



GUIDE TO INDUSTRIAL COAL AND ASH HANDLING

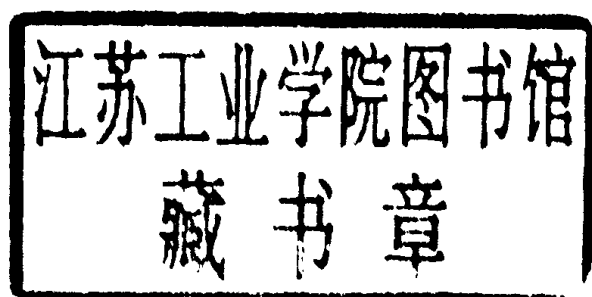
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BRITISH MATERIALS HANDLING BOARD



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GUIDE TO INDUSTRIAL COAL AND ASH HANDLING

Foreword

This document has been prepared by BMHB as the result of discussions in 1985 which led to the conclusion that there was a need for a code of practice for the installation and use of coal and ash handling plants associated with the increasing number of conversions of industrial boilers from oil or gas to coal firing. It was intended that it could in due course form a Draft for Development in the British Standard scheme for the production of new Codes of Practice. However, as it was developed it became apparent that it could not be made definitive enough for a Code of Practice if its wide scope was to be maintained, so that it was decided to describe it as a Guide.

The work of preparation of the Guide has been undertaken by a small team formed by Cremer and Warner (C&W), Consulting Engineers and Scientists, overseen and guided by a Project Panel with the following membership:

J. A. Barton (Chairman)	Health and Safety Executive
N. Abrahams	West Midland RHA/DHSS
P. J. Attenborough	NEI International Combustion
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Dr J. Topper	British Coal, CRE
J. Truman	PSA/DMEES, MEE10
K. Walker	Redler

The Guide is intended for use primarily by those taking part in projects involving the use of coal as a fuel, either in a new installation, or in an existing installation using another fuel, or in one in which coal is already used and in which problems remain to be solved. The advice in it is not aimed at the designers of major installations such as power stations feeding the national grid.

This document does not include methods of evaluating the economics of coal burning compared with other fuels but before writing a specification for the installation it should have been concluded that the overall cost of the heat required would be lower with coal.

The topic of selection of the type of coal from among those available to be burned is covered in this document, because that choice will have a bearing on the design and operation of the installation.

Its compilers have endeavoured to provide industrial users, equipment manufacturers, engineers, regulatory bodies and industrial hygienists with general guidance for use in specifying, selecting, installing, operating and maintaining systems for handling coal and ash, without attempting to make specific recommendations.

The subjects of heat transfer, boiler water, steam, etc., are outside the scope of the Guide, but it does cover coal feeding to furnaces and the removal of grits and dusts from exit gases, insofar as their design is influenced by the type of coal used, and the need to remove the ash.

The topic of 'liquid coal', i.e. coal suspended in water or oil, to be injected as a fuel similar to heavy oil, has not been included, because as a technique it was still under development at the time the Guide was compiled, and its application had not been sufficiently widespread to build up a body of practical experience which could be drawn upon.

During the preparation of the Guide, information, advice and comments were received from a great number of organisations and individuals, too many to list here, but the Board, the Chairman and members of the Panel, and the consultants, wish to place on record their gratitude for all the help which has been received.

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1

General

1.1 SCOPE

This Guide provides guidance on the fuel and ash handling aspects of installations using coal of grades commercially available in the UK, either as supplied from coal treatment plants or after milling to form pulverised fuel (PF).

It covers the design criteria for plant, types of coal and their definition, reasons for differences in cost, methods of transport to the consumer, reception and storage, extraction from stock, conveying and feeding, milling, drying and handling of pulverised coal (where applicable), metering of the feed to the furnace, ash collection, handling and disposal, and dust control and collection. Risks, particularly those associated with pulverised fuel, are discussed.

It also covers the concept of the plant as an integrated handling system, equipment selection, management of plant operation, stock and quality control, operability, reliability, common problems, health and safety, laws and regulations affecting coal users, precautions against accidental fires or explosions, and means of limiting damage from spontaneous combustion.

The thermal capacity of the furnaces for which coal and ash handling is needed has been taken to be larger than 45 kW but does not extend to the scale of major electricity generating board installations, the specification, design and operation of which is carried out by a substantial number of engineers who are skilled in the art.

Brown coals and lignite with a lower calorific value (dry, ash-free basis) below 31 400 kJ/kg are not covered, not being used in the UK, nor is the subject of processing of ash for further use, as opposed to ash disposal.

Figure 1.1 illustrates the stages through which coal passes when used as a fuel, and the parts of the Guide which refer to them.