Journal of Tribology

Book Review

CRC Handbook of Lubrication (Theory and Practice of Tribology), Volume I – Application and Maintenance. Edited by E. R. Booser

REVIEWED BY W. W. GARDNER[1]

The American Society of Lubrication Engineers (ASLE) sponsored this handbook, published in late 1983, to "provide the latest information in the field." This follows their sponsorship of the McGraw-Hill *Standard Handbook of Lubrication Engineering* published in 1968. A third English language "lubrication handbook" of recent vintage is the Halsted Press *Tribology Handbook*, sponsored by the Department of Trade and Industry (UK) in 1973.

Although this results in three handbooks published within a sixteen year period, this does not imply that a choice can necessarily be made to obtain one to the exclusion of the others. Coverage of specific areas will be different simply due to the different viewpoints and areas of interest and expertise of the authors and the editor. These very differences, in fact, provide the user with a broader view of the specific topic of interest and should provide a better basis for judging what action to take in a specific situation. And, of course, a recently published handbook should provide "the latest information in the field."

In this respect, then, it is this reviewer's opinion that this new handbook will add to the value of the tribologist's library, even if this now includes the other handbooks mentioned.

By their very nature, handbooks that cover broad fields, as lubrication (or more properly, tribology), are often rather large books. Here, the decision was made to publish this handbook in two volumes. This results in each volume being closer to a "textbook" size, and thus more manageable, but in addition, the division of material between the two permits some users the savings from being able to obtain only the volume of specific interest.

Volume I of this hand book is subtitled "Application and Maintenance," and this is covered in the three primary sections under the headings; (*a*) Applications; (*b*) Industrial Lubrication Practices; and (*c*) Maintenance. An Appendix includes symbols for lubrication calculations and SI units with conversion factors.

Of the thirty-eight contributers to volume one, only five were also contributors to the 1968 ASLE sponsored handbook. Although the subject matter is, of course, much the same, it is thus presented through somewhat different viewpoints. There is new subject matter, also. Of the thirty-three titled sections in volume one, eleven of these review lubrication aspects were not covered in the earlier handbook.

One of these new areas is that of automotive lubrication other than the engine. This includes automatic transmission, gear boxes, rear axles, and the chassis. Although this area of automotive lubrication is well documented by the manufacturers for the service industry, it is helpful to have the general procedures and practices in a handbook of this type for the benefit and knowledge of those not directly involved with these areas. This, of course, is one of the values of a handbook of this type. It provides in one location information on the practices used in a broad range of industries and products, and can be a source for problem solutions in one area through knowledge of what has been done elsewhere.

In the Applications" section of this handbook, the lubrication of engines other than automotive is also covered in addition to turbines, compressors, motors, hydraulic equipment, machine tools, and other machinery.

In the "Industrial Lubrication Practices" section, new industries reviewed (as compared to the 1968 handbook) are textile, food processing, aviation, mining, and lumber and paper. Other industries covered include steel and nonferrous metal production, marine and construction equipment, and railroads. Lubrication in space is also reviewed.

In the "Maintenance" section, a chapter on conservation of lubricants, materials, and energy adds information of increasing interest since the earlier handbook.

One possibly minor but nonetheless inconvenient factor in the use of this handbook is the lack of any chapter or section headings on each page, either by number or title. In order to use any specific section or chapter, it is thus necessary to refer either to the contents or the index for page numbers. It is difficult to thumb through and quickly find a particular area of interest unless continued use has resulted in memory of page numbers.

The value of a handbook of this type which presents primarily industry practices, as opposed to tables of material characteristics or mathematical functions, is dependent to a large extent on the expertise and background of the contributors. The selection of the contributors is a primary function of the editor, and it is difficult to imagine a better selection for editor of a handbook covering the many and varied aspects of lubrication than Dr. Booser. The contributors represent a broad range and many years of experience in lubrication practices and applications in major North American corporations, in laboratories, and in consulting firms.

There are, of course varying depths of coverage of the selected topics and this is hardly avoidable in a book of this type. It is the reviewer's judgment, however, that information obtained from a handbook such as this should be used in conjunction with that gleaned from other sources (other books, experience of yourself and associates, trade and society publications, etc.) to make a decision on how best to proceed in a particular situation. In this respect, then, volume I of this new "Handbook of Lubrication" is deemed a worthy addition to the library of those charged with responsibilities for lubrication practices in their particular industry or product.

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