

Basler scout GigE Cameras Used for Cargo Train Fault Detection System

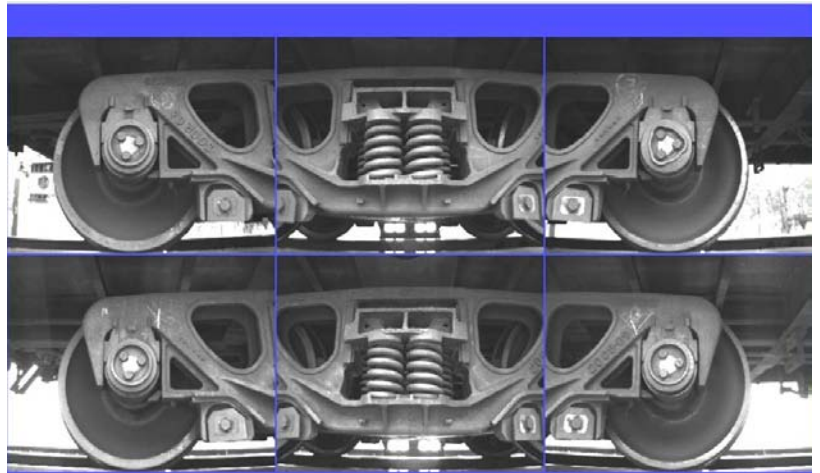
Customer

- Location: Asia
- Industry: Fault Inspection

Application

In comparison to other modes of transport, rail travel is considered as especially safe. However, the possibility of an accident cannot be completely excluded, and if a rail accident does happen, it can lead to catastrophic damage or even the loss of human life. This means that fault detection processes for trains, especially for older rail stock, are needed.

Until now, proper inspection of trains has only been possible by using the technical services staff in a workshop. In large countries where long distance rail lines are predominant, it is not practical to bring the train to a shop for regular maintenance checks. However, frequent quality control of the most safety-critical parts of the train would be enabled by using a cost-effective inspection solution that could be installed more easily than building a complete service workshop. Cutting-edge technology would even allow quality control inspection of a train at full speed without disturbing travel schedules. That's where the inspection system we are describing comes into play.



Basler Camera Images from Side Box

The main purpose of this system is to inspect the undercarriages and wheels of a moving train for flaws that could lead to catastrophic failures. The primary objective is to inspect these parts without stopping the train to ensure that each carriage is in a safe condition while saving valuable time. In the customer's application, cargo trains running at about 50 to 60 km/h are inspected. The trains being inspected tend to include older rail stock.

The captured image data is transmitted from the fault detection system to a control room near the station, which might be 100 meters away.

Solution and Benefits

- The fault detection system described here uses three Basler scout GigE cameras on the rail bed and two scout GigE cameras beside the rail. While a train passes through the system at a speed of 50 to 60 km/h, the cameras capture images of the under carriages and the wheels and the images are transmitted to a control room. Specialists in the control room then carefully examine each image to determine whether any faults are present.
- The Basler area scan cameras offer a reasonable trade-off between detailed resolution on one hand and sensitivity on the other: Sensitivity is key for supporting the short exposure times that allow the system to “freeze” the motion in the images of a rapidly moving train. The high frame rate of the cameras lets the system capture a series of images as the train passes by.
- Using cameras with a GigE interface provides the great advantage of long cable lengths that allow an easy connection between the system and the control room.

Technologies Used

List of components used in this application:

- Basler scout cameras (monochrome area scan cameras, GigE Vision compatible)
- Basler pylon API – a powerful and easy to use application programming interface that makes camera integration easy and allows engineers to focus on designing the application



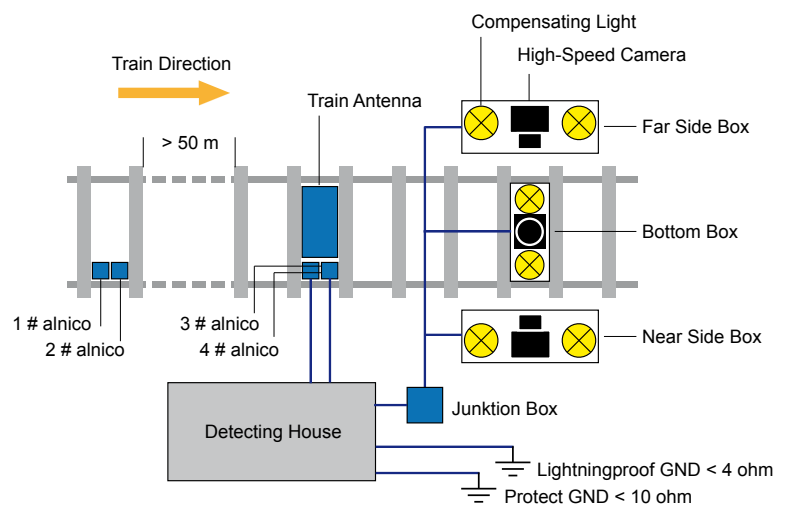
Side Box with Basler High-Speed Cameras



Wheel Sensor



Basler scout GigE



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