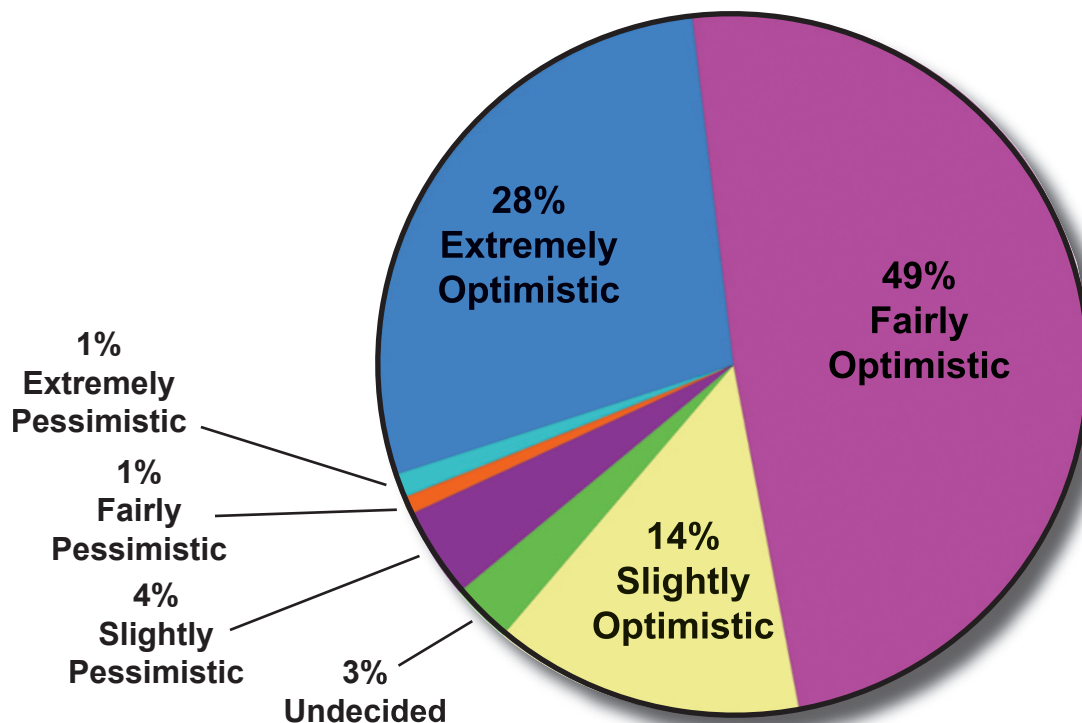




State of the Gear Industry

91% of Gear Industry Respondents are Optimistic About their Ability to Compete over the next 5 Years



Based on the chart above, gear manufacturers are clearly optimistic about 2007 and beyond. They've been riding a wave of increased employment, increased sales and increased production. Nearly all involved in gear manufacturing believe in their companies, their technology and their processes.

It's safe to say the gear industry has a positive outlook.

Of course, the optimism shown by these results reflects a worldwide gear manufacturing economy that has been strong over the last few years. If you make gears these days, chances are good that you're pretty busy.

But that doesn't mean that you aren't concerned.

The results presented here are biased. They aren't representative of the entire gear industry, nor are they representative of

all of its facets. For example, this survey definitely underrepresents the thousands of Americans who manufacture gears for automotive transmissions and axles—and that industry, at least in America, continues to struggle.

"Our highest-volume products are tied to trucks and SUVs, which have fallen out of favor due to higher fuel prices," said a design engineer for a U.S. Tier One automotive supplier. "We either need new products, new customers or both."

Another automotive industry respondent said, "This facility is closing and production is being moved to low-cost countries, like India, Poland and China."

A number of other respondents mentioned that the automotive industry downturn was negatively affecting their businesses.

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 at gear manufacturing locations 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 (45%), captive shops at OEMs (53%) and shops manufacturing gears for maintenance, spares and their own use (2%).

The survey covers gear manufacturing around the world, with 57% of respondents working in the United States, and 43% outside the United States.

