

Dennis Gimpert of Koepfer America

This is the second in our series of interviews with the leaders in the gear industry. This interview is with Dennis Gimpert, president of Koepfer America, South Elgin, IL.

GT: What do you see as the state of the American gear industry now?

DG: First of all, we need to define what the gear industry is. There are at least five areas. The first and largest is the automotive, truck and off-highway, which consumes two-thirds of all gears produced. It is the largest and most important segment of the industry. The second area is large gearing; industrial, marine, cement plants, things of that nature. The third area is job shops, which support the entire industry. Fourth, hand tools and fractional horsepower drives; and fifth, instruments and aerospace.

The automotive area is the strongest it has been in decades. This market is extremely "hot," not only in the United States, but also in the emerging markets of Asia, China and South America. This segment will probably represent the biggest competitive challenge in the future for U.S. manufacturers. In the large gear shop segment, my impression is that they still have over-capacity from the defense buildup, which is now flat or in depression. Job shops that support the industry are busy and challenged to meet their customers' needs. The fourth segment, hand tools, fractional drives, etc., is also busy. The fifth area, instruments and aerospace, is flat, which goes along with defense.



Dennis Gimpert

GT: Where do you see the gear industry going into the year 2000?

DG: For the automotive industry, with its captive gear manufacturing and companies that support that industry, the biggest challenge will be the emerging international markets, in particular China, Asia and South America. How they respond to those markets will determine if they gain that business throughout the world. In addition to the Asian and South American markets, we shouldn't forget the Eastern Bloc of Europe that is struggling through its emergence into a capitalistic system. They are in a position to consume many products. These markets are going to present a challenge to U.S. industry because those areas are so different from North American markets. The culture, the economy and the pay structures of these markets differ, not the quality and not the technology.

GT: Speaking of trade status, what are your thoughts on GATT?

DG: I think it really refers to government's influence on manufacturing. Clearly one of the areas of trade that has been restricted to us has been parts of Asia. One of the purposes of GATT is to knock down some of those trade barriers. Whether it will accomplish that and at what cost, I am not sure. An equally important area we've lost sight of has been government cooperation and support of manufacturing. The reestablishment of an investment tax credit and accelerated depreciation would be welcome measures to increase the productivity of our country.

GT: You characterized the aerospace industry as flat. Do you see down the road an evolution or change in the aerospace industry?

DG: Aerospace is primarily related to commercial and defense aviation. Certainly the commercial aviation industry in the United States, Boeing, McDonnell Douglas, is being challenged by the European consortium and potentially by the Asian consortia. The defense industry, which has been totally captive, is now open to an international market, and our defense systems include a lot of offshore components. This new world market will require increased efficiencies to remain competitive.

GT: What about strengths and weaknesses of the American gear industry?

DG: I think you can look at what changes have occurred in the gear industry, and the largest single change that I've seen is in quality improve-

ment in the gear elements themselves. I think everyone has always said he or she made a quality component, but I think that today they are actually doing it and being more truthful with themselves. Today it's both essential and practical to use some analytical gear inspection equipment, and if you look at the major suppliers like M&M, Zeiss-Höfler and Klingelberg, they provide accurate, flexible, efficient machines that inspect gears quickly and without an operator's influence or interpretation. The cost of these systems has gone down in relation to the cost of other capital equipment. So when I look at our customers and others in the industry, I think that they are truly making a higher quality component today.

GT: We read more and more about on-machine inspection as opposed to separate machines for inspection. How prevalent is on-machine inspection? How fast is it coming?

DG: One of the problems that I see with on-machine inspection is that the hobbing, shaping and other processes used to produce gears are chip-making processes. This creates an environment that is not friendly for inspection. To overcome that environment will require systems that are overly expensive and complicated to integrate with the machine. There are systems certainly that can do it, but they are slow, costly and not yet practical.

GT: What about Koepfer? Where is your company going in terms of products, markets and philosophy in the next six to eight years.

DG: Over the last 20 years, there have been repeated changes in technology and products. First a machine tool improvement, followed by a cutting tool improvement, followed by another machine tool improvement and so on. It appears today that cutting tools are emerging once more as the leader over the machine tools. In particular

with carbide and cermet tools, the machines are now limiting the correct application of these cutters. It is apparent that it is practical to use much higher surface speeds with these tools than machines are capable of today. One of the major problems we all face is the commercially available servo systems used. Standard commercial spindle drives have a practical limit today of 5,000 rpm, and that is too slow for the next generation of machines. If we look at where we have to go, it has to be to use the cutting tools that are available but not being pushed to the limit.

