



White Paper

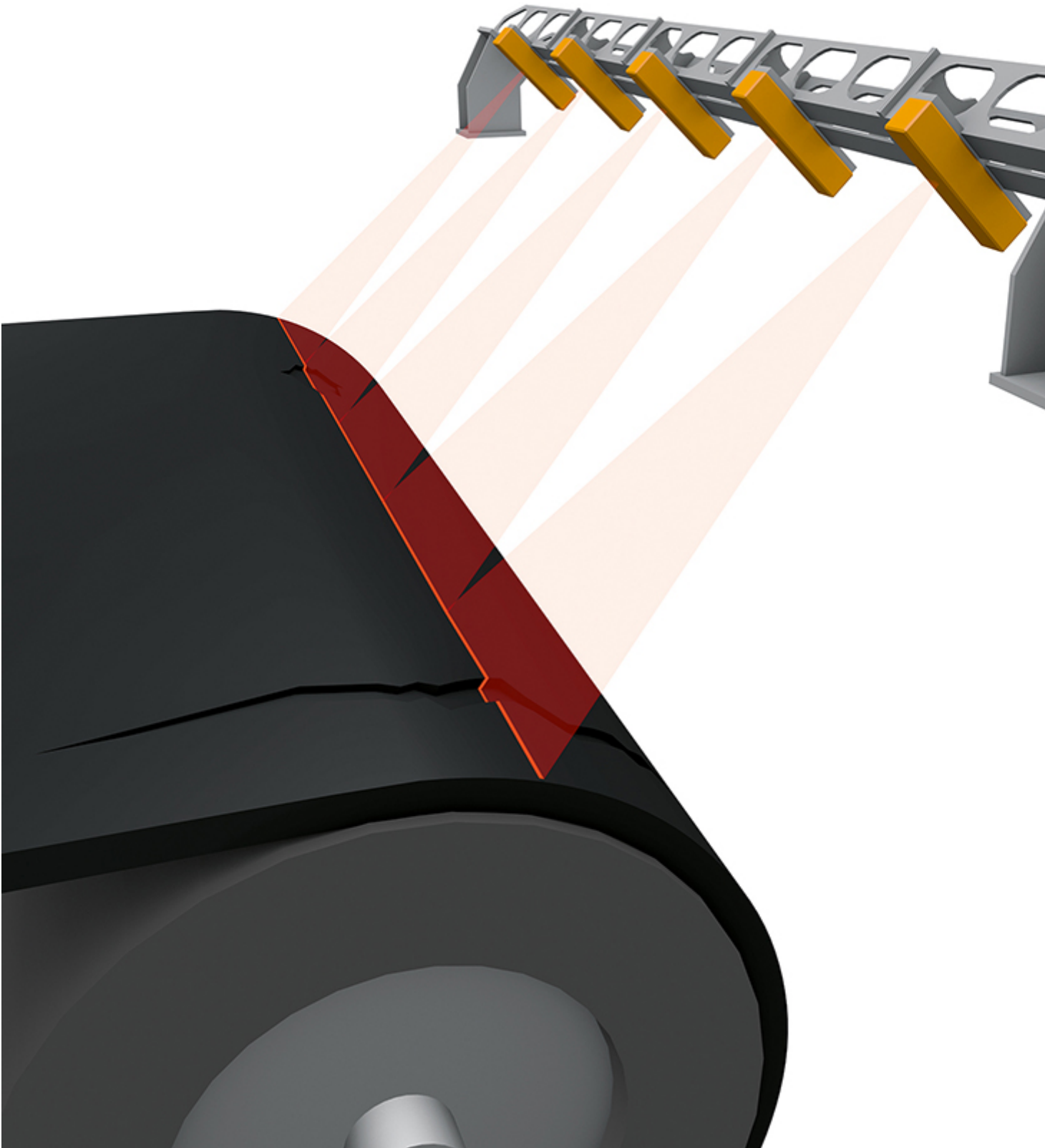
Checking a Belts Intactness - Surface Scanner Makes Conveyor Belt Damage Visible

Edited by on 16. Mar. 2020

[Published in bulk solids handling, Vol. 36 \(2016\) No. 6](#)

Belt conveyors are the lifeline of many bulk materials handling operations. Therefore, their continuous availability is of paramount importance. To help operators keep their systems running, Contitech offers a variety of inspection systems that present the conveyor belts actual state.

