



Here at last!

Introducing
the BMS 1000 series Belt Management System
after 18 months in development and reviewing.

Why?

For over 25 years during my time in working in mining, I have extensively researched the market place for an effective system to monitor conveyor belt systems. Although there are systems available, finding one that actually worked and continued to work reliably and cost effectively was difficult. I could not find one, I decided it couldn't be all that hard.

With the assistance of PJB Controls the Conveyor "Belt Monitoring System" was developed. Now there is a system designed by someone who understands belts and uses the belts natural behaviour to provide feedback required to indicate potential belt failure and shutdown belts as required. This system will not only monitor for Belt Rips but also Edge Damage, Belt Wander, carry back/spillage and load over height issues. You can't afford not to review and inquire on this simple but effective solution to Conveyor Belt Management.

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Conveyor Belt Monitoring System

System Features

- ▶ Belt rip detection
- ▶ Belt wander detection
- ▶ System can be configured as standalone unit or Integrated with existing site Scada/PLC network
- ▶ HMI touch screen for system parameter changes and status viewing
- ▶ Datalogging capabilities

How does it work?

(Belt Rip)

We need to understand what happens when a belt is ripped. There are typically 3 scenarios. Firstly the Belt is ripped due to sharp rock, rock bolt, wear plate etc. At this point the belt can behave 3 ways.

- Slice the belt and stays at the same width. (Neat cut which can cut the full length of the belt and stay unnoticed for a considerable length of time)
- Slice the belt and the belt will overlap reducing the width of the belt
- Slice the belt and two sections move apart from one another increasing the distance between the two exterior belt edges.

Understanding the basic principles of a conveyor belt behaviour enables us to provide a solution to identify point 'a' above.

- ▶ It is a commonly known fact that a belt has all of its strength is tension.
- ▶ What is not commonly recognized is the ease in which a belt can be "tracked" although it is quite common practice for it to be done by the following methods.

- Tracking idlers. (Steering Frames)
- Skewing frames to track the belt to whatever side is required.
- Adjusting Pulleys

By using the natural characteristics of tracking by placing "Fixed Steering Frames" in the area of the sensors we can easily steer a ripped belt apart.

Having an effective mechanism in place that opens the belt enables the BMS series 1000 to quickly identify a change in width.

Belt under or over width monitoring

Two ultrasonic sensors are set up either side of the edge of the belt (carry or return) and the gap between the sensors and the edge of the belt is measured.

The system can then be programmed with maximum and minimum belt widths which if exceeded will alarm and stop conveyor operation.

Belt wander monitoring

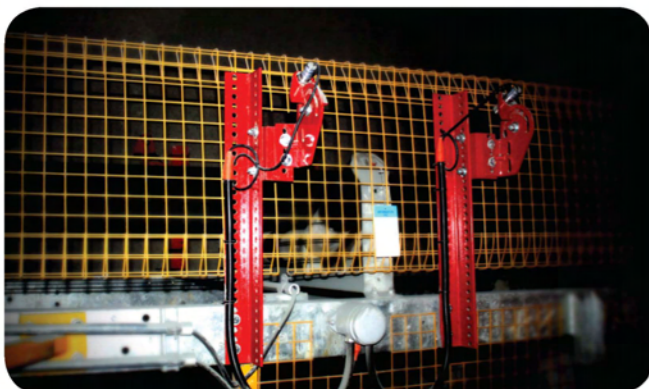
As the belt wanders from left to right so will the values of the ultrasonic sensors proportional to this movement. The system can then be programmed with maximum and minimum belt wander values which if are exceeded will alarm and stop conveyor operation.

Data Logging

This is one of the key features of the system. The system will log up to 2 years of data before it is required to be stored to another source. This data becomes an invaluable information source when understanding issues with the belt leading up to failures within the system.

System Benefits

- ▶ Simple to operate
The system is designed so that you do not need a degree to understand or operate. In actual fact the system is so simple you will ask why it has taken so long for something so simple to come along. Your maintenance people will quickly understand its operation and look to it to investigate issues as they arise.
- ▶ Installation Simple and Easy
System is designed so sites can be self sufficient in its installation and maintenance. Installation can be organized by B&C if requested.
- ▶ Stand alone or integrate with your current operation system
System can be easily integrated within your current operating system or just stand alone.
- ▶ Suit any belt whether Steel Cord / Fabric / Solid Woven
System can be used on any existing system whether Steel Cord / Fabric / Solid Woven. It does not require any modifications to the actual belt e.g. Belt loops
- ▶ System that ensures people get out to the system to reset
System can be programmed to be as disciplined as you want it to be. In the case where you have 000's of dollars of belt at risk a customer may wish to ensure strict changes are adhered to.
- ▶ Field Use
System can be set up mid way along a conveyor and powered remotely and use wireless to again manage the system. There is no limitation to its placement.



Benefits of this unit for monitoring and identifying rips

- ▶ Any belt construction can be monitored. No costly extras are required to be inserted or maintained. I.e. Belt loops.
- ▶ Unlike some other rip detection units this unit will also pick up edge damage.
- ▶ Any existing damage will be recorded and different parameters set specifically for damaged areas. This means that these sections are still monitored and not just ignored.
- ▶ Belt can be monitored minimizing the amount of belt exposed compared to other units. With this system every "250mm" of belt is monitored regardless of existing damage.
- ▶ System will record and if required can either alarm or trip for belt width or wander.