

RAG Deutsche Steinkohle AG is Germany's single coal mining company, operating six coal mines with a total workforce of more than 25000 miners. Altogether, RAG covers approximately 33 per cent of Germany's overall demand for anthracite coal. In order to enable voice, data and video communication within its coal mines, RAG makes use of a computer based communication system which is developed particularly for underground mining. Within this system, ecom instruments' explosion proof handheld computer i.roc® Ci70 -Ex plays a decisive role.

CaseStudy



i.roc® Ci70 -Ex enables mobile communication in underground mining

The challenge

Coal mines are well known for their harsh work environment including dirt, dust and extraordinary physical pressure and stress.

Under these conditions, wireless mobile communication is difficult to realize. Furthermore, branches, curves & mine doors interfere with wireless devices which themselves have to fulfil the requirements regarding explosion protection.

Therefore, voice, data and video communication remain non-portable and wire-bound.

InfoBOX

Company:
RAG Deutsche Steinkohle AG

Application:
mobile communication

Application area:
mining

Product:
i.roc® Ci70 -Ex & Barcode Scanner



equipment like shearer loaders facilitate coal mining

Besides technical and lawful requirements, wireless mobile communication must fulfil economic requirements in order to increase efficiency and therefore make German coal mining more competitive.

The solution

RAG introduces a computer based communication system in order to enable voice, data and video communication within its coal mines. Several components form an overall system:

- Bluetooth headset
- ecom instruments' handheld computer i.roc® Ci70 -Ex equipped with bar code module
- wireless LAN camera
- energy & wireless LAN unit
- wireless LAN access points

Video communication is realized by means of a wireless LAN camera. It sends video recordings to the portable energy & wireless LAN unit which converts and forwards transferred data to fixed access points. Access points represent interfaces between wireless and wired communication in underground mining. Data is then transferred to above ground where personnel overlook visually the current situation below ground.



harsh work environment in underground mining

Voice communication is realized by means of i.roc® and a Bluetooth headset. Voice signals are transferred from the headset to the i.roc® via Bluetooth technology. Data is then forwarded to access points which – like in case of video communication – enable wired data transmission to above ground. Thereby, personnel follow the current situation below ground not only visually but also acoustically.

Data communication is realized by means of ruggedized i.roc® and RAG's software which is installed on this handheld computer. Personnel located above ground send requested data like technical documents to access points which are located below ground. Data is then forwarded wirelessly to the i.roc® which displays the requested data to miners.

The i.roc is ideally suited for RAG's communication system in underground mining as it is robust enough (IP65) and certified to be used within explosive mining environments.

The benefits

By introducing its computer based communication system, RAG opens up new possibilities to maintain and operate its coal mines. Both maintenance and operation of coal mines are facilitated remarkably due to immediate availability of expert advice and necessary data from above ground.

Time savings

In case of damage below ground, RAG's communication system saves a lot of time. Experts no longer have to be on-site in order to instruct miners, but they can accompany through inspection / repair steps from above ground. As a consequence, downtime in case of damage is reduced significantly.

Cost savings

Smooth processes in both maintenance and operation of coal mines lead to time and cost savings. Hence, efficiency is increased which makes German coal mining more competitive compared to countries with lower labour costs.

Safety of miners

Even though using electrical equipment like PDAs within mining areas is potentially dangerous, RAG ensures the safety of its miners by using the explosion proof i.roc. Both its mechanical and electrical maturity guarantees that requirements regarding explosion protection are fulfilled and therefore the safety of miners is sustained.



laws regarding explosion protection ensure the safety of miners

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