

An interesting side note is that the publishers have used very large print in the book, comforting for those of us who are older (with failing eyesight), but the choice of print of this size did cause many more pages to be used in printing.

In summary, for U.S. cities, the Brownfield program represents a major breakthrough in industrial property reclamation. This book should markedly assist both engineers and lawyers in this process.

GARY F. BENNETT

PII: S0304-3894(98)00205-2

*Electrical Installations in Hazardous Areas*, Alan McMillan, Published by Butterworth Heinemann, May 1998, 4, price £75. Hardback 360 pp. 234 x 156 mm, 25 half tones, 100 line illustrations ISBN 0-7506 3768

This book draws together information from a substantial range of sources, that I have not seen assembled in a single publication before. On many topics it gives an insight into the reasons for particular requirements in equipment design, that is not available from reading European Standards. Engineers of quite a diverse range of backgrounds need some understanding of this subject, but their needs and interests will vary. This is particularly the case with hazardous area classification, which may be left to the electrical engineer, if no other professional expertise is available, but which properly needs an input from chemical engineers, who may have designed the plant layout, and mechanical engineers, who may have essential information about the integrity of the containment system. I was surprised then, to find that the chapters on hazardous area classification have not drawn from the work of Cox, Lees and Ang, published by the I Chem E, but a rare example of cooperation between four professional engineering institutions.

The material presented in chapters 2, 3 4 and 5 on area classification is a useful contribution to the subject, but the details are not likely to be universally acceptable, as well established codes are available for different industries. This is a topic on which the IEC and CENELEC really do not lead, and the regular practitioner is more likely to use codes such as those from the Institute of Petroleum, the former British Gas, or the LP Gas Association, depending on the application.

Chapter 6 covering area classification for dusts perhaps ought to recognise, that however desirable such an exercise might be, very few of the relevant industries actually have attempted to specify zones within their plants. Where it is given any serious thought, safety depends on minimising the consequences of an ignition rather than worrying about zone boundaries and IEC standards on construction of equipment.

Chapters 7–14 look in turn at the different protection concepts used in preventing electrical equipment igniting atmospheres containing gases or vapours. These draw heavily on the relevant European standards, but also contain some background information on the development of the protection concepts and the reason for some of the requirements. Later chapters cover equipment for dusty areas, selection considerations, and much information about good installation practice.

The final chapter (22) covers the ignition risks from lightning and electrostatic risks, which often cannot be eliminated entirely. The information about static electricity is rather brief, and the book acknowledges that many concerned with this risk will need to consult other texts, but the references given are not comprehensive.

By drawing on many sources for detailed information, and probably writing this book over a significant period, the author is inevitably vulnerable to changes in some fields. European law is one such area, and the standardisers are prone also to produce amendments or new and even conflicting documents at unpredictable times. For instance we have at present slightly different definitions for the dust zones in CEN and the IEC. This does not matter if the book will be used as a background reference work, but those who need approval of their equipment through a certification regime will always have to keep up with the latest standards and legal developments.

I would have liked to see discussion of some of the trickier issues that have been ducked in the standards bodies over the years. For example, everyone agrees that if there is only a very small amount of flammable material in a plant, ignition protected equipment may not be needed. No one can agree, however, how small is small. Similarly, no one would dispute that equipment for zone 0 needs to be to a high standard, but few have seriously tried to specify what that standard should be as a numerical target, in terms of probability of failing in a dangerous manner. Unless we can address this, and measure how well existing equipment meets a given target, we are on weak ground specifying what equipment protection concepts are suitable for use in zones 0, 1 or 2. In the dust field, it has never been clear whether the equipment standards are intended to prevent not only explosions, but also fires, which are actually far more common. I feel the book has missed an opportunity here to give a lead on some real issues where the more thoughtful practitioners would have welcomed at least a recognition of the problems.

I am left wondering at the end, quite who the audience is for this book. The amount of detail on many subjects is substantial, but it cannot be the definitive answer on any of the topics covered. The equipment user may have little need for the minutiae of equipment design, while those who design intrinsically safe instrumentation do not need equations for calculating vapour dispersion from an evaporating pool. The academic world might well find this a useful source of information, but I do not know how much coverage this topic is given in university courses on electrical engineering. Perhaps the book needs to be shared between engineers with different interests and skills, but engaged on some common project where the explosion risk needs to be controlled.

A. TYLDESLEY  
*Principal Specialist Inspector*  
*Technology Division, HSE*  
UK