Application of Green Mining Technology based on Digital Information

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Abstract

China's mines have extensively employed information technology in production, safety, and other domains to accomplish the objective of automation as the information technology continuously grows. gradually developed. Green mining is to prevent environmental harm during the mining process, develop a system that coordinates resources and the environment, and efficiently handle mining environmental problems in mines. This article will examine green mining technology, digital and informatization mining, the definition of green mining and digitalization, the present state of digital and informatization green mining, and optimization approaches for digital and informatization green mining.

Keywords

Digitalization; Information Technology; Mining; Green Mining Technologies.

1. Introduction

At the moment, mining and environmental concerns are gaining more and more attentions. Green mining can only be done by coordinating mining and environmental preservation. Green mining combines the characteristics of digital and informatization technology, emphasizes the advantages of green mining technology, promotes the development of green mining, and forms a situation of intelligent mining of mines, establishes a green mining concept that protects the environment, and achieves China's goal of sustainable development.

2. Green Mining Technology

When Metal mining has an environmental effect and the mining industry is faced with a conflict between resource extraction and environmental issues, it decides to create green mining. Green mining technology, as the fundamental technology of green mining, aims to establish a green industry and ecologically sound environment based on the full use of mineral resources. Green mining technologies primarily include water conservation mining, underground gasification, and other methods for preventing Metal mining from destroying land and water resources, confronting the impact of mining on the environment, and minimizing the negative impact of Metal mining on the environment and other resources. The best economic benefits, keeping up with the rate of technological progress, comprehensively improving green mining technology, and widely applying it to mining. Green mining is an essential technology for the mining sector that may effectively alleviate the issue of environmental contamination. At the moment, the majority of the mining industry uses green mining technology to carry out production and management tasks in order to optimize resource development while minimizing environmental impact.

3. Digital and Informatization Mining

Based on networks, technology, etc., digital and informatization may help cut costs and boost human society's development. In our nation, the creation of digital mines and the advancement of informatization technology are having a big impact. Digitization on the information platform may be used to efficiently identify environmental concerns, intelligently improve the production process, and prevent safety concerns in the mining process in digital mines. The accident occurred as a result. In digital and informatization mining, miners may communicate more easily with each other by using network equipment and webcams, which makes it easier for them to do their task. In order to further enhance mining, advanced technology is capable of creating mining models and conducting mining planning. Changing conventional mine management procedures via real-time monitoring of the subterranean environment, staff, and equipment, as well as using information mining to better safeguard workers and minimize the likelihood of accidents.

4. The Significance of Digital- and Informatization-based Green Mining

Green-mining digital and informatization is to combine green mining technology with digital and informatization mining technology, give full play to the advantages of various parts, promote the sustainable development of the metal industry, and earnestly achieve a mining environment with low mining, high utilization, and low emissions. At the moment, the mining process in China is causing major environmental degradation. If you're going to mine metal from under the surface, you're going to deplete the water supply, lower groundwater levels and impact soil quality, making it more difficult for crops to grow in the process. Ground subsidence and surface management, as well as secondary geological catastrophes, may also be impacted by mining. Because of this, they'll contaminate our water and atmosphere, putting our health in jeopardy. High-quality minerals are dwindling as mining progresses, making the job more challenging [1]. Green mining is a powerful tool for extracting valuable information from digital data. It reduces emissions during manufacturing, preserves the ecological balance, and further enables digital and informatization green mining via the Internet of Things' digital and informatization technology. Figure 1 depicts the mining model's most recent update.
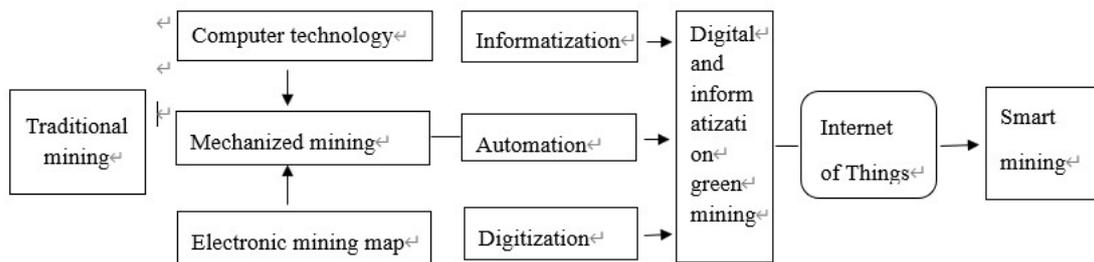

Figure 1. Development of mining model

5. The Status Quo of Green Mining in Digital and Informatization Mining

There is a lot of room for improvement when it comes to Metal mining company management. China's digital and informatization infrastructure is still not up to par. Management and technological skills are lacking in the businesses. When it comes to digital and informatization mining, the executives of Metal mining companies only pay attention to the most apparent interests. There is a lack of consistency in corporate management, neglecting the long-term growth of the firm [2]. At this point, mining industry informatization has achieved some

progress and has pushed the field forward. However, the degree of company informatization has remained low because of the lack of progress in information technology. The pollution level emissions with the adoption of new mining methods might also be difficult to ensure further. Green mining will be rendered meaningless if it causes contamination of the water supply and the land. The classic Metal mine digital remote monitoring system and other information systems have imperfect difficulties that impact the growth of Metal mining companies. Green mining is a mining method that creates a complete information platform via digital and informatization green mining. As a result, the current digital and informatization mines are still far from perfect.

