TURBOMACHINERY VISION—2000
(GETTING THE MOST OUT OF WHAT YOU GOT)

by
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William E. (Bill) Forsthoffer spent six years at the Delaval Turbine Company, as Manager of Compressor Project Engineering, where he designed and tested centrifugal pumps and compressors, gears, steam turbines, and rotary (screw) pumps.

Mr. Forsthoffer then joined the Mobil Research and Development Corporation. For five years, he directed the application, selection, design, testing, site precommissioning, and startup of the Yanbu Petrochemical complex in Yanbu, Saudi Arabia. Following that, he returned to MRDC and established a technical service program for Mobil affiliates to provide application, troubleshooting, and training services for rotating equipment. He left Mobil in 1990 to found his own company, Forsthoffer Associates, Inc., to provide training, critical equipment selection, and troubleshooting services to the refining, petrochemical, utility, and gas transmission industries.

Mr. Forsthoffer is a graduate of Bellarmine College with a B.A. degree (Mathematics) and from the University of Detroit with a B.S. degree (Mechanical Engineering).

The following was delivered as the "Welcome Address" for the Twenty-Ninth Turbomachinery Symposium on September 19, 2000. It has received minimal editing.

At the conclusion of the last symposium, I was asked if I would be interested in addressing the opening session of the Twenty-Ninth Turbomachinery Symposium. Naturally, I accepted and it is truly an honor to address you all today.

My brief presentation concerns the future of turbomachinery in the next millennium long-term and short-term—next week when you return to work.

Now ladies and gentlemen, my presentation will probably be a little unorthodox since I am going to ask a few questions. I know it's early but we want some noise!

To begin with, by a show of bodies nice and high please, I would like to know:

- The end users present
- The vendors present
- The E&C contractors present
- Any operations people present?

So, let us begin (Figure 1), and let me try to see what the future of turbomachinery may be, but I'll need some help. Some possibilities are: Users, what do you think the turbomachines of the next millennium may look like? One possibility is shown in Figure 2.

In fact, some of those present probably already have this type of oil free compressor in operation. Who does—by a show of hands? One variation of this scheme is to incorporate an integral variable frequency drive (VFD) motor. Does anyone have any of these yet?

Figure 1. Vision 2000.

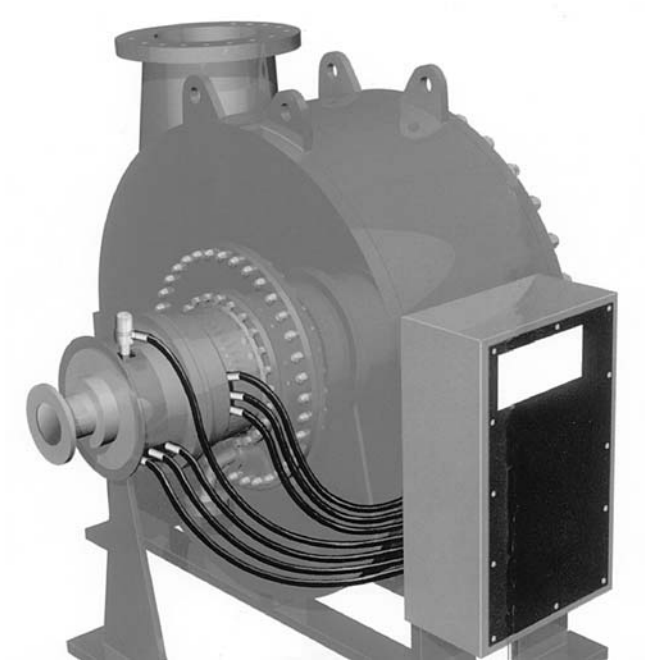

Figure 2. Possible Turbomachines of the Next Millennium.

Okay vendors, now it's your turn! What's it going to look like? Of course, it's proprietary so they can't tell us. But, let's see if we can get a peek (Figure 3). Oh, come on guys, at least an artist's rendition (Figure 4).

No oil, no moving parts, no nothing! What's going to happen to all our reliability engineers? They will become instrument techs! Is this happening now?

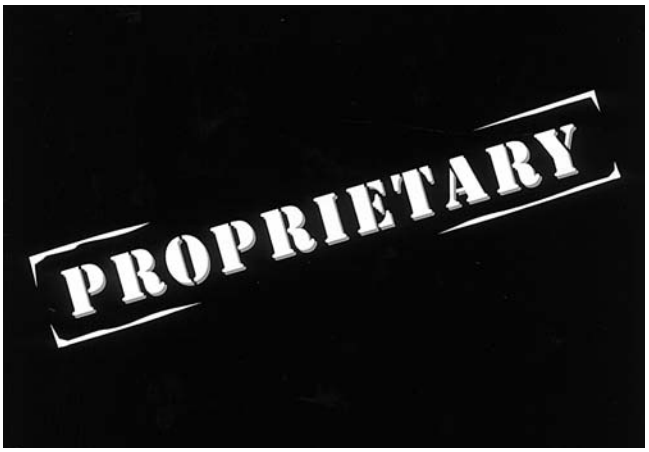

Figure 3. "Proprietary."

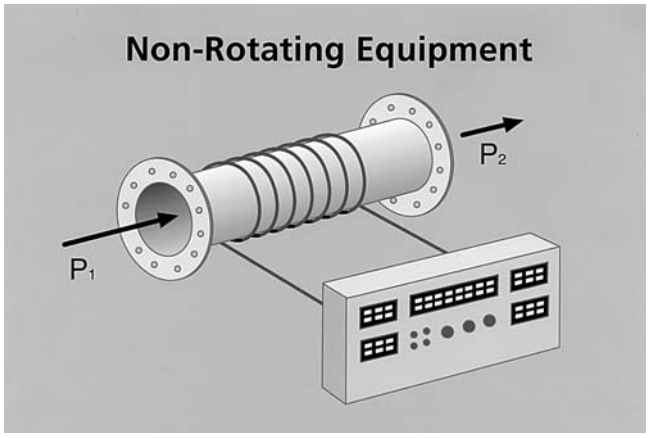

Figure 4. Nonrotating Equipment.

