Book review

RAILWAY MANAGEMENT AND ENGINEERING, 3rd edition

V. A. Profillidis. Ashgate, 2006. ISBN 0-7546-4854-0, £75, 500 pp.

This is an ambitious book of 22 chapters over 430 pages, and if this review were to comment on each of the chapters in detail it too would be ambitious and far too long for *Transport* journal. This review will therefore be confined to broad analysis and comment.

The book sets out to cover all aspects of railways, starting with an historical outline and basic economics, moving on to technical and mechanical aspects of track design and maintenance, and through to a critique of different types of traction and the environmental effects of railways, particularly noise and air pollution. The expected sound academic approach of Professor Profillidis is evident throughout the book, no more so than in over 20 pages of references, subdivided by chapter heading, which both support the book's content and facilitate further research by the reader.

Despite the book's broad canvas it is well structured and is split into three principal sections: first, six chapters on history, management, cost and charges, demand forecast, policy and legislation, and an interesting section on new technological achievements, which in this third edition is right up to date with its descriptions of current maglev systems. The next 11 chapters deal with all aspects of railway track behaviour, design and maintenance. The final five chapters deal with rolling stock, train dynamics and the environmental issues of railways. In each technical chapter the author sets out to provide theoretical analysis and a review of different solutions, including recommendations where appropriate.

Perhaps not surprisingly the book is dominated by the 11 chapters and over 200 pages on track, and it is worth expanding on the content of that major section. The subject is introduced by description and analysis of the track as a system, from base and formation up to the wheelset. This section takes us through the effects of different traffic loads and a comparison of different loading gauges. Subsequent chapters work logically through the mechanical behaviour of the track, a geotechnical analysis of subgrade, and all aspects of the rail section itself, from manufacturing through to historic and modern profiles. Sleepers and ballast have their own chapters, and transverse effects leading to derailment forces are also

covered. The section concludes with track design and construction, switches and crossings (fascinating sketches here), maintenance, and a useful update of types of slab track, including a brave analysis of costs. These sections on track are not without errors and omissions: for example, the section on sleepers incorrectly states that steel sleepers are no longer in production (they are currently supplied to Network Rail by Corus). In this third edition the chapter on maintenance and inspection is a little out of date without a reference to Network Rail's New Measurement Train, particularly as this is used at much higher inspection frequencies for primary routes than are quoted in the book.

However, the other sections do contain good and up-to-date references, for example on high-speed lines, signalling (and telecoms), and the environment. The chapter on signalling is perhaps rather short. A stated and perhaps serious omission is the absence of much reference to stations and other operational property, which after all do form a major expense to the railway estate. Management of civil engineering structures is not covered either. There is a comprehensive description of various privatisation models, both in Chapter 3 dealing with 'Policy and legislation' and in Chapter 6 dealing with the 'Planning and management of railways'. The description of the formation of Network Rail as 'renationalised partially' may raise eyebrows in this country, but this reviewer was pleased to see advocacy of the need for a strong regulator.

Professor Profillidis has clearly researched widely around the globe to inform particular topics within the book. For example, a comparison table of the length of lines, traffic, staff and productivity draws on data from 36 countries (how disappointing that the UK was the only country for which productivity information was 'not available').

It has to be said that, in common with many textbooks these days, it is very expensive (at £75), which makes it more likely to find a place in corporate or academic libraries. This is a pity, and a student edition at a reduced price would greatly broaden its appeal. At this price this reviewer expects a better-quality cloth binding, as the printed card covers of this edition will not wear well. However, the book is well illustrated with some 400 charts, tables and photographs, but unusually these are entirely in black and white. Fortunately the charts and symbols are well designed to suit this monochrome format.

There were some odd anomalies and errors in the text that a more thorough proofreading should have picked up, particularly in a third edition. For example: 'Rail Network' instead of 'Network Rail', mis-spelling of 'owing' in place of 'owning' and the delightful 'crap iron' in place of 'scrap iron'. More seriously, some sentences with words or phrases apparently missing were noticed. There is extensive use of American spellings, and the use of a division sign (÷) in place of a hyphen when giving ranges of figures is curious.

Despite the unfortunate errors and omissions, this reviewer enjoyed reading and using the book in practice, but the high cost needs to be balanced against individual use. As a single textbook on railway management and engineering in the diverse world of railways it deserves a place in a technical library.

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