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

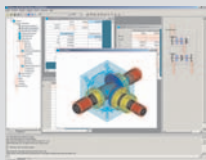
Sharing Knowledge

KISSsoft

Calculation programs for machine design

Leading calculation software for efficient gear box design

KISSsys



- Modeling of gearboxes and drivetrains for strength analysis
- Automatic calculations of power flow and load Duty Cycles on a system level
- Calculation of load spectra for all machine elements included in the model
- Perform sensitivity analysis automatically
- Automatically generate documentation for a complete gearbox analysis

KISSsoft



- Design and analysis of all major transmission elements
- Gears, shafts, bearings, hubs & connections
- Spur, helical, bevel, worm, crossed axis & face gears
- Basic and final design optimization tools unique in the industry
- Current standards implemented: AGMA, ISO, DIN, ANSI, VDI, FKM
- Comprehensive reports
- CAD interfaces (Inventor, Solid Edge, SolidWorks, Unigraphics, Catia)

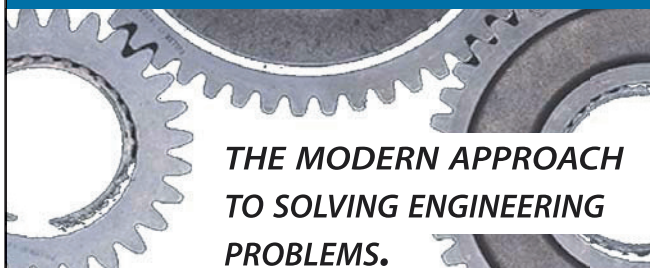
Our office in the USA



KISSsoft, USA, LLC
3719 N. Spring Grove Road
Johnsburg, Illinois 60050

(815) 363-8823
dan.kondrits@KISSsoft.com
www.KISSsoft.com

Residual Stress Retained Austenite Measurement



THE MODERN APPROACH TO SOLVING ENGINEERING PROBLEMS.



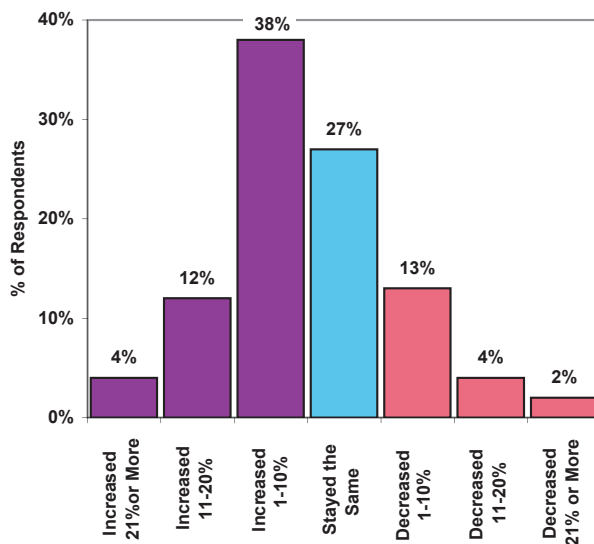
LXRD Laboratory Residual Stress Measurement System

Crack initiation
Crack propagation
Stress corrosion cracking
Distortion
Fatigue life



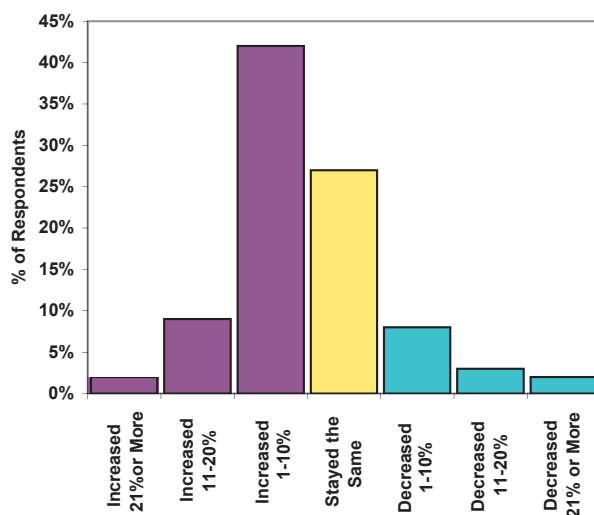
www.protoxrd.com tel: +1 (519) 737-6330

54% of Gear Industry Respondents Work at Locations Where Employment Increased in 2006



Change in Employment vs. 2005

53% of Gear Industry Respondents Expect Employment at their Location to Increase in 2007



