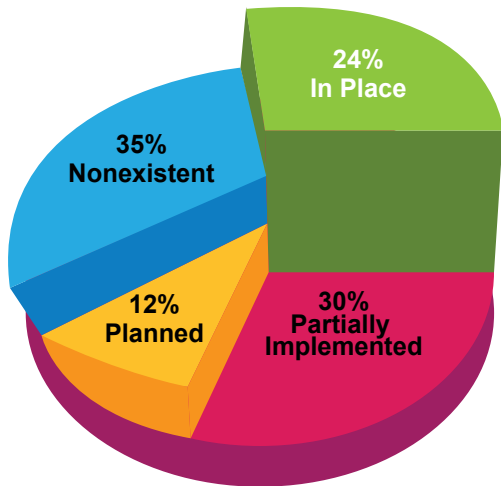
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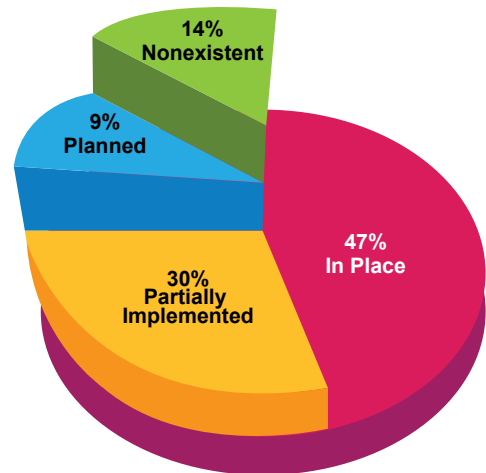
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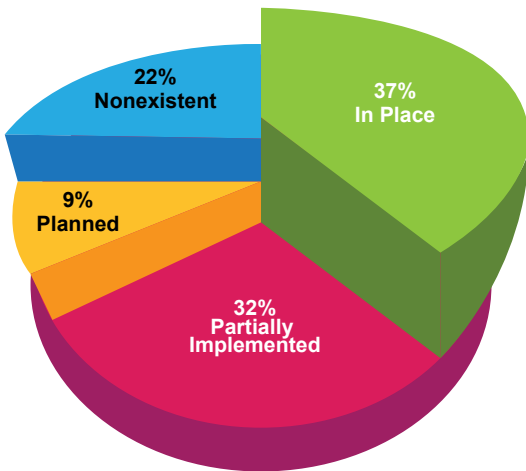
Six Sigma Implementation



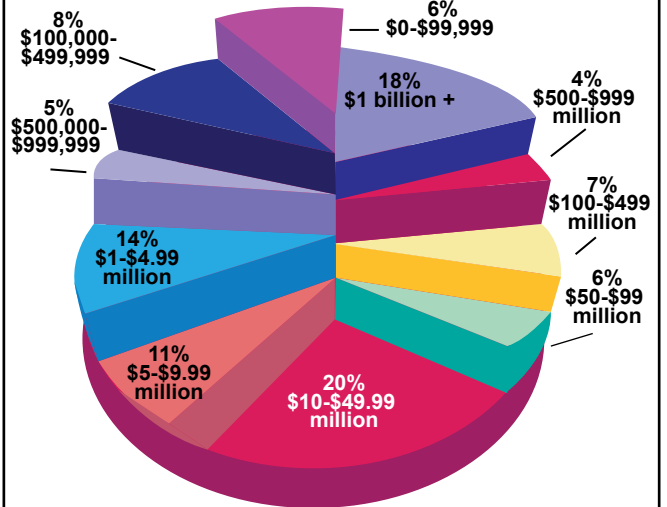
Lean Manufacturing Implementation



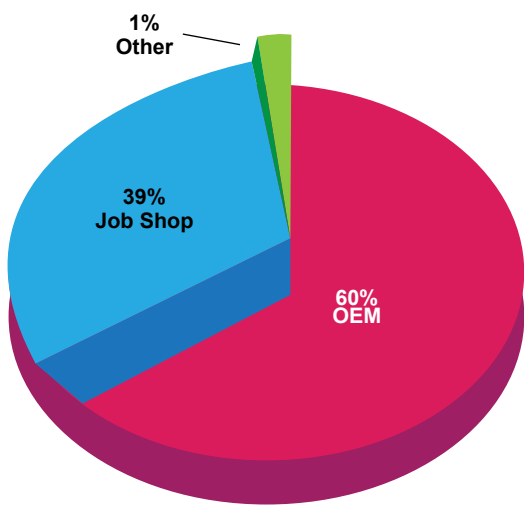
Statistical Process Control (SPC) Implementation



