

# Remote monitoring of conveyor belt rollers

## Case

In open-pit lignite mines, belt conveyor systems are one of the basic technologies that move coal from the excavators to the power plant, heating plant or transfer station. The failure of a conveyor belt represents a major operational and financial loss. The probability of a bearing jamming on one of the thousands of rollers is quite high. This can lead to overheating, deformation and ultimately to the belt being cut (ruptured). Repairing the belt is technically, time-consuming and costly. The greatest losses are caused by the shutdown of coal transport, or in the worst case by the shutdown of a power plant unit. The risks are significantly greater at certain critical points in the conveyor than in the rest of the conveyor belt length.



## How it was done in the past

For many years the rollers were monitored by occasional inspection to check if any of the rollers were seizing. However, with a huge number of rollers, it is very difficult to check the condition without any errors. Over time, thermo imaging inspections or even thermo-camera drones were used to detect rollers that had excessive bearing heat and could seize. Most often, roller damage occurs at the ends of conveyors where material is being transferred to the next conveyor or, in the case of tubular conveyors, where the belt is being rolled or unrolled.

## What it looks like today

At the Prunéřov II power plant, Czech Republic a SENSECOM-TR6 devices were deployed in the pilot, which monitors the temperature in the immediate vicinity of the roller bearings on a critical part of the conveyor using a set of thermistors. One device provides measurement of one conveyor segment using 6 temperature probes. Several critical conveyor segments are fitted on selected conveyors.

The plant operation receives information via SMS when a temperature spike is detected (warning message) or a critical temperature value is exceeded (alarm message). Upon receipt of the alert, the maintenance staff checks the condition of the rollers in that



section. Upon receipt of the alarm, the dispatcher stops the conveyor operation to prevent damage to the belt and the maintenance worker replaces the damaged roller. The remote monitoring device is battery operated, capable of operating independently of the environment for a minimum of **5 years** without battery replacement.

## Conclusion

By using remote conveyor belt monitoring technologies at critical points, plant and lignite mine operations are able to react very quickly to a problem before a breakdown occurs and the conveyor belt is shut down for an extended period of time. It can thus carry out repairs immediately and prevent potential losses and complications to plant operations or coal mining.

## Use of the equipment in other areas

SENSECOM-TR series devices are used in many other areas and locations, e.g. on moving production machines and process technology, where it is necessary to monitor temperature fluctuations simultaneously at several locations and to evaluate relative temperature changes between them. These are primarily locations where the deployment of wireless communication is crucial, without the need for power supply and local data network.

These devices can run on battery power for many years and require virtually no maintenance during that time.