(From the archive of "[bulk solids handling](#)", article published in Vol. 36 (2016) No. 6 , ©2016 bulk-online.com)

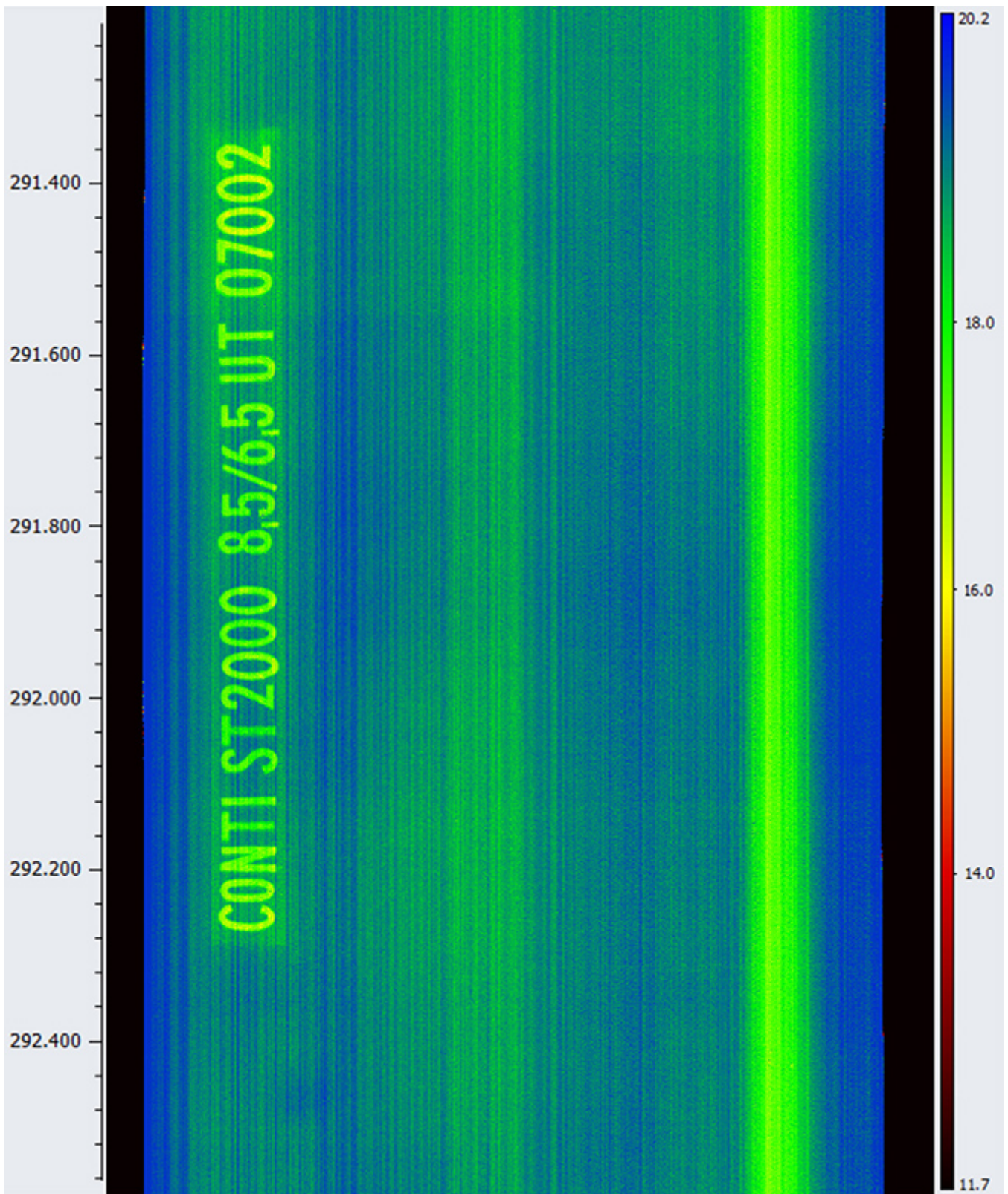


The mobile inspection system Conti SurfaceInspect scans the entire conveyor belt surface by means of ultra-modern line laser technology. (Pictures: ©ContiTech)