Expected Employment Change in 2007

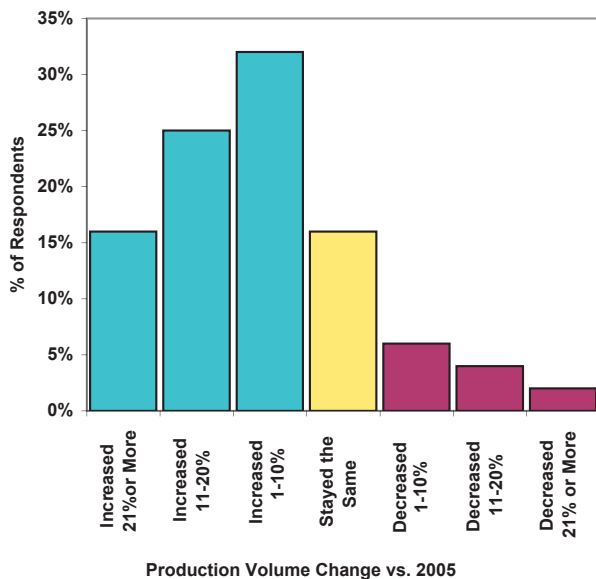
Surprisingly, only a few mentioned foreign competition, and some of those who did were outside the United States. In some cases, companies are being forced to set up manufacturing operations overseas in order to serve a major customer. A design engineer working for a major OEM in Wisconsin cited "unfair pricing by foreign competitors" as one of his company's most significant challenges.

Our audience seems less concerned with foreign competition than with competition in general. The respondents are worried about how they're going to be able to do more with less.

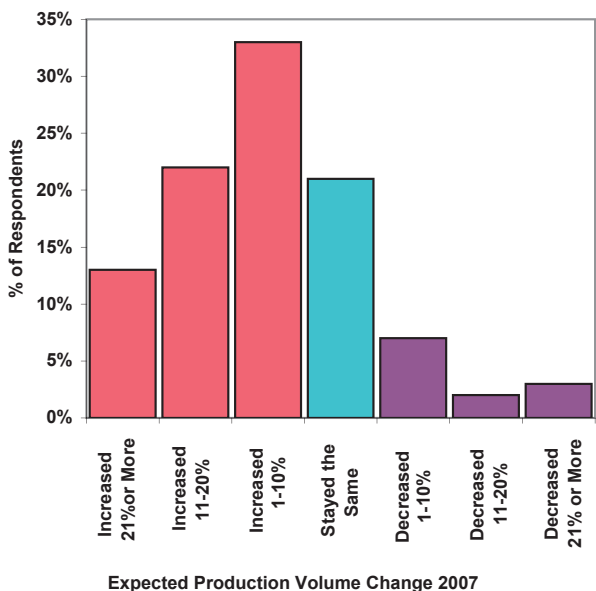
"Same as every year," one respondent said. "make it better, cheaper, and faster."

Most respondents work at locations that are increasing

73% Saw Production Volumes Increase in 2006



68% Expect Production Volume to Increase in 2007



production, but they're also being asked to reduce costs and decrease delivery times, all while deliveries from their suppliers are taking longer, costing more and becoming less reliable.

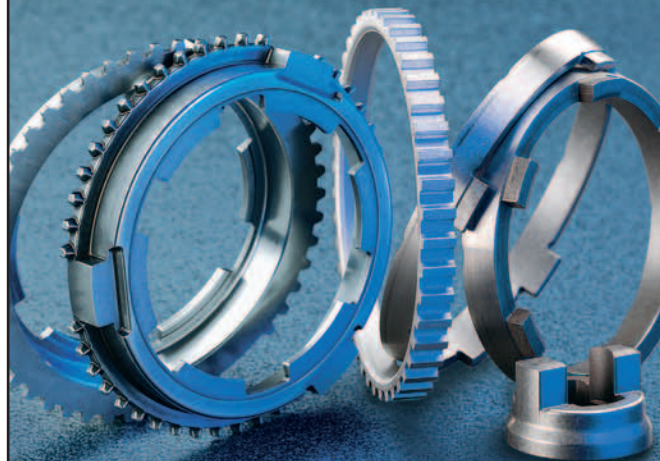
Another theme common among respondents, especially in the United States, was the difficulty in finding skilled workers—not enough engineering talent, not enough machining talent, and not enough interest in manufacturing in general.

"Large corporate attrition programs will see experienced workers flow out, being replaced by inexperienced workers," said a manufacturing engineer at a major U.S. manufacturer of heavy-duty transmissions.

"For my small operation, the inability to find qualified or any other help will be a deterrent to the growth of this com-

mG

miniGears North America



mG miniGears

Global Solutions from a Truly Global Company

The only company of its kind with a truly global manufacturing presence in all three areas of its customer's production: Europe, United States, Far East.

miniGears is the first name worldwide in providing small and mid-size precision transmission components in high volumes produced with consistently exceptional quality, both by traditional steel machining and highly innovative powder metallurgical PM processes.

A team of highly motivated and qualified individuals, recognized for their competence, accountability, innovation capability and responsiveness to customers' needs, have established miniGears as the reliable partner in gear calculation, engineering design and development, testing and production of gears and complete kinematic mechanisms.

