

Southern African Coal Mine migrates from analogue MPT-1327 to NEXEDGE digital.



A major open cast coal mining operation in South Africa completes its upgrade from analogue MPT-1327 to a trunked NEXEDGE NXDN system.



Mining for energy and the economy

South Africa is the fourth largest coal producer in the world with an output approaching 260 million tonnes in 2019.

It provides the country with a critical resource; coal powers some 80% of the country's energy needs and the industry is an important contributor to the economy, employing some 92,230 people. More than 25% of production is exported and represents the country's third largest source of foreign exchange behind platinum and gold.

Over half of South Africa's coal is produced from surface mining, via open-cast or open-pit mines

When the management of a large open cast coal mine, the primary coal supplier to the National Electricity Services, made the decision to upgrade from an existing analogue MPT-1327 radio communications system to improve the signal quality to the full extent of the coverage area, they called in the experts from Global Communications, Kenwood's distributor for Sub-Saharan Africa to find a solution.

In addition to site-wide coverage, the client also wanted to ensure an orderly migration to the new system with minimum disruption to operations and without risk to worker safety.

A Type-C, trunked NEXEDGE Digital NXDN™ system was selected as the preferred choice.

Type-C trunking is based on a centralised, control channel architecture where the trunking logic and allocation of traffic channels is executed via a dedicated control channel. It offers analogue MPT-1327 users an extremely efficient and cost-effective migration path to the benefits of digital operation for several reasons, most specifically:

- Existing analogue and NXDN digital fleets can share a NEXEDGE base/repeater station in 12.5 kHz conventional Mixed Mode to provide uninterrupted service as long as needed.
- NEXEDGE NXDN trunked traffic channels can be shared with existing analogue conventional or trunked logic controllers throughout the transition to full NXDN implementation.
- Improved effective site coverage and audio quality.

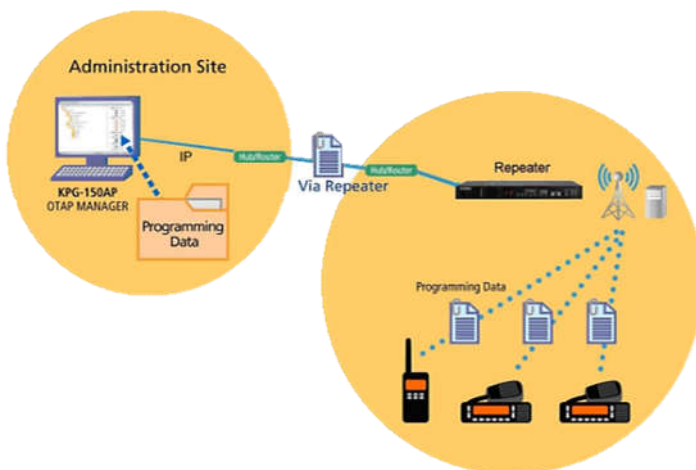
The system provides both voice and SDS capability alongside enhanced worker safety and emergency features.

Flexible configuration, capacity and redundancy gives complete peace of mind to management and workers alike



The NEXEDGE NXDN network implemented covers the 52km² site and is designed to provide the redundancy needed to ensure worker safety at all times and the flexibility to extend the coverage area and accommodate additional users if required.

The five-site (fixed and mobile) system is managed by Kenwood's KAS-10 AVL/Dispatch software primarily used for Emergency Channel voice recording and data messages. It is additionally equipped with the KPG-150AP application which allows the technical control centre to quickly implement radios over the air (OTAP). The OTAP feature is particularly useful as it allows radio equipment used by sub-contractors to be integrated with the system as they move from one area sector of the mine to another.



“In mining operations, it’s vital that all personnel on site can communicate instantly and reliably everywhere”

Mark Kinghorne, a Divisional Manager at Global Communications reports: “Particularly in mining operations, instant and reliable sitewide communications is vital to both operational efficiency and worker safety. But sites can be tricky with pits and straight cuts creating shadow areas. The previous analogue MPT-1327 system hadn’t evolved with the mines operations and proving unreliable in use, and a potential risk to worker safety. One of the most important challenges was to ensure complete stability between the 5 specifically located highsites, which is why each is equipped with an uninterruptible power supply and where appropriate, fibre optic links”. Mark concludes: “We listened carefully to what the client wanted to achieve and made sure that the system we designed and implemented could deliver the reliability, coverage and operations-critical functions required, including portable radios with increased battery capacity to last beyond a 12-hour shift and training of the client’s technical team on maintaining the system and programming of radios. It’s fair to say that

The proven Kenwood NEXEDGE NXDN trunked solution allowed us to meet all of the client’s specific requirements, quickly and cost-effectively”.

System Details

System: KENWOOD NEXEDGE

Type: Type-C Trunked

Technology: Digital

Channel Access: 6.25 kHz FDMA

Air Interface Protocol: NXDN

Sites: 5 highsites (fixed and mobile) connected by fibre optic and microwave links

Mobile Radios:

122 pieces NX-800 mobiles with KMC36 microphone for mobile production vehicles



Hand-Portable Radios:

685 pieces NX-300K4 portables with KNB48L batteries/KSC32 charger and KRA 27 antenna



Repeaters:

25 pieces NXR-800 repeaters (5 per site)



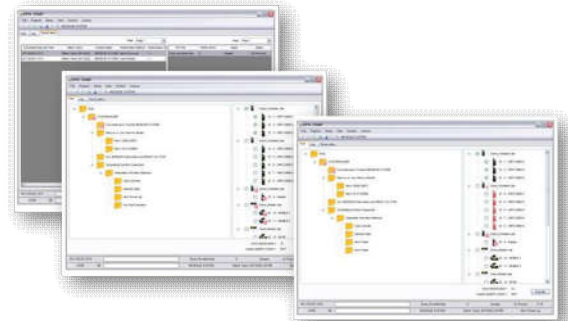
System Control & Management Software

AVL/Dispatch: 2 x KAS10 dispatcher suites



Over the Air Programming (OTAP):

3 x KPG-150 AP



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