

Gear Couplings

In the May/June issue of your excellent magazine, Mr. Stan Jakuba discusses a serious problem, not only for the gear industry, but any machinery where fluctuating torque is encountered. I would like to make the following comments to his article:

1. The statement "the transmission was properly selected and sized" is very wrong! If it were properly selected, it would not have failed! The engineer that selects a transmission cannot disregard the equipment the gears are connected to. It boggles my mind that someone would select a transmission based only on horsepower, speed and ratio, and would not ask what is the prime mover and the driven machine. If not the engineer that selected the transmission, who has the responsibility of selecting the couplings? Note the upper case S; Mr. Jakuba should have discussed the output coupling also. I would like to recommend to you an ASME paper written by Mr. John Wright and entitled "Flexible Couplings and the Cinderella Syndrome."

2. Mr. Jakuba's conclusion that one should select a coupling with "the lowest torsional spring rate" disregards the economics of coupling selection. Lower the spring rate — larger the coupling — higher the expense.

3. Mr. Jakuba makes the correct statement that the torque peaks "will be higher with higher equipment inertia"; which equipment? In the case he describes, it is apparent that the transmission was a speed increaser, hence, the engine was driving the gear (large inertia), and the pinion was driving the generator (very large inertia). Where should the "soft" coupling be installed? At the input or at the output shaft?

4. The conclusion I would have liked to have seen in Mr. Jakuba's article is: leave the coupling selection to the specialists! Select either a coupling manufacturer that makes more than one type of coupling or hire a specialized consultant to perform a design audit on the couplings which are proposed by various manufacturers.

Finally, Mr. Jakuba makes a basically wrong statement: "The culprit in the case was a coupling." The correct statement should have read: The culprit in the case was the inexperienced engineer who selected the wrong coupling.

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Mr. Jakuba's Reply:

It is always a pleasure to read comments written by someone who is as knowledgeable about the subject as Mr. Calistrat obviously is.

Regarding his first comment, the objective of the paragraph was to present an attention catching example of the consequences of poor engineering judgment. The point was that

the same transmission could have performed satisfactorily were it connected to the engine through the right coupling for the job. As for the output coupling, the article's aim was to bring forth the problems associated with the transmittal of pulsating torque in drivelines of substantial polar inertias. The principles described are applicable to output couplings too. Mr. Calistrat rightly pointed out the need to apply these considerations to the other end of the transmission.

I have to disagree with Mr. Calistrat's statement that the selection of the coupling with "the lowest torsional spring rate" contradicts economics. In my experience, there is little, if any, price difference among couplings of basically the same size and configuration, but different spring rate. Sometimes, it is just a matter of specifying a different grade of the resilient material in the coupling, and the maker may be offering a wide range of these with no price difference.

In response to the third paragraph, the word equipment was used to refer to any kind of driven machinery. In the case described in the article where the coupling flexibility was to protect the transmission, the coupling would be most effective if installed on the output from the engine (input to the transmission).

Finally, as a consultant myself, I wholeheartedly agree with Mr. Calistrat's recommendation in the fourth paragraph.

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Guest Editorial

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enabling us to keep in touch with innovations in the design and manufacture of gears and gearing products. The world has become an international market place of ideas as well as goods, and AGMA provides one way to stay in touch with these developments. For example, the AGMA Fall Technical Meeting has grown to an internationally recognized session, both in attendance and sources of quality technical papers. This year, over a third of the abstracts received for presentation at this year's meeting came from sources outside of the U.S. and Canada.

As good as this past approach has been, there still is a strong need for people in the gear industry to have a place to SEE the latest innovations for both design and manufacturing. Existing trade shows do not offer an answer—exhibitors in larger shows have to market to the broadest group of attendees, and that just doesn't focus on gear people. The only answer seemed to be for AGMA to organize GEAR EXPO.

October 4-7 in Cincinnati provides a new option for the industry. With both the traditional AGMA Fall Technical Meeting and the new GEAR EXPO being held at that time, the industry will have a genuine opportunity to see what it can do to make itself more competitive. And here, there may be a surprise.