ISO/TS 16949:2002 certified

mG miniGears North America

2505 International Parkway
Virginia Beach, VA 23452 U.S.A.

ph.: (757) 233-7000

fax: (757) 627-0944

e-mail: mg_usa@minigears.com

internet: www.minigears.com

PRECISION GEARS

Specialists in the manufacture of
Spur and Helical Gears to AGMA 15 and
BEVEL GEARS to AGMA 13.
 Hobbed internal and external gears up to
 80" diameter and 39" face.

Gleason bevels up to 100 inch
 diameter. Klingelnberg spiral
 bevels hard cut up to 85 inch
 diameter.

Ground internal and external
 gears up to 60" diameter and
 29" face.

In-house heat treatment, metal-
 lurgical lab, magnaflux, and nital
 etch capability.

Full inspection capabilities in
 our modern state-of-the-art
 gear metrology laboratory.



**Overton Gear and
 Tool Corporation**

www.overtongear.com

630-543-9570 PHONE

630-543-7440 FAX

530 Westgate Drive

Addison, IL 60101



ISO 9001: 2000 CERTIFIED

Aero Gear

**Your one stop source
 for all your gear-making
 requirements**



- Precision carburized gears,
 housings and gearbox
 assemblies

- Flowline production
- In-house heat treating
- Supplier to leading
 aerospace
 manufacturers
- Tolerances to AGMA
 Class 12

Design engineering services also available

For more information, contact:

Aero Gear Inc.

1050 Day Hill Rd., Windsor, CT 06095

Tel: (860) 688-0888

Fax: (860) 285-8514

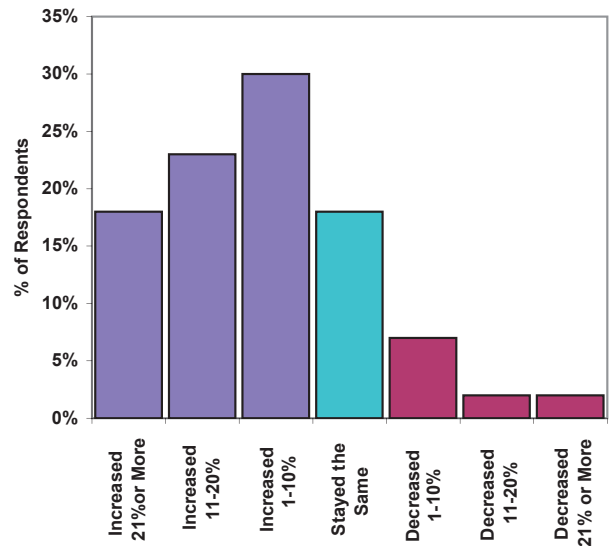


Aero Gear Inc.



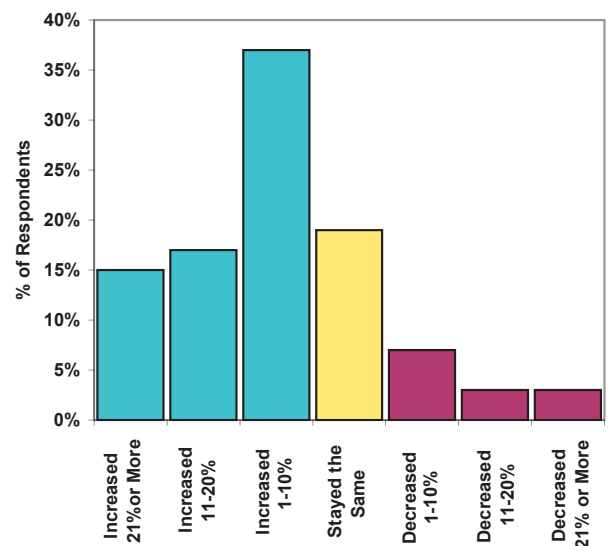
email: buygears@aerogear.com • www.aerogear.com

71% Saw Sales Volumes Increase in 2006



Change in Sales Volume vs. 2005

69% Expect Sales to Increase in 2007



Expected Change in Sales Volume 2007

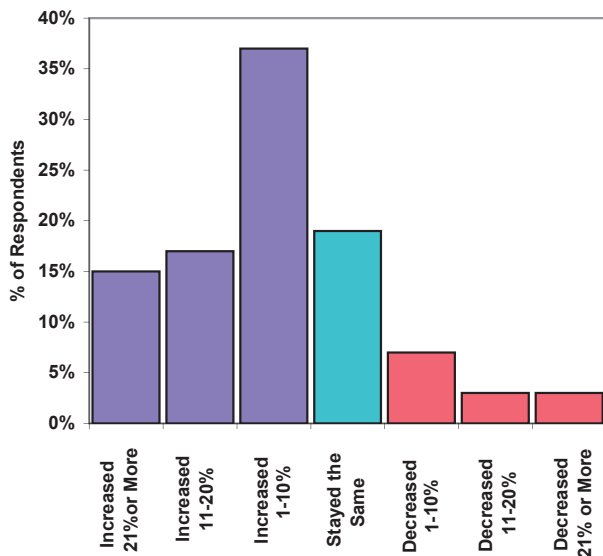
pany," said a production worker at a California job shop.

