

# ADVANCED CHARACTERISATION PROPERTY DATABASE FOR CHINESE AND INDIAN COALS

## OBJECTIVES

The overall project objective is to make available generic coal information on Chinese and Indian coals with regard to their combustion and emission performance, and to establish correlations between basic properties and this performance. Such information is clearly of value to UK industry in view of the export possibilities in these regions. The main aims are to obtain:

- a comprehensive overview of Chinese, Indian and other commercially-important Asian coal supplies for power generation (including standard coal analysis data), with reference to their geological origins
- a realistic property measurements on a representative range of Asian coal samples using advanced characterisation techniques, including high temperature wire mesh (HTWM)
- validated methods for estimating high temperature conversion properties from standard test data, with additional input from geological data when available
- detailed predictions for the effect of Chinese and Indian coal properties on NO<sub>x</sub>, carbon in ash, and thermal performance using CFD (Fluent) and engineering (BWHOT) models
- comparisons between coal properties and actual plant performance data (from UK industry and local collaborators)



The Imperial College high temperature wire mesh apparatus (HTWM)

## SUMMARY

The results of the laboratory scale testing will assist in reducing the technical risks associated with unknown coals in projects involving the supply and/or operation of combustion equipment in the Chinese and Indian markets.

Research work on the predicted effects of Chinese and Indian coal properties on plant performance undertaken by Mitsui Babcock under the auspices of this project will demonstrate the exploitation of the data arising from the laboratory scale testing by an equipment manufacturer or operator. Furthermore, the work provides a basis for the application of a new standard test that is pertinent to pulverised coal combustion – by undertaking the generic project the underlying experience in the use and application of the tests will allow them to be adopted for new plant design and troubleshooting of existing equipment. Finally, from the correlations derived in the project, the application of the findings will be possible even in the absence of a coal sample.

The work addresses the following R&D priority areas identified by the Foresight Task Force including Coal Science, Combustion and Gasification, plus Component Design and Development. The results will provide valuable data which will benefit on-going projects currently being supported by the DTI Cleaner Coal Programme and their follow on phases (for example the development of a burner for the wall firing of low volatile coals, and the collaborative burnout project).

## COST

The total cost of the project is £201 064, with a contribution of £99 395 from the DTI

## DURATION

3 years – December 2000 to November 2003

## CONTRACTOR

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In collaboration with

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National Power  
PowerGen  
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Further information on the Cleaner Coal Technology Programme, and copies of publications, can be obtained from:  
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CLEANER COAL TECHNOLOGY PROGRAMME

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