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CANDRILL

A Canadian Initiative to Make Mining Safer and Healthier

Federal government researchers at Natural Resources Canada have led an initiative to develop an innovative piece of mining equipment that will not only dramatically improve working conditions for underground miners in both Canada and the United States, but will also help mining companies increase their energy efficiencies.

Solving a real problem

The CANDRILL is a rockdrill that is powered by a high-pressure water system rather than compressed air. This new rockdrill and the system that runs it will dramatically reduce several of the hazards faced by miners while at the same time increasing efficiency.

At the present time, compressed air is the main power source for narrow-vein mining equipment. Rockdrills powered by compressed air create high levels of noise, dust and vibration while generating an oil mist that is a potential health hazard. These factors cost the industry many thousands of dollars every year in Canada alone.

For this reason, the SOREDEM consortium gave CANMET's Mining and Mineral Sciences Laboratories a mandate in 1994 to find an alternative to compressed air. After performing technical and economic feasibility studies, CANMET recommended electro-hydraulics as a safer and more energy-efficient system. The first tool developed to put the idea into practice was a rockdrill designed to take full advantage of the proposed power source.

THE CANDRILL initiative

In 1996, CANMET, SOREDEM (a consortium of Quebec mining companies) and Hydro-Québec formed a partnership to develop an electro-hydraulic rockdrill under CANMET's management. The partners then signed an agreement with Novatek, a South African company with great expertise in the development of water-powered equipment for use in mining operations. The challenge was to design and build a product that would be well suited to North American mining conditions.

After establishing the criteria and specifications for the project, CANMET was able to evaluate results in the authentic environment of NRCan's Experimental Mine facility near Val-d'Or, Quebec. Throughout the process, CANMET made full use of the expertise and experience of researchers at Canadian universities, other research centres and consultants from the private sector.



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Impressive results

The CANDRILL is now in a final optimization stage. Testing indicates that it offers reduced vibration and less dust, and eliminates oil mist emissions. It weighs 14 kg less and is 15 decibels quieter than its compressed-air counterpart. This will have a direct, even profound effect on the quality of the work environment underground. In addition to being less physically demanding, the CANDRILL will reduce miners' exposure to various health risks.

In short, the CANDRILL is not only a much safer piece of equipment, but it is also more energy efficient and effective. The new rockdrill drills holes twice as fast as compressed-air tools - a welcome bonus for mining companies.

The agreement reached between the Canadian partnership and Novatek ensures that there will be many other benefits for Canadians. All new rockdrills sold to North and South American markets will be manufactured right here in Canada. Forecasts suggest that sales could exceed \$3 million per year once the clear benefits of electro-hydraulification are recognized and embraced by industry. This will translate into the creation of many high-quality jobs, and CANMET and its partners will see royalty revenues from each rockdrill sold.

The next step

Final testing of the CANDRILL is almost complete. CANMET's efforts are now focused on working with regulators to develop new Canadian standards for the use of electro-hydraulics. It is vital that a comprehensive set of standard procedures be in place to ensure the safest and most efficient implementation of the new technology.

Convincing the mining industry in Canada and the rest of the Americas of the benefits of this technology should not be a major challenge. Health, safety, productivity and energy efficiency are all improved. The investment required to make the change from compressed air will be significant, but savings inherent in the new system should see the cost recovered within two years.

The success of the CANDRILL initiative demonstrates how effective collaboration between government organizations and private industry can be. It proves that cooperation based on a clear set of objectives and recognition of each partner's capabilities can lead to results that make a difference.

For more information on CANDRILL technology, please contact:

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