Other concerns were voiced as well, including issues like scheduling, finding raw materials, improving quality, increasing productivity and so forth. Others want to reduce their inventories and increase their flexibility through lean manufacturing.

Some are simply struggling with their own growth. "We are running out of space," said a manufacturing engineer at a mid-sized Canadian job shop.

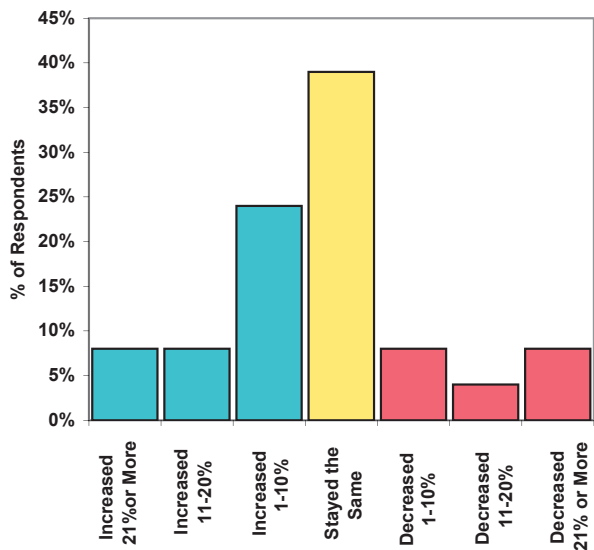
We deliberately did not ask questions about profits in this survey. Many of the respondents wouldn't necessarily have access to that kind of information. Others work at large OEMs whose profits are largely dependent upon factors outside of their gear manufacturing operations. But it's clear from the

**50% Work at Locations Where
Capital Spending Increased in 2006**



Expected Change in Sales Volume 2007

**41% Expect Capital Spending at Their
Locations to Increase in 2007**



Expected Change in Capital Spending 2007

comments of many of the respondents that, although they are extremely busy, it doesn't necessarily follow that they're also extremely profitable.

Reading through their comments, you get the sense that gear manufacturers are feeling squeezed, in more ways than one. Some are squeezed by space constraints. Others are squeezed by pricing. Still others are squeezed by their customers' demands for higher productivity, lower prices and improved quality.

But squeezing the most out of the least is the task of modern manufacturing. Despite the many challenges facing them, you also get the sense from reading their comments that the gear industry is not only up to the task, but also hopeful about its future. ⚙️



Quality Workholding

Expanding Mandrels

.0001" T.I.R. or better
Expansion Range: 1/4" to 7"
Fast & easy loading -
Ideal for:
Gear Inspection
Gear Grinding
Hob Sharpening



Spline Mandrels

Pitch diameter contact
.0002" T.I.R. or better
Inspection or Grinding



Grinding Mandrels

.0001" T.I.R. or better
Robust clamping
Available with part locator
Fast and easy loading



LeCOUNT, Inc. 180 Dewitt Drive White River Jc. VT 05001 USA
(800) 642-6713 (802) 296-2200 Fax: (802) 296-6843
sales@lecoun.com www.lecount.com

MESH UP

www.gtcgears.com

Exclusive North
American Distributor of
KHK GEARS

- Spur Gears
- Gear Racks
- Miter Gears
- Bevel Gears
- Worm Gears

From stock
for all
your metric
gearing
needs.



**Quality
Transmission
Components**

Phone: 516.437.6700
Fax: 516.328.3343

Find our products with
GLOBALSPEC®

GEAR CUTTING TOOLS

MADE IN SWITZERLAND



SCHNYDER US Distributor **HANIK CORPORATION**
 GEAR CUTTING TECHNOLOGY PHONE 630-595-7333
 60 YEARS OF TOP TECHNOLOGY FAX 630-595-7343
 www.hanikcorp.com email: hanikcorp@aol.com

ph: 011-41-32-344-0400 • fax: 011-41-32-344-0404 • www.schnyder.com • mail@schnyder.com

