Foreword

In about 2000, an experienced equipment reliability engineer and Technical Manager[1] explained how he had made good use of the author's first book, a text published in 1982 with the title *Improving Machinery Reliability*. Apparently, he found it helpful to examine, and then implemented, some of the book's stated principles and recommendations. He had generously called them guiding elements that allowed him to write better specifications, take a more active role in vendor selection, and getting involved in the manufacturers' process of building and installing these machines at his plant. When we met again a few years later, we re-visited his successes and asked each other how these could be incorporated in a fourth edition of the 1982 book.

However, the third edition released in 1998 [1] had filled 680 pages and, as 2020 approached, the reading habits of young engineers had moved in the direction of acquiring slimmer books. The author's focus – since 2011 – had also been on sharing important information in readable hard-cover books of perhaps 210–230 pages. Although generally agreeing with this page count, many publishers had reached the conclusion that paperback books with ever less expensive covers were the way to go. But, in the author's opinion, such covers would not be consistent with the quality and permanence sought by a reading audience made up of productive reliability professionals.

It was time to remind ourselves (and like-minded readers) that "only dead fish *always* swim downstream with the flow." Yes, some of us still cling to the belief that doing the right thing is more like a journey that occasionally requires us to swim against the common tide. In this instance, higher-quality cover options had to be identified and introduced to a receptive publishing company.

Fortunately, much can be said in about 230 pages, and even the new title *Fluid Machines: Improving the Life of Pumps, Compressors and Turbines* denotes a bit of a break with the past. As the author and his editor (using "we" because a competent editor was involved) set out to prove that value is sometimes found in fewer words, both of us agreed on this shorter, condensed, crisp, totally revised, and fully updated text. It finally materialized, many years after the experienced equipment reliability engineer-manager had given his favorable comments. The present text will again give guidance on how to cost-justify and upgrade aging machines, and how to specify new machines with greater forethought.

That said, however, it is not within the scope of this book to describe fluid machines in much detail. Many books, some by the author of [2] and [3], have described basic designs quite well since about 1980. Machinery reliability almost always involves lubrication, and we point to [4] without hesitation. But, instead of repeating the contents of these four references, we want to acquaint reliability professionals,

1 Robert DeMaria was a respected engineer and colleague. He succumbed to a vicious form of cancer in early 2015, aged 67. We honor his memory.

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our primary target audience, with 2020 vintage concepts and 2020s components that have extended the life of fluid machinery at best-in-class user facilities.

To extend equipment life or its operating time between interventions of any kind is the primary goal of this book. There are important side benefits to equipment life extension in the form of enhanced equipment safety and community goodwill. We will accomplish much if we specify, design, manufacture, and install fluid machines with forethought and expertise. Conversely, we will put everything at risk if we remain indifferent and are happy with the status quo.

Existing machines present opportunities for valuable upgrading with the components described in this text. Retrofitting can be done during scheduled maintenance or while engaged in an unscheduled repair event. Involved are improved components, better lubricant application provisions, and other ways to safely extend operating life. It follows that implementing experience-based procedures and insistence on suitable upgrades will yield increased profitability.

However, before moving forward with upgrading one's vintage process plant machinery, it is important to take a step back and assess the situation at one's own or, in case the reader is employed by an Engineering and Procurement Contractor (EPC), an appreciative client's process plant. Although it is true that upgrading a facility's machinery will, by definition, contribute to improved equipment availability, being aware of the full picture will prove valuable. The next chapter, Chapter 1, makes that point convincingly.

References

[1] Bloch, Heinz P. "Improving Machinery Reliability," 3rd Ed., (1998), Gulf Publishing Company, Houston, Texas.

[2] Bloch, Heinz P. and Claire Soares. "Process Plant Machinery," 2nd Edition (1998) Butterworth-Heinemann Publishing, Oxford, UK and Woburn, MA, ISBN 0-7506-7081-9.

[3] Bloch, Heinz P. "A Practical Guide to Compressor Technology," 2nd Edition (2006), Wiley Interscience, Hoboken, NJ, ISBN 0-471-72793-8.

[4] Bloch, Heinz P. "Optimized Equipment Lubrication, Oil Mist Technology, and Storage Preservation," (2020) Reliabilityweb, Ft. Myers, FL, ISBN 978-1-941872-98-7.