REPLACING COMMUNICATIONS CABLES WITH WIRELESS TELEMETRY IMPROVES THE SAFETY, EFFICIENCY, AND COST OF MINING OPERATIONS

The hard-wired systems currently used in mining to transmit production data, environmental monitoring data, and voice signals to the surface are not reliable in emergency situations or if damaged by shifting debris or other hazards. To solve these critical problems, a wireless, through-the-earth telemetry system is being developed that will eliminate the need for wire connections between the surface and mining sites underground.

In addition to improving safety for underground workers, such a system would be more reliable, useful, cost-effective, and flexible. For instance, if combined with a separate in-mine system, workers could communicate freely with other underground personnel, in addition to surface personnel. By using the wireless transmitters, mining operations would not need to invest in communications cables, or their installation and maintenance.

By replacing costly communications cables currently used in mining operations with wireless, through-the-earth telemetry to transmit data to the surface, miners can increase safety and reduce costs.
Project Description

Goal: The goal of this project is to develop to the demonstration phase a telemetry system that communicates through the earth using electromagnetic field forces.

Transtek, Inc. is developing this new technology with the help of a grant funded by the Inventions and Innovation Program through the Department of Energy’s Office of Industrial Technologies.

Progress and Milestones

- The invention is undergoing technical feasibility studies.
- The inventor has developed a computer model simulating characteristics that would be encountered in the operation of the invention.
- A prototype was developed and tested.

INDUSTRY OF THE FUTURE—MINING

In mid-1998, the National Mining Association reached an agreement with the U.S. Department of Energy’s Industries of the Future Program to join in creating research and development partnerships to develop and deploy new technologies that will improve environmental performance and enable the industry to meet increased global competition. The mining industry supplies the minerals and coal essential to the infrastructure of virtually the entire U.S. economy: glass, ceramics, metals, and cement for buildings, bridges, roads, and equipment, and coal or uranium to generate more than 70% of the nation’s electricity.

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