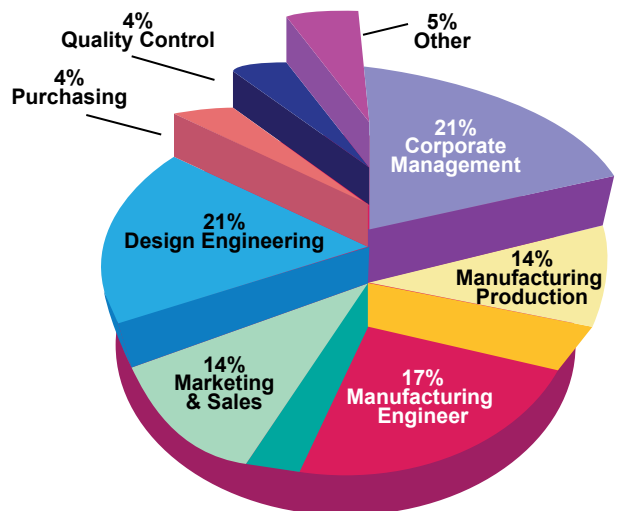
Annual Sales Volume of Company



Type of Operation



Job Title/Function of Respondent



What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"Increasing quality of manufactured bevel gears."

—Manufacturing engineer at a European gear manufacturing job shop

"Increasing production levels to meet rapidly increasing sales opportunities."

—Manufacturing engineer at a U.S. manufacturer of construction and mining transmissions

"Increasing sales of inventory that I currently have been manufacturing."

—Owner of a U.S. manufacturer of racing transmissions

"Introduction of large-scale assembly processes."

—Corporate executive at a European manufacturer of actuators

"Keeping up with customer demand."

—Manufacturing engineer at a U.S. manufacturer of plastic products

"Keeping engineering and manufacturing costs in line with expectations."

—Design engineer at a U.S. gear and gearbox repair facility

"Maintaining correct staff abilities to meet stringent contract targets."

—Design engineer at a European automotive transmission consultancy

"Maintaining existing equipment with higher overall equipment effectiveness."

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

"Maintaining our competitive advantage and increasing sales."

—Design engineer at a European design engineering firm

"Maintaining product cost with highest quality standards."

—Production worker at an Indian automobile OEM

"Manufacturing efficiencies."

—Sales manager at a U.S. gear manufacturing job shop

"Many new complex jobs in queue for processing."

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

"Material costs and equipment depreciation-obsolescence."

—Field service manager for a U.S. gear drive manufacturer

"Meeting foreign competition."

—Corporate executive for a U.S. manufacturer of gears and geared assemblies

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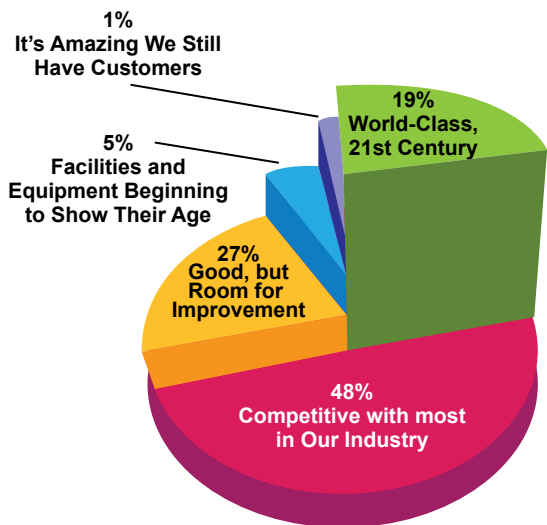
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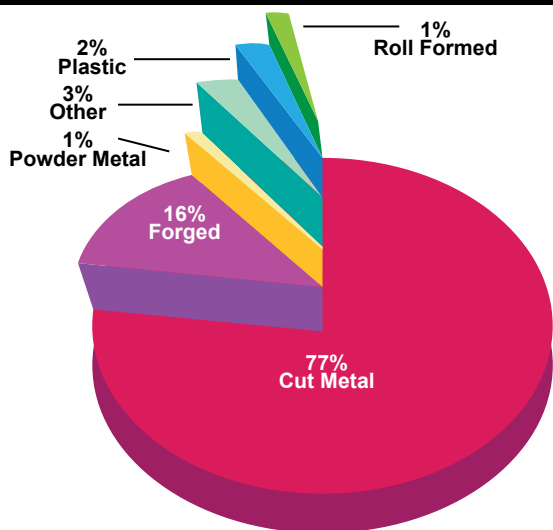
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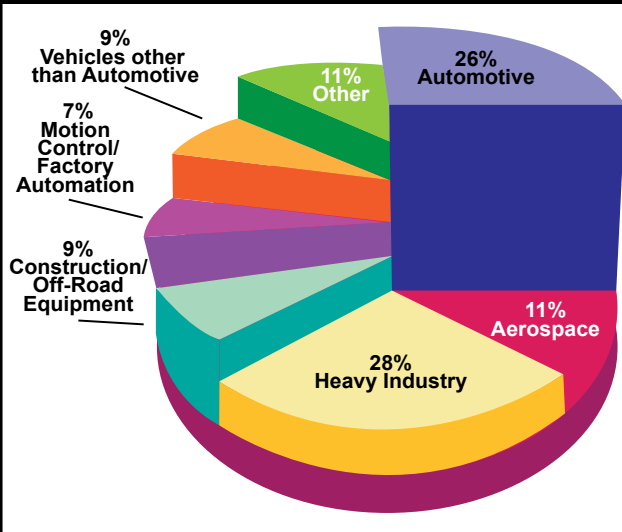
How Do Respondents Describe their Manufacturing Operations and Technology?



