

MYTH: WE REALLY NEED MORE MACHINERY STANDARDS

I am an extremely avid reader and usually devour 2 or 3 books a week. My library is packed with books ranging from the short and easy-to-read 200-page fiction crime and mystery novel to profound literary 1,200-page anthologies and historical compendiums.

But I must also shamefully admit that I frequently end up picking up all the short books and seldom have the time or mental energy to crack open any text that is longer than 500 pages. These books are just too long, have too much information and are too much of a time commitment.

My workplace is unfortunately no different. Nobody reads equipment manuals, specifications and standards that are more than a hundred pages long. Given the easy access we have to a wealth of information via the internet and emails, we generally can and will avoid reading long and exhaustive documents.

For example, has anyone ever actually read the entire 910 pages of National Electric Code NFPA 70? This is only one of the most important standards in the oil & gas industry since it defines critical area classifications and electrical wiring requirements for all hydrocarbon installations. But I do not know anyone who has read it. I certainly have not. I just do not have that much time and patience.

Industry standards for machinery, such as API 616 or ISO 3977 for gas turbines, API 617 for compressors, and ASME PTC for performance testing, are commonly used in the oil & gas and power industries for the procurement of turbomachinery. Most of these standards were originally developed by professional engineering societies, such as the American Petroleum Institute (API), the American Society of Mechanical Engineers (ASME), the Institute of Electrical Engineers (IEEE) and others to provide quality assurance, product uniformity, and minimum safety standards for widely used equipment such as compressors, pumps or expanders.

Today these standards provide the foundation to most company's machinery purchasing specifications and are broadly used as a basis for comparison of equipment. Essentially, these standards and their data sheets provide a common "language" between manufacturers and users to avoid misunderstanding and misinterpretation of equipment performance and features.

However, over the last 30 years the

length and number of these standards have grown exponentially. For example, the industry's primary standard for gas turbines is API 616. API 616 4th edition, published in 1998, was 83 pages long. The more recent 5th edition released in 2011 is 162 pages long. The standard almost doubled in length in 13 years. And a 6th edition is in the works that will again be substantially longer. Did gas turbines really change that much over the last few years?

Similarly, for reciprocating compressors, API 618 2nd edition, released in 1974, was 39 pages long. The most recent release of API 618 edition (6th) is 216 pages long. Is the 216-page standard really that much better than the 39-page standard?

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And some standards are just excessive: API 614 for lubrication oil systems is over 300 pages long and API 617 for axial and centrifugal compressors is nearly 400 pages long. But it gets worse: Each one of these standards cross-references many other standards.

For example, API 616 references 94 other standards, comprising a total of over 16,000 pages of specifications. And then there are duplicate and redundant standards published by competing organizations such as ISO, API, ASME, IEEE, and so on, for very similar equipment. Who has time to read all this?

Being a member on many of these standards committees, I have personally seen several of them dramatically increase in length with each addition. Most additions appear to be warranted at the time since they relate to improved technology, better understanding of operation and maintenance, and stricter safety and environmental requirements.

These are all good points, but by the time

the standard is ready to go to print I end up asking these questions: Do we really need to specify this much detail? Is this still a standard or is it becoming a specification? Who should design a machine, the equipment manufacturer or the standards committee?

Over-specification is costly and can cause project delays and it does not necessarily result in an improved product. Unfortunately, the way standards are put together by committee results in documents ballooning.

Specifications are added, but seldom is anything taken out. There is no incentive to keep documents short and concise, which has led us to the point where many of these standards have become so bloated that few read them.

And it is not just the users. Manufacturers are years behind in reviewing, commenting, and customizing their products to these standards. In fact, we now see manufacturers ignoring some standards as they have just become excessively specific, making them impractical to follow.

When writing a standard, are we creating a useful reference or an anthology of specifications that is too intimidatingly long to crack open? Please remember that most of us do not even have the time and patience to read through a really long book. ■

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