GT: Are the servodrive manufacturers addressing that problem?

DG: I think it is similar to the development of CNC hobbing and CNC shaping machines. Initially the equipment manufacturers developed black

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boxes to solve the problem of the kinematic link between the tool and the work. There was not a commercial unit available to solve this problem. The first electronic hobbing machines were introduced in the 70s with these black boxes, and it really wasn't until a decade later that standard CNC hardware was used. So I think it will be a supply and demand issue.

GT: What about Koepfer's philosophy and market direction?

DG: We are an international company and we've done business throughout

the world for over 100 years. Our markets include Europe, North America, Asia—the entire world. We have been doing business with China for many years. Historically China has always been politically volatile, and as such, we have conducted our business with them cautiously, but we remain optimistic about the largest population group in the world.

One unique feature of our company has been our emphasis on the niche markets. We grew up from the instrument and clock industry and have become larger both as a company and as an equipment manufacturer. Today we emphasize not the largest area of the market, which is automotive, but perhaps the next largest areas—job shops, hand tools, instruments and aerospace. This has allowed us to personalize our technical support to the customer, which gives us an advantage. Manufacturers have been forced to become more agile in their manufacturing philosophy. We respond to this niche market and the agile manufacturing required.

GT: Where do you see that taking you in terms of new products or new designs?

DG: Today I think the concept is beyond JIT as it applies to the total manufacturing environment, including lean management, direct interface to the shop floor, fewer levels of management and cellular concepts of manufacturing. All of this reduces the work process and increases the annual turns with smaller lot sizes. As the lot sizes have decreased, a need for quicker changeover and setup of equipment has emerged. We emphasize quick setup and extreme flexibility in the machines we produce.

The markets we are in have a requirement for a compact machine. And yet the machines being built today are the largest and heaviest ever built. This is a requirement of the emerging cutting tool technologies.

Although the physical size and weight of the machines have increased, the size of the gears that can be produced are similar.

GT: What do you see as the role for AGMA in the gear industry for the next 10 years?

DG: I think that AGMA is an essential element in our industry. I would like to take that a step further and say that the new leaders and personnel in AGMA have made changes that are very positive. These changes include the hands-on gear school, a closer link to the international standards groups working throughout the world, the AGMA Gear Expo, etc. My largest disappointment, and it's not necessarily directed to AGMA, is the difficulty of reaching the many gear companies in the United States and OEMs that produce gears. Most people who are in gear shops and who produce gears as a captive market are not members of AGMA. Yet that gear may be an important part of their product. As I see it, two of the biggest challenges for AGMA are, first, to continue to guide the standards towards an international standard so that our products can be accepted worldwide; and second, to gain acceptance by a broader group of members and incorporate those people into the association.

GT: What are your feelings about ISO 9000 as a quality standard?

DG: I see ISO 9000 as a method of manufacturing a product to its design criteria. I do not see it as a method of producing a "quality" product or a competitive product or a product that is "marketable." It is a philosophy of manufacturing a product to a standard; therefore, it can be potentially a method to produce junk very consistently. I think AGMA and the ISO standards are effective when used with correct statistical process control and inspection techniques. They can provide quality components to the industry.

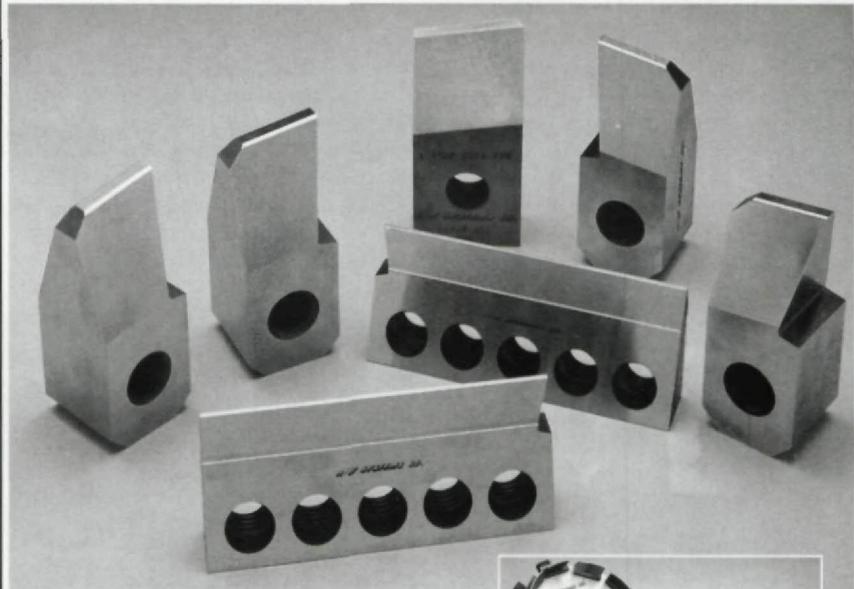
GT: How do you define quality?

