Southern Peru Mining Company Application Paper

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Operating one of the largest copper mines in South America, Southern Peru Mining Company is using cutting-edge technology to improve the operations of multiple belt trippers to consolidate critical processes to a central control location. The Southern Peru Mining Company recently implemented a state-of-the-art wireless network system at the Arequipa, Peru site to enable control room operators to adjust and limit the belt trippers and beds as well as make immediate corrections to the field deployed equipment from the central command post. (Fig. 1)

Figure 1: Southern Peru Control Center

Southern Peru looked to improve the operation of the belt trippers and to establish centralized control from a control center. Such a control center would eliminate the need of having an operator at each site to modify the limits by means of mechanical levies to drive race aim switches.

The Demar 42-inch belt tripper is capable of handling 1200 short tons of material per hour. It has a travel range of 600 feet and delivers the material to a 600-foot long linear stockpile. The tripper services a reversing belt with unique dual discharge design utilizing a four-wheel, direct drive system. The belt trippers required the on-site operator to monitor and control the speed and direction of the trips. All this was done locally, without any signal state reference to the other belt trippers or location of the belt trippers.

To optimize operations, Arequipa site personnel consulted with Control Total engineers Roger Sucilla, Jorge Galarza and Martin Alarcon to thoroughly investigate all the options available on the market. They needed hardware capable of meeting today's demands with the flexibility to meet future needs. After considering all the options, the obvious choice was an ESTeem radio system.

Figure 2: Southern Peru Site

ESTeem, the recognized leader in industrial wireless modems, worked with Control Total engineers to design a tailor-made wireless network. A radio analysis of the site was conducted and found that three deployed ESTeem radio modems would be

needed to establish reliable communications and provide full coverage for a common network.

The ESTeem 192S spread spectrum modem was chosen due to its affordability, secure encrypted transmissions and a data rate of 171K bps while maintaining a data accuracy of greater than one part in 100 million. Because the ESTeem modems possess the unique ability to operate as a master, remote or repeater node, there is a tremendous cost advantage over conventional systems.

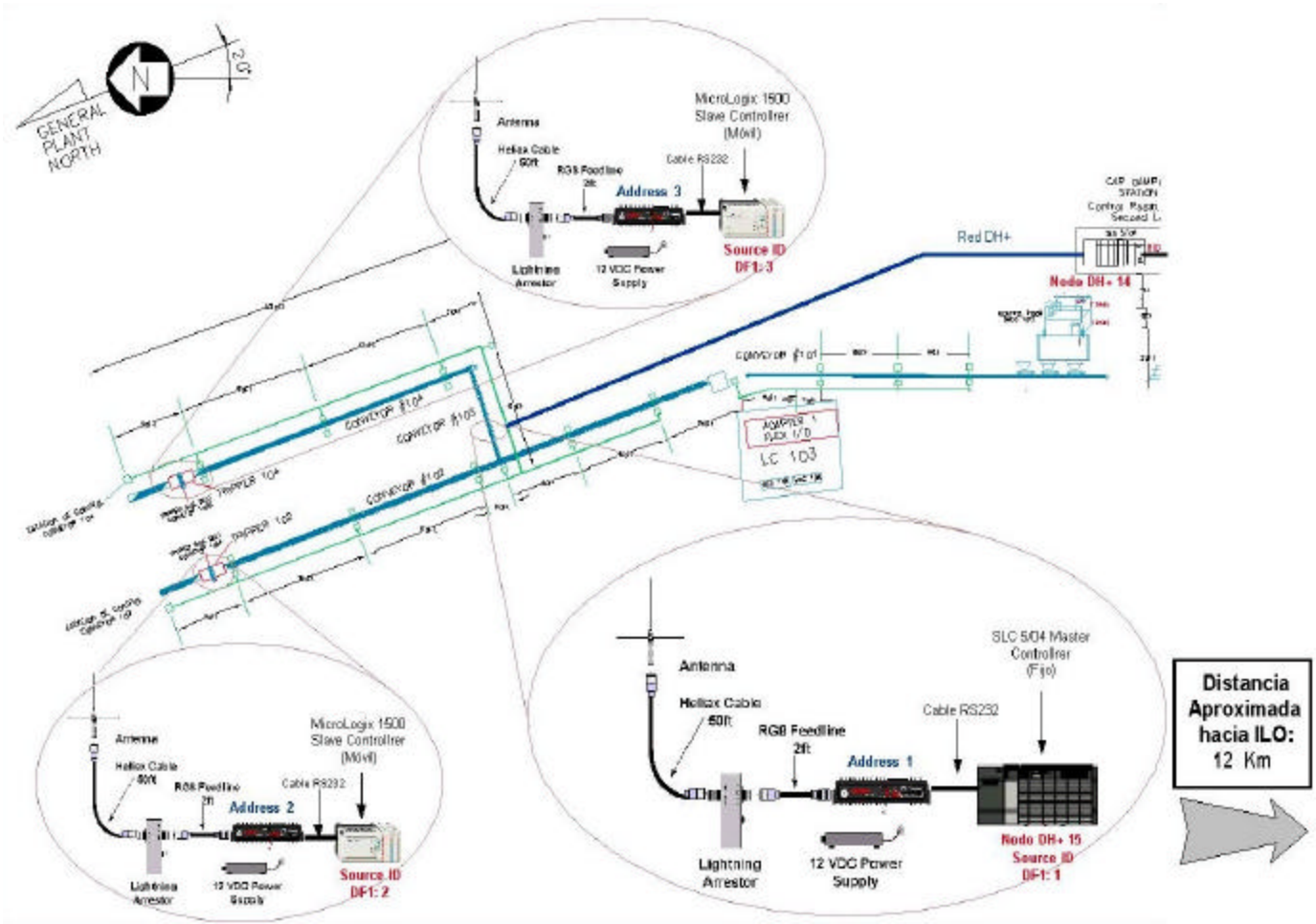

Figure 3: Southern Peru Mine Site Diagram

At each remote location, an ESTeem 192S is connected to an Allen Bradley Micrologix 1500 processor. The data collected at each remote node is then relayed wirelessly via the ESTeem 192S to the control room, where an Allen Bradley SLC 5/04 is connected to another ESTeem 192S (Fig 3). From the control room an operator, by means of an installed Panel View; can control the direction in which the belt tripper must go as well as the limits of sweeping beds. The entire process has been optimized because from the same control room, an operator controls the unloading and movement towards the belt tripper, allowing immediate changes can be implemented from the control room.

Routines have also been put into practice, which allow operators to make necessary changes of direction or rotation of the belt trippers without interrupting the flow of material, displacement of the belt trippers toward hoppers or speed alterations according to the minerals to unload. All this can be done using PanelView commands to the master PLC and transmitted wirelessly via the ESTeem 192S to the remote processors.

Southern Peru has successfully implemented a state-of-the-art wireless technology to network individual remote processors and the control room. The ESTeem wireless modems allow reliable, real-time communication while eliminating the constraints of hardwiring and time-to-implement.

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