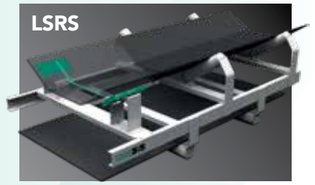
The EMSYS Conveyor Belt Protection System

EMSYS provides a series of Rip Detection and Monitoring products and solutions. Conveyor belts are subject to damage (longitudinal belt rips) through the foreign objects or in heavy use areas like loading, unloading. The EMSYS solutions are designed to work together to detect and notify or correct for issues such as rips or holes in the belt, edge damage and misalignment.

The EMSYS WSR uses RFID Technology to provide a reference point and the belt is then operated for several revolutions. Measurements are taken every few centimeters and the WSR system learns the width of the conveyor for its entire belt length as a baseline. If the belt is ripped, the width of the belt will change and trigger a signal and/or stop the belt.



The EMSYS LSRS monitors the belt via embedded wires that can detect rips and damage to the belt through SmartWire technology.
The LSRS will read most major belt manufacturers rip detection loops and antennae.
SmartWire can be embedded in a newly manufactured belt or retrofit into an existing belt in under an hour.

EMSYS offers the Belt Steering Gear (BSG) system to provide precise belt alignment control and monitoring of the belt tracking, onsite or remotely via an application on your phone or tablet.
A combination of an actuator and sensors and idlers before and after this sensor can detect and correct any belt misalignment, even remotely.

The LSRS Retrofit Kit

The EMSYS SmartWire system is a cost-effective retrofit wire solution for a belt with broken loops. A SmartWire can be installed within 30-40 minutes versus 4-6 hours for most other loop system installs. The LSRS Retrofit comes with everything you need for retrofitting SmartWire system into your belt:

- Rubber grooving/skiving tool and drill-mounted winch – to remove the strip of rubber required for the SmartWire
- Press and control box

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EMSYS BELT RIP DETECTION WSR

BELT RIP DETECTION - WSR

Belt conveyors are subject to damage (longitudinal belt rips) through the impact of foreign objects at the loading and discharging area, or edge damage from conveyor belt mis-tracking. Conveyor belts that do no have antenna installed or have antenna that have failed due to damage, are at risk of catastrophic rips and damage. Until now there hasn't been a reliable solution to prevent that loss.

The EMSYS WSR system relies on embedded RFID Tags inserted into the belt to provide a reference home position in the conveyor belt. The belt is then operated for several revolutions taking measurements every inch of the conveyor width as a baseline. If the belt is ripped longitudinally the width of the belt will change and trigger a signal to stop the conveyor belt. Additional Alarm parameters can be added such as excessive or continuous mis alignment/tracking of the conveyor belt or to detect edge damage. These alarms can be used to alert the operator at the belt or on a remote device such as a smart phone or tablet using WIFI.

The WSR does not require installed loops and can be used on both steel cable or fabric belts, of any length. The system is ATEX certified and is UL and CE approved.

CONTROL UNIT

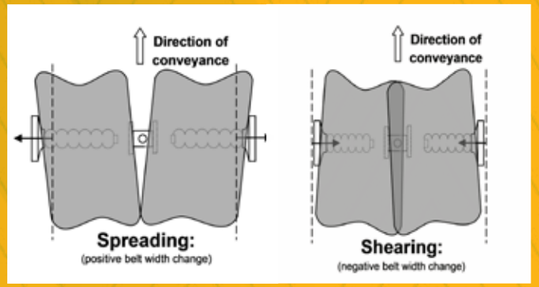
The processor is an ATEX-certified, state-of-the-art Allen Bradley PLC unit that is able to record multiple revolutions of data.It interfaces with the mine PLC or SCADA System.

RFID READER

The RFID Reader detects embedded RFID tags that provide reference points to the WSR system as it learns and stores the width of the conveyor belt for its entire length. This data is compared to real-time data in order to detect any rips or edge damage.

SYSTEM PRINCIPLES

When a conveyor belt is ripped due to a foreign object it will exhibit one of two different states – spreading or shearing. The WSR system utilizes an offset idler in front of the system to amplify these actions and accurately detect a rip. Because it doesn't rely on antenna, it will detect a rip immediately after it begins due to the change in the width of the belt.



BELT WIDTH MONITORS

Mounted on either side of the conveyor system are linear encoders that telescope in and out and work together to create a baseline of the width of the entire belt. If necessary the belt can be re-trained again to record any changes in the belt.

DATA APPLICATION

The WSR system provides a graphical display of the entire conveyor belt both in the control room or remotely on a smart phone or tablet. Conveyor belt data, alerts and stoppages are all displayed.

DETECTS RIP DAMAGE

No other rip detection adds the additional benefit of edge damage detection. The WSR compares the conveyor belt to stored data and measurable wear is detected and transmitted to the operator and the mine system. Edge repair is extremely costly and difficult to repair and the EMSYS WSR can detect this damage before it becomes a problem.