6. Optimization Measures for Digital and Informatization Green Mining

6.1. Establish a Sound Mining Industry Information System

Aiming at the application of digital and informatization green mining mode, Metal mining enterprises should pay attention to the construction of digital informatization, establish a sound Metal mine informatization system, increase capital investment, ensure that Metal mine informatization and green mining are carried out at the same time, realize standardized and scientific enterprise unification management, correctly understand the importance of corporate environmental protection, innovate corporate management models, and strengthen the advantages of information technology [3]. As a further safeguard for the company's long-term growth, mining businesses should promote the environmental protection concept of green mining, so that all workers may better understand the digital and informatization construction of green mining. Make use of digital technology, appropriately address the issue of mining and the environment, build a strong mine data system that promotes the long-term viability of mining companies.

6.2. Cultivate Comprehensive Information Talents

Rather than investing in human capital development, mining corporations focus only on the construction of physical infrastructure. Metal mining companies that are looking to grow should put in place the necessary training, encourage their employees to get involved, and encourage them to work hard in the field of information technology so that they can raise the company's technical proficiency. They should also put together a strong information technology and management team. Environmentally friendly mining methods must be used in conjunction with cutting-edge digital information systems, and this can only be achieved by constantly enhancing existing mining models based on learned lessons from previous operations. Mining companies can also actively recruit IT talent, conduct regular lectures to impart experience, strengthen communication among employees and ensure that information is authentic and reliable in order to effectively use information technology to carry out green digital Coal mining.

6.3. Vigorously Develop Product Deep Processing Technologies

Metal mining companies must deep-process throughout the mining process. As the metal mine's raw is tainted with several contaminants. Metal mining companies should deep-process throughout the mining process[4]. So Metal mining companies must energetically develop product deep processing and conversion technologies, and contaminants in raw metal are removed and the metal is categorized. During mining process, which contributes to the advancement of green mining to some extent, saves resources, effectively reduces corporate costs, and promotes corporate development.[5] The government should aggressively encourage technological research and innovation, create green mining equipment, and realize the use of green mining technology. Metal mining companies can also focus more on green mining and enhance their engineering technology [6].

6.4. Establish Green Mining Standards

In order to realize digital and information-based green mining in Metal mines, suitable green mining criteria must be established, as well as the Metal mining process must be made more visible. First and foremost, in the mining system, comprehensively designing indicators such as resource recovery rate, green coverage rate, and information development level, combined with actual analysis of Metal mining enterprises, forming relevant norms and standards and assessment objectives, and forming a relationship between resources, people, and the environment, is required. Coordination of Metal mines, implementation of Metal mine informatization construction indicators, and formulation of green mining standards. Furthermore, in the mining process, traditional mines are utilized as specimens, and the analysis technique is employed to create an index database. The index data must be representative. Reasonable mining criteria should be monitored throughout the mine's green development process to verify that green mining can cut emissions and efficiently safeguard the ecosystem. Green mining standards are guaranteed by the environment and the law [7].

6.5. Actively Advocate Green Mining Technology Innovation

Metal mining companies are now investing heavily in green mining technologies. The enterprise's revenue is generally low due to the effect of variables such as mine quality and washing rate, which is not beneficial to the enterprise's long-term growth. As a result, there is a lack of incentive in the development of green mining technologies. However, with society's fast growth, green mining has become an unavoidable development trend. Therefore, the country should improve financial support for the metal mine sector, broadly apply sophisticated mining technology to green mining at home and abroad, and strengthen business incentive to create green mining technologies. To effectively use the green mining method of digital and informatization mining[8].

7. Conclusion

In the backdrop of China's fast economic growth, information technology continues to advance, and Metal mine environmental challenges have come to the fore. As a result, the advancement of green mining may help to address environmental issues, construct Mine digital information technology to promote green mining and establish a safe Metal mine. Information system, comprehensive information technology talent training, vigorously developing clean combustion and product deep processing and transformation technologies, establishing green development standards, actively advocating for green mining technology innovation, realizing the common development of resource development and environmental protection, and empowering the metal industry's sustainable development and progress, which will in turn drive China to achieve its development objectives!

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