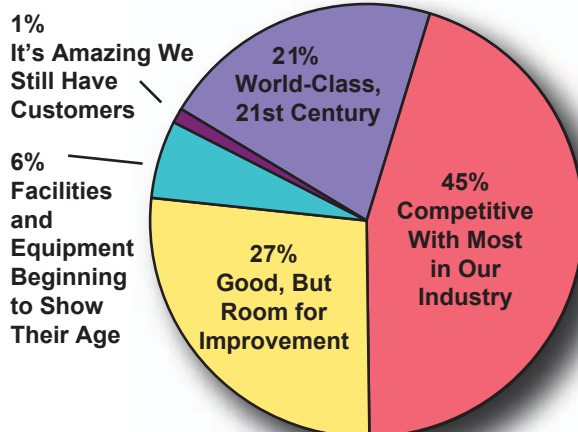


Magnum Induction

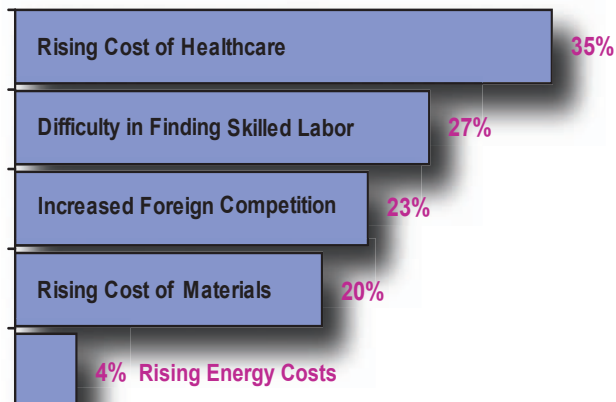
Experts in CNC controlled tooth by tooth submerged process gear hardening. We specialize in precision induction hardening of all power transmission components. Registered to TS16949:2002 standards.

Magnum Induction Inc.
14 Ash Drive • Smiths Creek, MI 48074
Ph: 810.364.5270 • Fax: 810.364.4114
Email: tom@magnuminduction.com
magnuminduction.com

How Do Respondents Describe Their Manufacturing Operations and Technology?

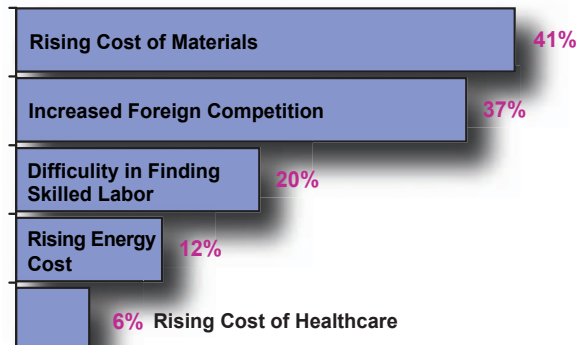


Ranked as #1 Concern in the USA



* % equals more than 100% because some respondents chose more than one option as their #1.

Ranked as #1 Concern Outside USA



* % equals more than 100% because some respondents chose more than one option as their #1.

What Other Factors are Presenting Significant Challenges to Your Business?

"Although we have experienced a nice increase in sales in the last 18 months, there is still a fear that the industry could go into a downturn again...The fun of what would be coming in the door next is being replaced by the dread of 'How can we meet these ridiculous deliveries on parts we quoted months ago and now are suddenly HOT because the customer waited so long to order.'"

—*a manufacturing production worker at a Michigan job shop*

"Coping with changing demands on products. Reducing stock levels with a view to becoming leaner."

—*design engineer at a U.K. manufacturer of gear drives*

"Failure of society/industry to shake negative perceptions about machining as a career, thus difficulty in finding and hiring excellent, intelligent help."

—*corporate executive at a small U.S. manufacturer of automotive powertrain products*

"Increased competition, but domestic."

—*a manufacturing engineer at a major U.S. automotive transmission plant*

"Keeping up with rapid growth and demand."

—*a quality control worker at a U.S. manufacturer of mining equipment*

"Meeting the ever-increasing demands for quicker deliveries and reducing lead times, coupled with price reduction requests. Many customers' expectations have gone beyond being unreasonable."

—*corporate executive at a mid-sized Illinois job shop*

"More and more companies which were not gear producers 10 years ago are now getting into the gear business."

—*employee at a mid-sized Michigan job shop*

"Not just the cost of gear steel, but availability; getting forgings into the plant."

—*production worker at a large U.S. manufacturer of industrial gearboxes*

"Suppliers being able to meet our scheduled ramp-up and our quality requirements."

—*manufacturing engineer at a major U.S. automotive transmission plant*

What are Your Company's Most Significant Manufacturing/Engineering Challenges for 2007?

"Find people with enough skill on gears."