Conveyor belts are the heart of many transport systems. Their importance becomes particularly clear when damage occurs. If this results in an extended

system downtime, the entire production chain frequently collapses. This in turn results in high sales losses for the mine operators. To allow conveyor belt systems to run free of faults and cost-effectively in the long term, even when subjected to high loads, the operators are focusing more and more on prevention. Innovative electronic conveyor belt monitoring systems make it possible to identify the exact state of the transport systems at any time. "With the ContiInspect systems for servicing, and the ContiProtect systems for monitoring during operation, Contitech provides the right solutions for these jobs," says Andreas Bakenhus, head of Mining Europe, Africa, Asia, and Australia in ContiTech's conveyor belt group. "All the systems meet high quality standards and therefore guarantee a high level of safety." Damage to the conveyor belt surface is a typical defect. This often occurs in systems in which the impacting material subjects the surface to a particularly high load. To identify the number, the extent, and the position of such sites of damage, intensive servicing is necessary. Up to now, technicians have had to evaluate and document the state of the conveyor belts individually at a reduced operating speed. This process was very time-consuming and involved a large number of people. To help customers with servicing, ContiTech has developed the mobile inspection system Conti SurfaceInspect. Using ultra-modern line laser technology, this system scans the entire conveyor belt surface. On the basis of the height profile that is identified, it creates a digital belt map on which all cover plate damage is recorded and can therefore be examined more closely. In an automatically generated report, ContiTech provides all relevant information about the damage. "These analyses result in a detailed picture of the condition of the conveyor belt surface. It offers an ideal basis for systematically recording surface damage, preparing cover plate repairs, and making predictions about the conveyor belt's service life," declares application engineer Patrick Raffler.

Reliable Forecasts for increased Service Life



On the basis of the data recorded, Conti SurfaceInspect creates a digital map on which all cover plate damage is visible.

The mobile inspection systems, to which the surface scanner belongs, allow conveyor belts to be serviced while still in operation, and help to detect at an early stage damage caused by the material conveyed or by wear. The systems

provide the relevant data for more effective planning of servicing jobs on conveyor belt systems. The Conti Inspect systems thus contribute to reducing the downtime of conveyor systems. The offering is rounded off by two further Conti Inspect systems. By means of triangulation sensors, Conti WearInspect measures the cover plate thickness over the entire belt length. It records the position of the belt surface on the pulley and carrying side, and calculates the conveyor belt's actual thickness by means of a large number of measuring points. It even detects systematic wear. This means that the conveyor belt's service life can be estimated, and a belt change recommended if necessary. If damage occurs inside the carcass of the steel cord conveyor belt, it can be detected with Conti CordInspect. By means of magnetic induction procedures, it detects the smallest of damage to the steel cable tension members. All pieces of damage are detected, classified, and documented in a report with information about size, severity, and position.

Providing Protection from total Failures

Larger pieces of damage such as longitudinal slitting and splice faults on the conveyor belt can have serious consequences for system operation, and lead to total failures in a worst-case scenario. ContiProtect monitoring systems help to detect such damage at an early stage during operation, and automatically stop the system if necessary. Conti SpliceProtect monitors the length and stretch of the conveyor belt splices in systems that are exposed to heavy tensile forces due to long center distances or large height differences. The system uses magnetic strips vulcanized into the conveyor belt to make precise measurements during operation. As soon as a splice has reached a critical length, the danger of a splice failure becomes too great and the system stops the conveyor before the splice tears. Conti RipProtect provides protection against longitudinal slitting that causes long downtime and high costs. Thanks to conductor loops vulcanized into the conveyor belt, it detects the dangerous longitudinal slitting at an early stage. The metal loops carry a high-frequency signal between a transmitter and receiver. If a loop is damaged, the signal will break down on the receiver end. The system control then automatically stops the conveyor belt. Conti CordProtect allows customers to look inside the carcass of steel cord conveyor belts. The system magnetizes the tensile members and detects magnetic fields that arise at the ends of the cords or if defects occur. This means that even very minor cord damage in the intact belt area can be detected and monitored, as can the state of the splices. Conti MultiProtect expands the functions of Conti CordProtect. Rip inserts implanted into the conveyor belt are checked for longitudinal slitting by means of their characteristic magnetic fields. By means of a special sensor

application, the rip insert function can also monitor the rotation of tube conveyors. Conti TotalProtect makes a detailed examination of steel cord conveyor belts possible by means of x-ray technology. The system detects and monitors all types of defects, from the tiniest pieces of surface damage and all manner of effects caused by foreign bodies, right up to cord and splice damage.

About the Author

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