Okay, we asked the users and vendors for their vision of the future, how about the E&C contractors and operators (if we have some). It's only appropriate to ask this group what a future plant will look like. How about a polyethylene plant (Figure 5)?

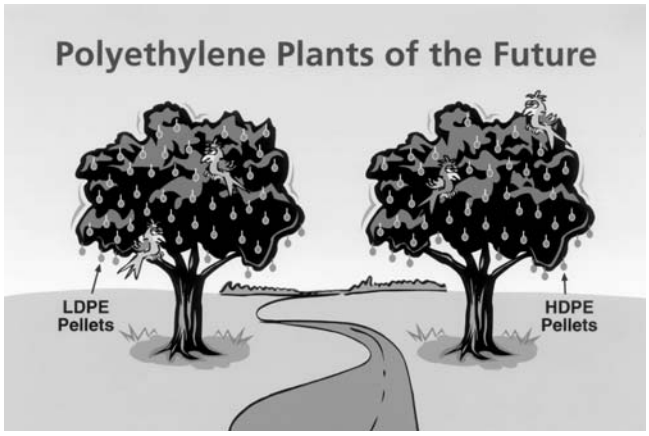

Figure 5. Polyethylene Plant of the Future.

Ladies and gentlemen, this is not a joke! If you don't believe me, please refer to a recent book— *The Biotech Century*, written by Jeremy Rifkin (Rifkin, 1998), page 15.

A rather well-known chemical company has applied for the patent. Guess who? —Monsanto! In fact, Charlie Jackson finally got bored with vibration troubleshooting and figured he can troubleshoot and do some bird hunting at the same time! Sort of killing two birds with one stone!

Well, can it happen? Will it happen? Who knows and who cares when we have to go back to work next week and face (Figure 6)—

Figure 6. Project Team Reaction.

If any viable improvements are in our future, who is going to pay? And how are we going to convince the project team?

Let's face it, we have more available tools, technology, and engineers in the field then we ever had and many of the same problems that some of us old folks faced in the 60s!

So what's gone wrong? Well, for starters, it used to be that the machinist and operator started work together and kept working together, even when the operator became Plant Manager or the machinist, Maintenance Manager or Plant Manager. There was always trust!

Today, everyone comes from different educational backgrounds, environments, and countries. Trust is hard to come by and implementation of recommendations is another story!

Now, you are about to be exposed to one of the best tech transfer opportunities in the world for the next three days. Some of you even started yesterday by taking a short course. Get the most out of this and other tech transfer opportunities (Figure 7).

GET THE MOST OUT OF THIS SYMPOISUM:

- **DON'T BE SHY**
- **USE NETWORKING**
- **ATTEND DISCUSSION GROUPS, TUTORIALS AND PAPERS**
- **MOST IMPORTANT – REPORT TO YOUR SPONSOR AND PUT SAVINGS $ (MONEY) ON IT**

Figure 7. Get the Most Out of This Symposium.

Now, even if you stay in your room all night and read the Symposium Proceedings and ask all your questions, you still are faced with the ultimate challenge (Figure 8).

What's the key? Prepare a report for your manager and transfer the technology to the operators (Figure 9).

In our industry, folks, the operator is the driver! Having him on our side assures we will get firsthand information and—get support for recommendations and stop finger pointing.

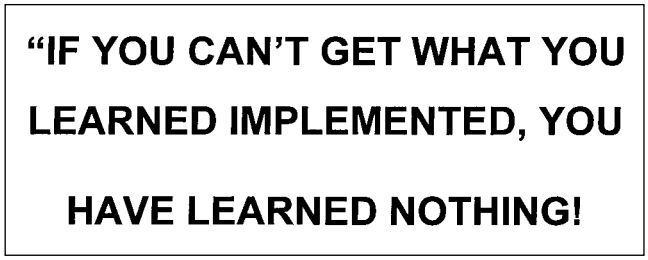

Figure 8. Ultimate Challenge.

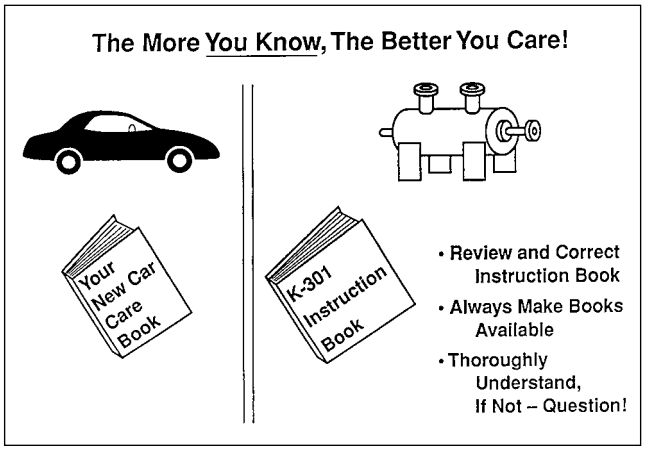

Figure 9. The More You Know, the Better You Care!

In conclusion, any future scenario is possible, but for the immediate future, the challenge is implementing our solutions! Get the most out of what you got and enjoy the Twenty-Ninth Turbomachinery Symposium.

REFERENCE

Rifkin, J., 1998, *The Biotech Century: Harnessing the Gene and Remaking the World*, New York, New York: Tarcher/Putnam, p. 15.