VIEWPOINT

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Shot Peening

I always take pleasure in learning new techniques which appear in "Gear Technology". The publication is very helpful to the communication of engineering information among investigators, and I am proud of being one of the authors of articles.

Recently, I read the paper by Mr. N.K. Burrell of Metal Improvement Co. titled "Improved Gear Life Through Controlled Shot Peening", which appeared in the September/October issue, p.12. We are also studying the bending strength of shotpeened carburized gear teeth; therefore, I am very interested in the coverage measurement method "Peenscan Process" in his paper. I understand the method is practical and useful for the control of shot peening as well as the measurement of coverage. I really hope to apply the Peenscan Process to our experiment, so I am anxious to have a copy of the specification "MIL-S-13165B" and further information on the coating material "Dyescan." For example, what is the address of the maker or dealer of Dyescan, the price, directions for use, etc.

Katsumi Inoue
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Editors Note:

Contact Ken Burrell at
Metal Improvement Company, Inc.
678 Winthrop Avenue
Addison, Illinois 60101
for further information.

American Competitiveness

I want to commend you on your timely editorial, "The World—Our Market."

The competitiveness of American industry is linked inextricably to its ability to trade freely in world markets. Your editorial stressing the necessity of industry's competitive role in a world market faces the challenge of our changing world.

Thomas J. Lynch
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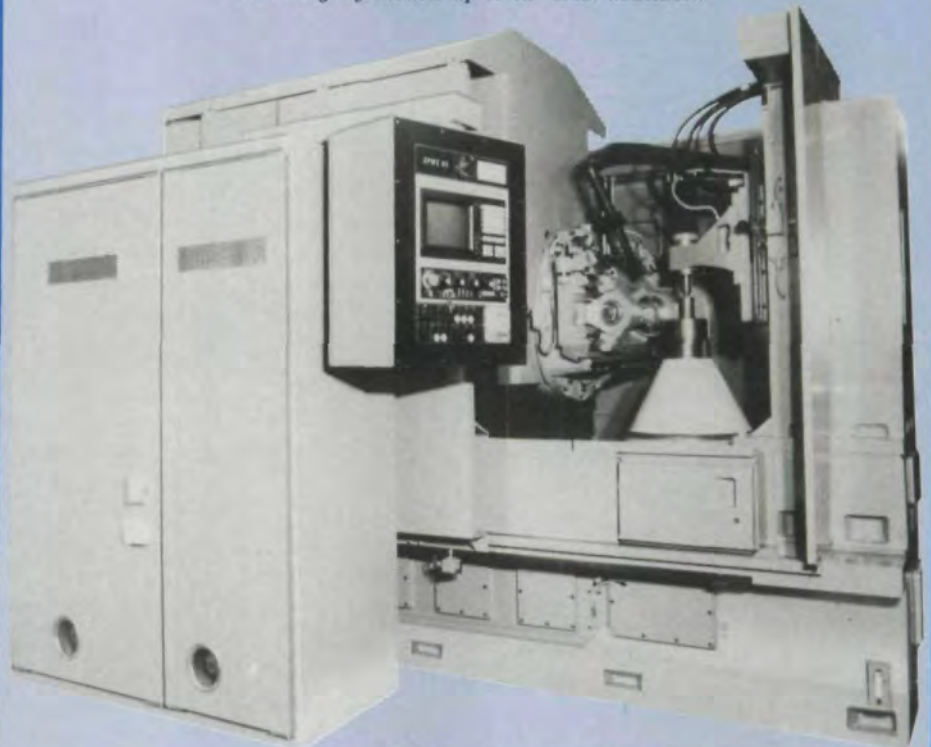
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CIRCLE A-12 ON READER REPLY CARD

It is my view that open, free trade is one of the main engines of economic growth, prosperity and jobs.

Your publication is very slick and professional. Keep up the good work!

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