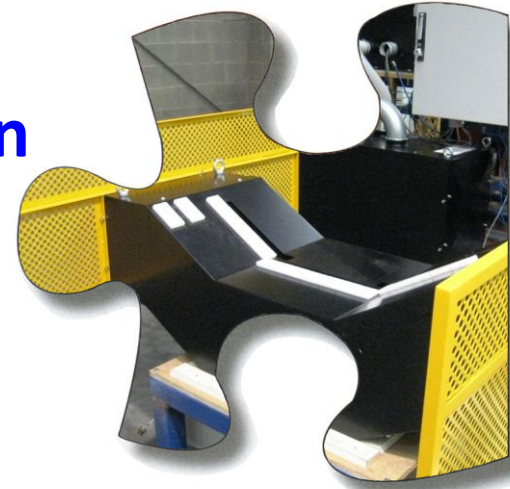




CBM – Longitudinal Rip Detection

Maximising the return on your assets



WHY DETECT LONGITUDINAL RIPS?

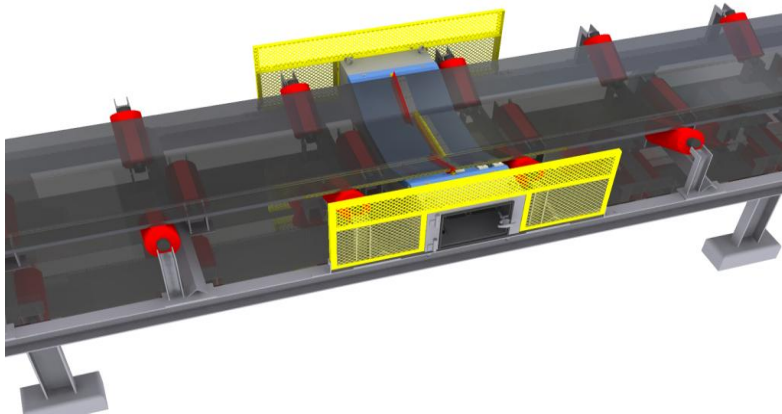
In all conveyor belt systems that are used for transporting bulk materials such as coal, mineral rock and ores over long distances, it is not uncommon for sharp or jagged pieces of the conveyed material as they are transferred or parts of the chute liner, to penetrate into the conveyor belt.

With continued use of the conveyor belt, the damaged area often can develop into a rip that progressively increases in length longitudinally along the belt until the rip has grown in size sufficient to require the replacement of a large segment of the belt or sometimes, the replacement of the entire belt. Additionally, if the rip becomes too extensive, the conveyor belt itself may pull apart and become jammed in the drive mechanism of the conveyor system.

Accordingly, it has long been recognized that a monitoring system for early detection of longitudinal rips in conveyor belts is desirable.

At present the rip detection monitoring systems for detecting a longitudinal rip in a conveyor belt (before the rip causes excessive or irreparable damage to the conveyor belt or the conveyor drive system) are imbedded into, or attached to the conveyor belt. These monitoring systems have been developed with various methods of observation and recording events. The systems generally are expensive and quite complex in their circuitry requirements thereby increasing the number of potential sources for component failure and add to increasing maintenance costs and required downtime for maintenance to occur.

Apart from **“Catastrophic Failure”** the greatest cost to the mining industry is the **“False Positives”** (unnecessary and costly conveyor belt shut down) generated by these imbedded / contact systems stopping at partial rips (not penetrating fully through the belt), and these components require extra shutdowns for maintenance purposes. In addition, the potential for catastrophic longitudinal rip failure rises, when these methods fail. This exposes the now unmonitored sections, or the entire Conveyor Belt to catastrophic failure and major expense. Worse still is when the maintenance personnel on the sounding of an alarm shut these systems down due to what turns out to be a false positive.



The CBM innovation provides a reliable, non contact, 24 / 7, on line, monitoring system for detecting a longitudinal rip in a conveyor belt before it has progressed in size sufficiently to require the replacement of an unduly large segment of the belt or the belt itself. In doing this, the current methodologies were thrown out and a clean slate was used – the two main mine operational issues being;

1. avoid **“False Positives”** and effect on the operations;
2. avoid and / or minimise a **“Catastrophic Failure”** and effect on the operations.

In answering point 1 above, the existing systems of longitudinal rip detection are the single largest area of grief, i.e.: the system worked over the (imbedded / contact) sensor last pass and not the next (system assumes a longitudinal rip) shutting down the conveyor belt.