DG: Quality has both objective and subjective components, and they don't always match up. On an objective basis, a gear may be performing completely up to standards, but it may have a perceived quality problem. One of our customers, a major producer of hand tools, utilizes a simple inspection at the end of the assembly line. The hand tool is plugged in and someone

listens to it. That tool may be rejected or accepted based upon the perceived quality of it, which is determined by a personal evaluation of whether the tool is "too noisy." Although that hand tool may have performed for years at the same noise level, the company would no longer ship it. This "perceived quality" originally created a tremendous problem for them. Since then, we have identified the problem and worked

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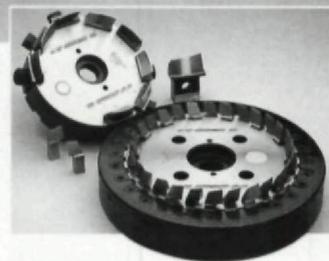
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with them to improve the actual quality of the components. The tool runs more quietly now, and the perceived quality is no longer a problem.

GT: Where do you see CNC going, and where do you think it should go?

DG: The PC system can be an effective interface tool for the operator, the manufacturing engineers and the gear manufacturing machine. As an interface tool, the PC could perform off-

line programming, obtain statistical data and control auxiliary functions. I don't think that the existing PC system will be effective as a machine tool control directly. It is a serial data device. It crunches one piece of data at a time, although faster and faster as the chips get better. Most gear manufacturing machines require parallel processing of data to perform multiple functions simultaneously. CNC

machine tools need special computer systems. The operational speeds of those systems will rise as the use of carbide and cermet tools increases.

GT: Do you see more control of the machine from a remote as opposed to on-site, hands-on operation?

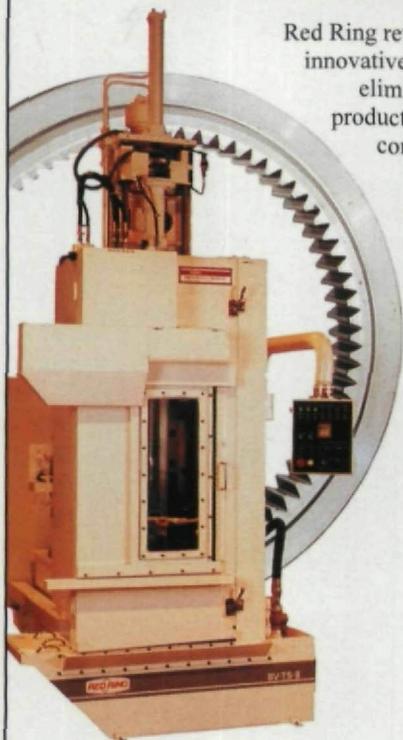
DG: It's a mixed bag. In our particular market, we see that the number of required programs is limited. They can be easily stored in the CNC control systems and recalled with tool offsets performed for size changes as required. DNC for our type of equipment is really not necessary. Programming will remain at the machine because of its simplicity.

GT: Any other topics you would like to address?

DG: One area has been an improved understanding of the gear and the quality being produced in the industry as a whole. The technical knowledge of the manufacturing personnel is better today than it has ever been. People understand that the blank, the fixture, the cutting tool, the machine and the entire system influence the final quality of the gear.

An area of continued interest is hard finishing of components. Heat treatment of gears is still required for life and durability. Although improved, heat treatment is still a problem because of the distortions produced. Who would have dreamed that there would be ground gears in automotive and motorcycle transmissions? Today these products have ground gears in them at an extreme cost. If we look at the niche market that Koepfer is involved in, there is a strong interest in hard finishing techniques that are economical and productive. The area of hard finishing for improved subjective as well as objective quality will continue to be important. ⚙

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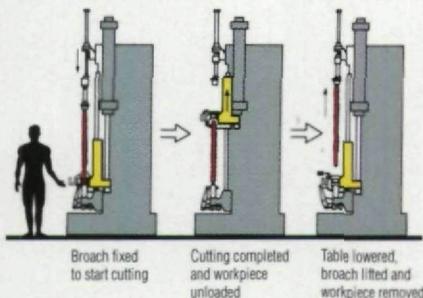
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