Underground Mining Market Expected to Hit $28.5 billion with a 2.1% CAGR Through 2033 | Vale SA, Rio Tinto

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NEW CASTLE, DE, UNITED STATES, February 18, 2025 /EINPresswire.com/ -- Underground mining is the process of extracting valuable minerals from beneath the Earth's surface. It is commonly used to reach resources like gold, coal, and diamonds, which are deep underground. This method is essential when surface mining is not possible because of the location or depth of the minerals.

Allied Market Research published a report, titled,"𝗨𝗻𝗱𝗲𝗿𝗴𝗿𝗼𝘂𝗻𝗱 𝗠𝗶𝗻𝗶𝗻𝗴 𝗠𝗮𝗿𝗸𝗲𝘁 by Product (Supported, Unsupported and Caving), Operator (Contract Mining and Operator Mining), Application (Coal Mining, Metal Mining, Mineral Mining and Others): Global Opportunity Analysis and Industry Forecast, 2024-2033". According to the report, the underground mining market was valued at $23.1 billion in 2023, and is estimated to reach $28.5 billion by 2033, growing at a CAGR of 2.1% from 2024 to 2033.

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The underground mining sector is experiencing robust growth because of the increasing mineral demand across diverse sectors, consisting of construction, energy, and technology. Moreover, technological advancements play an important role in this growth by enhancing safety and performance. Innovations such as automated machinery, improved ventilation systems and real-time monitoring tools minimize operational risks, lower costs, and boost productivity. Besides, these advancements permit better resource extraction and waste management, resulting in more sustainable practices. However, the growing demand for minerals, coupled with their new applications drives the need for safe and efficient underground mining operations, fueling sector expansion.

It is worth noting that underground mining plays a key role in meeting the growing global demand for raw materials. It also creates employment opportunities and enhances local economies. Sustainable mining practices are being adopted, which help minimize environmental impacts. Growing investments and innovations drive the development of the underground

mining industry, which has contributed positively to the global economy and society.

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By type, the supported mining segment held the highest market share in the underground mining market in 2023. Supported mining methods involve the use of artificial supports to maintain the stability of the mine workings. This can include timber supports, rock bolts, steel arches, and other structural reinforcements. Supported mining methods have a significant market share due to their versatility and applicability in various geological conditions. However, the caving mining segment is expected to grow with a higher CAGR, driven by advancements in technology and the increasing need to exploit deeper ore bodies efficiently.

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By operator type, the contract mining segment held the highest market share in terms of revenue in 2023, driven by increasing outsourcing trends, technological advancements in mining services, and the global trend towards operational efficiency and cost optimization. The same segment is also expected to grow at the highest CAGR during the forecast period.

By application, the coal mining held a significant market share in 2023, due to its critical role in energy production and industrial applications. However, the metal mining is expected to grow with a higher CAGR, driven by increasing demand for metals in construction, technology, and renewable energy sectors.

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Asia-Pacific is expected to maintain its leadership in the underground mining market through 2033 due to several compelling factors. Rich in diverse mineral resources such as coal, metals, and industrial minerals, the region continues to meet significant global demand for commodities essential to industrialization, construction, and technological advancement. Rapid economic growth, particularly in countries like China, India, and Australia, fuels the ongoing expansion of mining activities. Moreover, Asia-Pacific's adoption of advanced mining technologies enhances operational efficiency and safety while meeting stringent environmental standards. Strategic investments in infrastructure projects further boost demand for minerals and metals, supporting robust mining operations. Stable regulatory frameworks and political environments encourage sustained investments in mining ventures, ensuring continued growth. With a focus on sustainable practices and corporate responsibility, the region aligns with global standards, reinforcing its pivotal role in the global underground mining landscape.

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BHP
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Vale
Implats Platinum Limited
Norilsk Nickel
Amur Minerals Corporation
Alcoa Corporation
The Redpath Group
GBF Underground Mining Company.
Emerging trends in underground mining

Mining is a vital industry undergoing a huge transformation due to technological advancements. Some of the notable trends mentioned are:

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The shift toward sustainable mining has accelerated the adoption of BEVs in underground operations. BEVs provide significant benefits over diesel vehicles, including lower emissions, reduced ventilation costs, decreased noise levels and enhanced energy efficiency. New developments in battery technology enhanced the length of operation times, making BEVs a practical alternative for underground transportation. In addition, they offer lower maintenance expenses and a reduced total cost of ownership. For instance, Newmont's Borden gold mine in Canada, which is the world's first all-electric underground mine, has used BEVs, achieving zero emissions, cost savings, and a healthier as well as quieter environment for workers.

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Effective communication systems are essential for underground mining operations. Traditional methods such as two-way radios are being replaced by advanced technologies, including mesh networks, which ensure seamless connectivity in challenging underground environments. These systems allow real-time communication among workers, supervisors and control centers, enhancing coordination and emergencies. They also support remote monitoring and management of health sensor data critical for the activity. In addition, improved connectivity facilitates the operation of autonomous vehicles, which depend on real time information for safe navigation in mines. These advancements are transforming underground mining, making it safer and more efficient.

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3D scanning and mapping revolutionized the mining industry by enhancing surveying,

exploration and mine planning. This technology enabled precise mapping of mines and real-time data analysis, improving operational efficiency. It also helped identify potential safety risks, including unstable terrain or hazardous gases, guaranteeing safer and profitable mining operations. For instance, Newcrest Cadia's SmartHog underground inspection vehicle used radar to autonomously inspect underground areas. An industry-first feature allowed it to plan its route in real time, collecting important data like wind speed and wet bulb temperature that were previously gathered manually, optimizing safety and productivity.

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The global underground mining market is highly competitive and constantly evolving. Leading companies are adopting key strategies which include introducing new products, forming mergers and acquisitions, establishing legal agreements and engaging in partnerships and collaborations to reinforce their position in a competitive landscape. For instance, in March 2023, Sandvik introduced the Toro™ LH518iB a battery-electric underground loader designed to be automation-ready featuring compatibility with the AutoMine automation machine.

On the other hand, in April 2023, Alcoa announced the growth of its EcoSource™ low-carbon alumina brand to include specific categories of non-metallurgical alumina.

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The underground mining sector is experiencing considerable growth because of increased demand for minerals and technological advancements. Sustainable practices which include electric vehicles, better connectivity and 3D mapping, are improving safety and efficiency. These innovations create profitable opportunities for industry expansion, enhancing resource extraction, reducing costs and promoting environmental responsibility.

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