

## Axis network cameras test safety of Betuweroute. Camera images show whether route is ready for completion.



Organization:  
Betuweroute

Location:  
Maasvlakte to Zevenaar,  
Netherlands

Industry segment:  
Transportation

Application:  
Testing of train route

### Mission

The Betuweroute project has attracted a lot of attention. Construction of the railway began in 1995, and completion took place in 2007. Since that time, the 160 kilometer railway has run from the Maasvlakte near Rotterdam to Zevenaar, where the Betuweroute links to the German railway network.

A lack of space in the test train locomotive was the primary reason for the Betuweroute Project Setup Team purchasing Axis network cameras. Six cameras now record images during the intensive testing intended to prove whether the Betuweroute is ready for completion.

### Solution

During the 600 different tests, it must be determined whether the signals and subsystems function properly. In the most ideal situation, the entire test team would be located at the front of the locomotive, because the data collected there is of essential importance for the tests. But due to a lack of space, the team had to search for a

solution; this was found in the Axis network cameras. These are mounted in and around the test train and record images of the railway and the surroundings. This makes it possible to view the images at any time or place.

### Result

The images are immediately available within the moving test center. In one of the carriages, the test team views the images, which provide a good overview of the surrounding area. Another benefit this offers is the possibility to save the images so they can be reviewed later.

"Thanks to the Axis network cameras, the tests are proceeding very smoothly. We have a good view of the Betuweroute and can therefore determine whether the Betuweroute is ready for completion or not."

Everard van Rees, test manager for the Betuweroute.

## The Betuweroute

The purpose of the railway is to strengthen the international competitive position of Rotterdam and reinforce the role of the Netherlands as a transport and distribution country. An important additional purpose of the fast rail connection is to once again establish a prominent position for the transportation of goods by rail. The commissioning party for this railway is the Betuweroute Project Setup Team, a division of ProRail, the Dutch railway operator. Completion was planned for the spring of 2007.

## Safety above all else

"The tests of the Betuweroute are intended to reveal whether all safety-related subsystems are working as an integrated system. A large number of new technologies are, after all, being used on and around the railway. The "old fashioned" signals found along the Dutch railways have been eliminated. Signboards have instead been placed at various locations.

When an engineer passes such a board, a command appears on a monitor in the cab (for example: reduce speed to 40 km/h). It is the intention that these commands appear on the screen in the correct order, at the right time. Collectively, these modern signals form a safety system that obviously must be tested for correct operation. It must also satisfy the requirements established by the Dutch Ministry of Transport, Public Works and Water Management and other involved agencies."

## AXIS 211 Network Cameras provide convenience

A total of six network cameras have been installed in the riding test center for the Betuweroute. Four of these are placed in the locomotive itself, and two others hang on the front and rear of the test train to monitor the sections of track. The network can even accommodate two additional cameras. The cameras currently in use are AXIS 211 Network Cameras.

These cameras can be used both indoors and outdoors and offer the great advantage of a fixed focal distance and a fixed zoom lens. As a result, oscillations and vibrations have little influence on the image quality.

"We also opted for network cameras because they provide convenience due to the simplicity of the cabling. In total, our test train is 100 meters long and consists of five separate carriages. If we were to use cables, various signal amplifiers would be necessary. With IP cameras, just a single Ethernet cable is required that makes the images available via a network. The images can then be accessed via each camera's individual IP address."