—*manufacturing engineer at a small California job shop*

"Bringing the best manufacturing practice to produce world-class gear products. Implementing six sigma and TQM culture into the organization."

—*corporate executive at a small Indian job shop serving the construction market*

"Cost reduction to compete with foreign products."

—*production worker at a small U.S. manufacturer of motion control products*

"Creating good scheduling for production, to create better on-time delivery."

—*production worker at a large U.S. job shop serving the aerospace industries*

"Design and prototype products in a shorter time period with the same resources."

—*design engineer at a major U.S. manufacturer of construction/off-highway equipment*

"Expansion: double production capacity without losing focus on cost optimization."

—*corporate executive at a major European manufacturer of industrial gearboxes*

"Finding and retaining skilled labor."

—*corporate executive at a mid-sized New York job shop*

"Increasing the production by at least 10% while reducing the manpower by 2-5%."

—*manufacturing engineer at a major Indian automobile manufacturer*

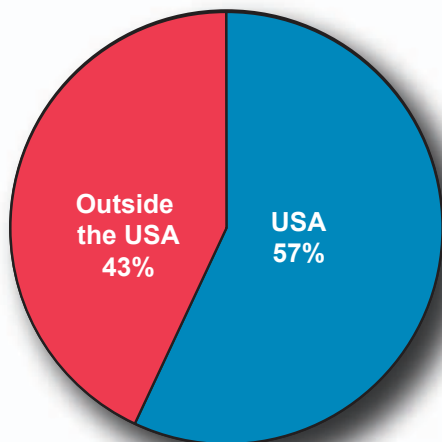
"Keeping production costs low and keeping our competitive edge against foreign competition."

—*marketing & sales worker at a mid-sized job shop in Malaysia*

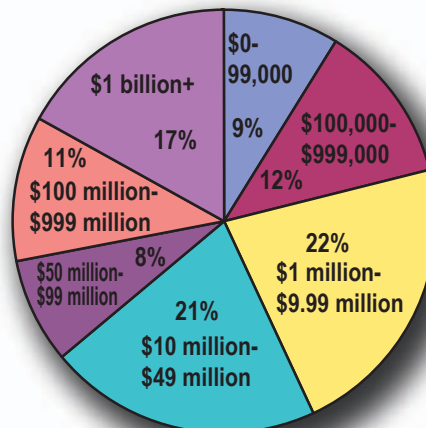
"To reduce price without affecting quality and delivery."

—*quality control worker at a major U.S. aerospace job shop*

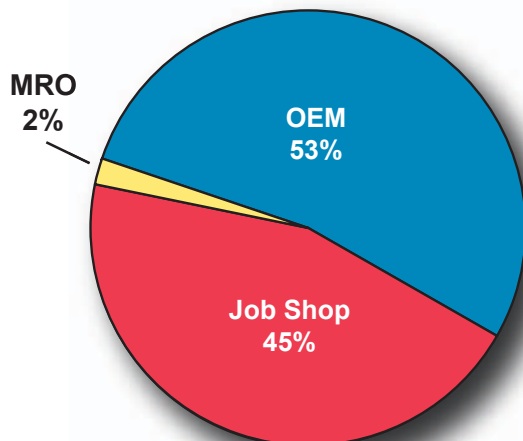
State of the Gear Industry: Who Responded