Primary Method of Manufacture



Primary Industry of Respondent



What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"Need to upgrade our gear cutting technology with little capital."

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

"Implementing new processes."

—Sales manager at a U.S. manufacturer of powder metal components

"New production developments, multitasking."

—Corporate executive at a European manufacturer of ground gears

"No university-trained gear engineers available."

—Manufacturing engineer at a U.S. manufacturer of gears and drives

"Qualified and skilled personnel."

—Engineering manager at a Canadian manufacturer of gears and drives

"Quality control and heat treatment."

—Manufacturing engineer at an African gear manufacturing job shop

"Quality employees."

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

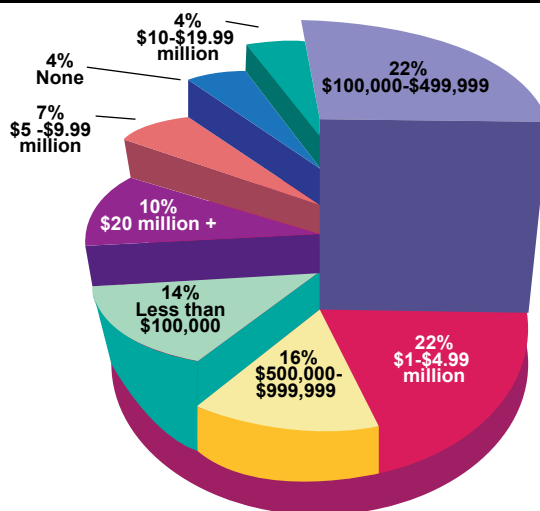
"Reducing costs."

—Manufacturing engineer at a U.S. manufacturer of custom bearings

"Resources and training."

—Design engineering manager at a U.S. manufacturer of industrial gears

Capital Spending for 2010



What Are Your Company's Greatest Manufacturing/Engineering Challenges for 2011?

"Reversing the economic climate made worse by the Obama regime. All sized private sector businesses are critical to the U.S. economy. We do not need more do-nothing, perpetually brain-dead government jobs! When it comes to what drives our country, Obama and his ideologues are immature, childish, ideological bozos."

—Application technician at a U.S. provider of technical services

"Shorter delivery time requirements."

—Sales manager at a U.S. manufacturer of couplings

"Skilled manpower."

—Heat treating manager at an Indian manufacturer of transmission gears

"Staying ahead of our competitors with innovative products. Trying to balance sales demand with manufacturing capacity."

—Design engineer at a European manufacturer of torque multipliers

"The economy. Will it continue to grow?"

—Design engineer at a U.S. manufacturer of automobile transmissions

"To manufacture various types of product with a minimum tolerance, or more precisely to supply product to a 0.005 accuracy. At present we are up to 0.015."

—Production manager at an Indian gear manufacturing job shop

"To meet the increase in demand without deterioration of quality."

—Design engineer at an Indian manufacturer of two- and three-wheel vehicles

"To supply the current increased demand as well as add new parts."

—Corporate executive at an Indian gear manufacturing job shop

"Winning orders in an increasingly competitive market."

—Corporate executive at a European gear manufacturing job shop



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