CERBERUS

SIL2 Conveyance Communication

Wireless Data - Voice - Video

WWW.TECOMAUS.COM.AU

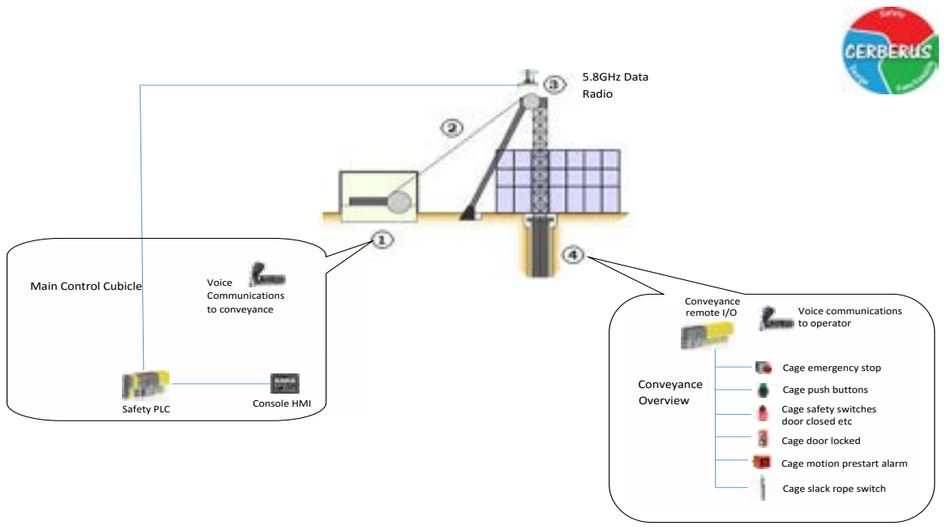
TECOM

SAFE LONG DISTANCE DATA TRANSMISSION

The TECOM Conveyance Management System CERBERUS is a powerful SIL3 capable PLC based data acquisition device, designed to interface with many different industry standard devices that support discrete SIL2 and SIL3 digital and analog I/O.

In addition to the data acquisition, the CERBERUS system has the ability to provide:

- Voice and Video Communications from the conveyance when used for man riding
- Video streaming, for visual or thermal imaging, mounted above or below the conveyance for shaft inspections.
- Data acquired from these systems can either be transferred to a central monitoring facility or other remote locations via a designated 5.8 GHz telemetry channel.



COMPLETE CONVEYANCE COMMUNICATION SOLUTION

CERBERUS is capable of interfacing with several devices through SIL2 and SIL3 remote digital and analog I/O blocks all simultaneously, 5.8 GHz wireless data transfer between devices is achieved via SIL3 Ethernet concepts over a fixed point aerial network. This provides a robust and safe means of sending safety-related data over long distances, using the communications medium that suits the application best.

CERBERUS is customised to meet site-specific requirements, having the ability to expand its digital, analog and safety I/O in accordance with client demands. The basic system is equipped with 24 digital inputs and 16 digital outputs.

CERBERUS Factory acceptance testing with Hahn Electrical (Rio Tinto Mongolia Project)

Although all systems can be supplied with varying I/O arrangements, the basic format consists of 8 control inputs and 8 control outputs, with an additional 8 control I/O that are configurable. In addition to the control I/O there are 8 safety inputs and 8 safety outputs.

The state of each input and output is signaled by the HMI, which is located at the main console. This HMI allows the operator to confirm the correct stature of all inputs and outputs associated with the conveyance. CERBERUS is designed for operation up to a maximum temperature of 60°C. The temperature status is evaluated by the CPU module in the controller.

CERBERUS - GUARDIAN UNDERGROUND

Just as Cerberus guarded the gates of the underworld in Greek mythology, TECOM's CERBERUS Conveyance Com-munications Management System guards underground personnel against many of the hazards they face on a daily basis.

TECOM Australia specialises in hazard reduction technologies and was the first Australian company to develop Safety Integrity Level (SIL) rated communication solutions for drift and shaft winders, not only permitting the instant management of incidents, but also adding multiple safeguard layers and incorporating video to monitor:

- Down the shaft
- Inside cages
- Man-riding conveyances
- Winders

CERBERUS is a closed-loop system that adds additional layers of redundancies, which are themselves SIL rated. An example of this is a simple switched door lock on a typical personnel cage. If the single switch fails, the door may not close fully, creating a danger that could potentialy cause injuries to workers. By adding an additional switch to the circuit, that works in series with the first one, the risk of failure is reduced exponentially.
In order to override such a system, other applications within the closed-loop must first be activated. This can be done by e.g. :

- Turning a key
- Pushing a button
- Pulling a lever

These added levels of redundancy prevent remote override and significantly reduce the risk of injury.

CERBERUS Installation at Copper Mine

CERBERUS also delivers communications of Voice-Over-IP (VOIP) with its own dedicated, intelligent 5.8 GHz data radio network, connecting underground operations to the surface. Apart from monitoring and interfacing the closed-loop SIL redundancies across the site to the mines PLC, CERBE-RUS incorporates data, telemetry and video communications, that meet NSW Mine Safety Standards, the strictest in the country.

In use with a conveyance cage, CERBERUS monitors:

- Cage emergency stop
- Push buttons
- Safety switches (monitoring door open and closed options)
- Cage door lock
- Motion prestart alarm
- Slack rope switch

CERBERUS -
INNOVATION IN MINE SAFETY SYSTEMS

Obsolete mine safety methods, such as the safety three bell systems with their inherent time delays that could turn a slack rope event in a cage into a deadly situation, are a thing of the past. With CERBERUS's Data, VOIP and Video Communications, the winder operator is instantly alerted in case of any abnormal event and hence is able to stop the cable feed, view inside the cage and communicate directly with personnel quickly and safely to rectify the situation.

The live video link allows the winder control operator a real-time look above, below and inside the cage or bucket as it is traveling. This enables quick hazard identification, as-sessment and avoidance, which makes CERBERUS a versatile tool to assist with shaft inspections.

FEATURES:

- SIL2 approved in accordance with AS61508
- Supports remote isolation
- Compliance with DMR TRG-Powered Winding System
- Supports video channels
- Supports voice channels
- Extensive diagnostics

TYPICAL APPLICATIONS:

- Mine Shaft Winders, such as
    - « Single Drum
    - « Double Drum
    - « Koepe Drum
- Shaft Sinking Winders
- SIL rated Telemetry Applications

SIL2 rated CERBERUS System installed at CSA Cobar

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WINDER CONTROLS

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