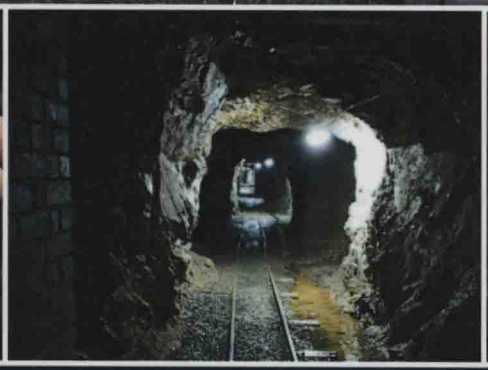
MANAGEMENT OF COKING COAL RESOURCES



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Management of Coking Coal Resources

Dedication

This book is dedicated to the loving memory of late Dr Krishna Dhan Kumar and late Ms Sneha Lata Kumar.

Preface

We are inspired by the multidisciplinary approach in the *magnum opus* of the world-famous Saxonian scientist Georgius Agricola's *De re metallica libri XII* written in 1556. He wrote 12 books of different disciplines in the field of mining and metallurgy. Even today, this achievement is referred to and recognized quite often. Although mining and metallurgy are considered separate fields, we want to address both subjects in this book. The objective is to integrate mining and metallurgy so that the big picture is revealed. Readers from different backgrounds – geologists, mining engineers, metallurgists, business managers, economists, social scientists, students, and others – will find this book a one-stop shop, covering all aspects of the coking coal supply chain. The subject matter of coking coal has been considered from a global perspective with special reference made to the Indian coal industry. Readers will have access to the different problems faced by the industry, and their possible solutions.

The Indian coal industry has been rapidly depleting its indigenous coking coal resources. A sizable portion of the resources had already been used up for steam generation and other nonmetallurgical purposes during most of the twentieth century. Moreover, there are possibilities of further losses in mining processes as a consequence of fire. Thus, the risk of future coking coal scarcity in the Indian steel industry is real. To counter this, India may need to import coal. This has led the authors to probe deeper into the crux of the issue.

Compared with sizable iron ore resources in India, coking coal resources are deficient both in quantity and quality. In fact, it has become necessary to import high-grade coking coal to supply demand from the steel industry. Yet, the reserves of noncoking coal in India are overly adequate, giving the possibility of replacing coking coal with noncoking coal in steel making via emerging techniques.

Estimation of coal resources is a continuous process with reserves being updated periodically as a result of the exploration activities of different agencies.

Other factors like increases in coal price can convert uneconomic resources into economically exploitable ones.

Coking coal reserves, as per our present knowledge, are likely to last only a few decades based upon present and projected rates of consumption. There are revolutionary advances being made in different scientific fields concerning the steel and coal industries. Hopefully, advances in exploration, mining technology, beneficiation techniques, coke making, steel manufacturing, and globalization will help extend the lifespan of coking coal reserves.

The subject chosen in the text encompasses a wide range of scientific and technological disciplines. This book represents not only the culmination of many years of studying reports, published material, and unpublished material, but also of a sustained effort to scientifically relate their findings.

The following interdisciplinary problems encompassing economics, management systems, and mathematical analyses have been dealt with:

- The present state of the Indian steel industry and possible methods of reducing consumption of coking coal.
- A purposive classification of resources, status of coking coal reserves in India, and their lifespans.
- The present mining conditions in India and the possibilities of improvement in exploitation methods.
- Transportation system bottlenecks and examination of the feasibility of introducing hydraulic transportation.
- Economic considerations for resource assessment, mining, quality control, and supply problems.
- Sustainable mining and its role in the viability of the mining industry.

As there is no specific book on coking coal, the subject matter is both timely and relevant for undergraduate and graduate students, practicing engineers, supervisors, and the research community. Although the service industry may override the manufacturing industry in enhancing the GDP of a country, basic industrialization rests on the growth of steel production. Blast furnace technology is going to be around for several decades, and consequently coking coal use will not lose its dominance. Therefore, the subject matter is highly appropriate in that it details the steps required to support the growth of the steel industry in the context of coking coal.

The emphasis is on sound management practice to insure profitability with due regard to community development. Strategic plans have been drawn to optimize the planning process incorporating all governing factors. There is enough scope for improvement of productivity in mining operations, most markedly in mining technology, the use of higher capacity equipment for

larger mines, autonomous control, predictive maintenance (PdM), and digital communication systems.

It is hoped that the broad coverage and in-depth study of each problem presented in this book will make a seminal contribution to the coking coal sector, the mining and steel industries of India, and the world at large.

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Dilip Kumar
Deepak Kumar

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