The reason why

What constitutes a good technical article? This is a question which members of the Editorial Panel of this Journal have to consider when recommending synopses for development into articles and when considering the articles themselves for publication. This is no place for philosophical discussion of the abstract meaning of ‘good’, but I will describe the elements of interest which I look for on behalf of the general reader. Through the letters column readers might like to give their views on the matter.

From the inception of Power Engineering Journal the main aim has been to promote practical engineering articles, albeit supported by necessary and relevant theory. Naturally, the resolution of design, manufacturing and construction engineering problems are of prime interest. Similarly, project engineering which combines some element of all of these is important as well as being of interest in its own right as a discipline. The requirement of originality which has long been applied to the selection of papers for the IEE Proceedings does not have anything like the same weighting in the case of PEJ.

Each engineering application has its particular problems which the designer, manufacturer or project engineer has to solve, and if the method of solution is unusual there is the basis of an interesting article. The skill in writing such an article is to devote only as much time to what is already known as is necessary to set the scene for what is new. If the solution is applicable to other circumstances then the article passes from the realm of the interesting to the valuable.

An engineer’s work, compared with that of a scientist, is concerned with decisions involving trade-offs between actual or perceived characteristics in order to achieve an end result which is satisfactory and reasonably optimum. The degree of satisfaction depends on meeting many criteria including safety, life, capital and operating costs. The weighting of the factors involved requires a technical understanding of materials, processes and the interaction of components in system performance. Achievement of a satisfactory solution depends on a blend of science and art in which experience plays a very great part.

Those who would extol the virtues of computerised optimisation techniques should not lose sight of the fact that the parameters on which they are based rely heavily on experience and often on quite subjective experience. In fact, it is now recognised that the best use of such techniques is in scenario modes, i.e. to ask ‘what if?’ questions and to express the answers as a range of possibilities. Between these possibilities, of course, the engineer has to make definite decisions in order to proceed, and it is the reasons behind the decisions that are important.

In many, if not most, circumstances the best common language in which to express the criteria for optimisation is that of economics. Accordingly, I have been disappointed that few of the synopses and articles so far submitted devote sufficient attention to the economic reasons why. Even in the case of projects of historic interest it is helpful to know what constraints faced the engineer in dealing with his problems and why his solution was considered appropriate and cost effective at the time. Additionally, I would like to know whether the same solution would be adopted today with the current cost of capital and increased emphasis on environmental and political issues which constrain engineering choices in different ways in different countries.

If more economic and other decision-affecting information can be included wherever possible in future articles for Power Engineering Journal, it will then comprise, however defined, better if not ‘good’ technical articles. It will certainly develop from its excellent beginning into a medium of lasting value to practising engineers.

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