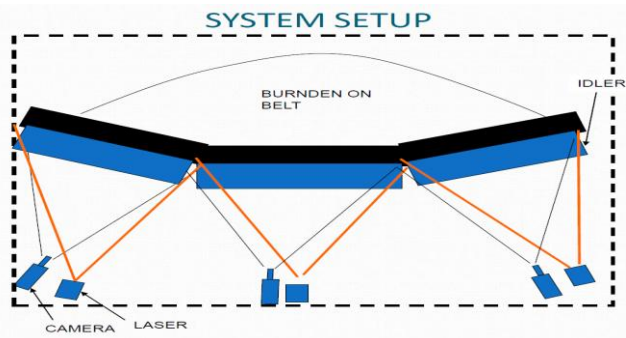
Partner of Choice

RELATED SERVICES

- CBM – Vision and/or Profile Monitoring
- CBM – Conveyor System Inspection
- CBM – Remote Monitoring
- CBM – Semi-Remote Monitoring
- CBM – Steel Cord Belt Scanning
- CBM – Fabric Belt Scanning
- CBM – Cover Thickness Testing
- CBM – Longitudinal Cover Thickness Testing

On inspection a small cut into the vulcanized rubber has rendered the sensor out of action giving a **“False Positive”** or no physical evidence was found, meaning the materials when being loaded onto the conveyor, have impacted the sensor and knocked it out thus causing a **“False Positive”**. Each unwarranted stop is a costly exercise as the belt stops operating, staff are required to travel to the place of the alarm assess the damage or lack thereof, rectify and re start the belt.

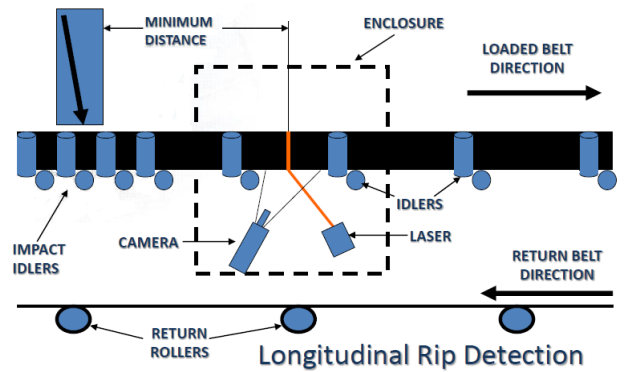
In answering point 2 above, CBM’s research identified **“Catastrophic Failure”** from a longitudinal rip, as full longitudinal penetration threatening the operational longevity of the conveyor belt.



CBM using some propriety technology from other non mining related industries combined with its own systems have developed a longitudinal rip detection system that once activated stops the conveyor belt. This system is separate from the belt and can be fitted or retrofitted to **any belt (width or type – steel cord, fabric or solid woven)**, anywhere, at any time.

There is no contact with the belt and hence the removal of **“False Positives”** due to contact related issues.

The system monitors in real time and once a mine has specified the parameters (a rip of say 1000mm plus) the CBM Longitudinal Rip Detector will activate the emergency stop once this event has occurred – in



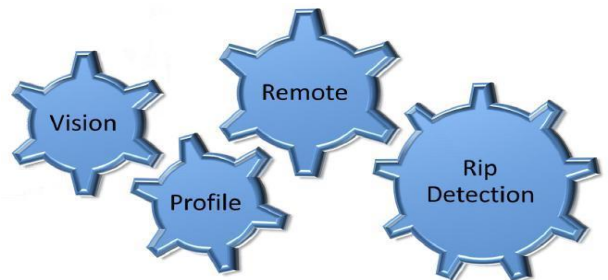
specifying the parameters the distance from the load point and conveyor belt stopping distance need to be taken into account.

The system once having a repaired longitudinal rip in it will ignore the repaired rip – however if the repaired rip starts to increase again the CBM Longitudinal Rip Detection System will send the stop trigger to the belt control unit.

For many mine sites or production systems, a major conveyor can represent an area of major risk with no redundancy in the event of failure. This is compounded by the typical long lead times associated with replacement belting. This unique monitoring system has been developed to mitigate the risk of **“Catastrophic Failure” & “False Positives”** on conveyor belts.

This new system uses the latest in vision and laser technology to ensure that any rips are detected and the belt stopped as soon as possible so that temporary repairs can be made to return the belt to service, saving valuable production time. The rip can then be planned for removal during a suitable maintenance stop.

The CBM Longitudinal Rip Detection System has been designed as a standalone system, or as an integral part of a Condition Based Monitoring System.



CBM – HEAD OFFICE
6 / 92A Mona Vale Road
Mona Vale 2103 NSW
Australia

p. +61 2 9979 6644
f. +61 2 9979 7744

e. info@cbmi.com.au

➤ **CONTACT**

For details about this service, please contact CBM
By phone: +61 2 9979 6644
By e-mail: info@cbmi.com.au

➤ **FOR MORE INFORMATION**

please visit:
www.cbmi.com.au