

4 - 3 DEVELOPMENT OF DRY COAL CLEANING TECHNOLOGIES

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Commercialization of the drying coal cleaning technology is expected for the coal preparation technique in drying area where water resources are limited or in cold land where the wet coal preparation at mining site cannot be applied due to freezing in winter season. Especially, China is the largest coal producing country and the biggest coal consuming country in the world. Coal preparation at mining site is the most appropriate measure as the clean coal technology to mitigate environmental impact. The Chinese government announced that the cleaning ratio of about 30% now should be increased 40-50% at the end of 2010. In China, the dry land and cold land, which are producing the great amount of coal at present and are expected to increase coal production in near future, are widely located in Shanxi, the northern and western China, and Nimenggu district. Therefore, it is considered that the improvement of dry coal cleaning technology is very important.

In this project, three fundamental techniques have been developed from 1997 to 2000. That is, the float and sink separation system using the fluidized bed is applied for coarse size coal (+10mm), the air table is for small size coal (10-0.5mm) and the super conductive magnetic separation is for fine size coal (-0.5mm). In 2000, the testing equipment including three techniques has been installed at the existing coal preparation plant at IKESHIMA Colliery. The site tests were conducted to confirm the correspondence ability to the variation of moisture contents of feed raw coal, the stability for continuous long-term operation and the equipment detail design for commercial operation.

As the result of site test, various technical knowledge required for the commercialization was obtained. On the basis of this technical knowledge, commercial plant having the capacity of 3 million tons per year was designed and also the operation cost was estimated. The estimated cost showed that the dry coal cleaning process should be fully economical. We want to execute the research and development work continuously for the expansion and diffusion of this technology in cooperation with other research organizations.

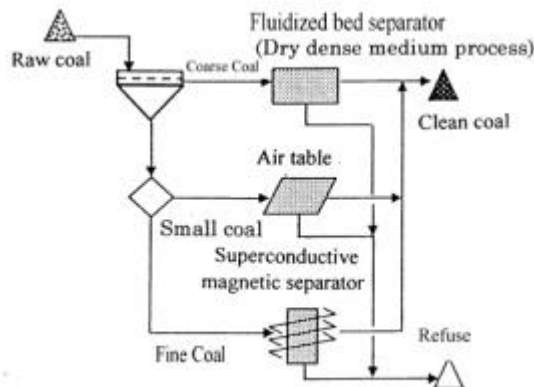


Fig.1 Dry Coal Cleaning System



Fig.2 Site Testing Equipments