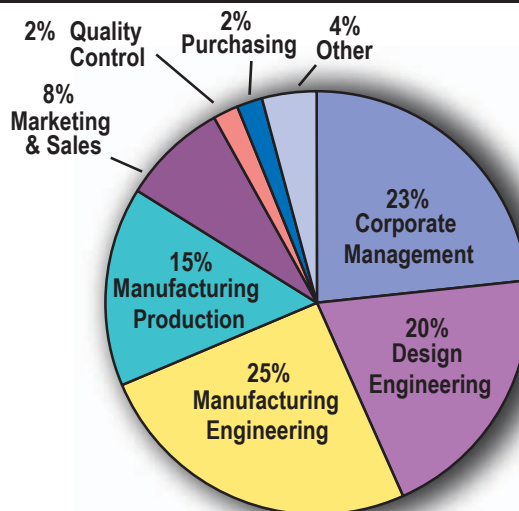
Sales Volume of Company



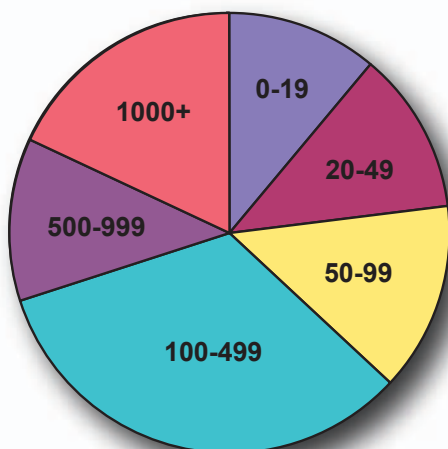
Type of Operation



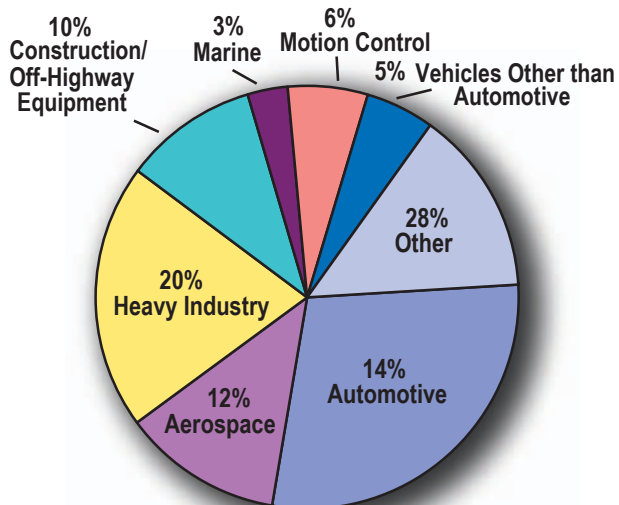
Job Title/Function of Respondent



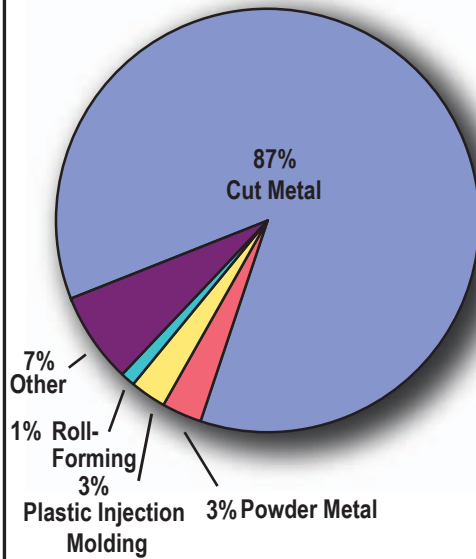
Size of Company



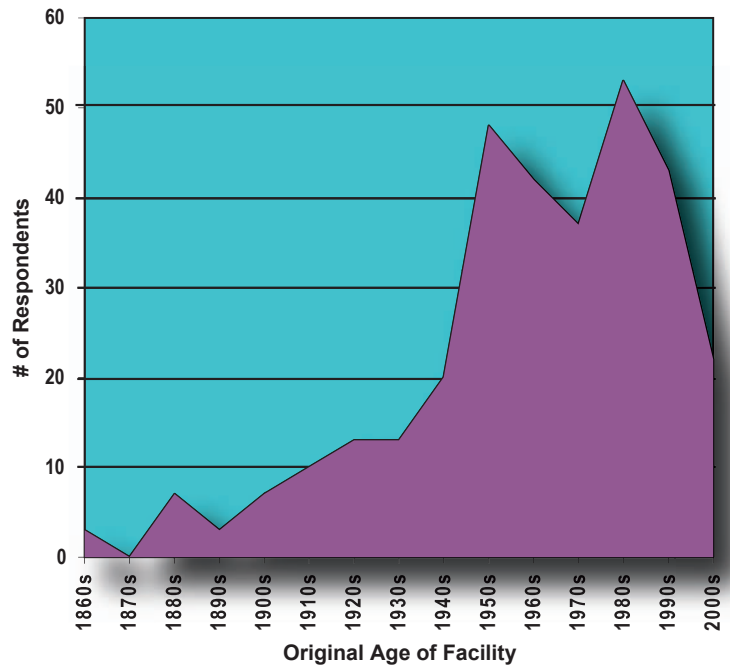
Prime Industry



Primary Method of Manufacture



Age of Manufacturing Location



Half of gear industry respondents work in facilities originally built before 1967

Modular Transmission Test Systems

Leading Manufacturers worldwide implement teamtechnik solutions for their production needs.



- Proven Turnkey Solutions readily available for your production needs.
- Regional & Global Service and Spare Parts Support.
- Highest quality solutions and product at affordable costs.

One supplier,
proven turnkey solutions
teamtechnik!



**team
technik**
PRODUCTION TECHNOLOGY

teamtechnik USA, 678/957-0334, application.usa@teamtechnik.com, www.teamtechnik.com