



# WESTMINSTER

## INTERNATIONAL LTD

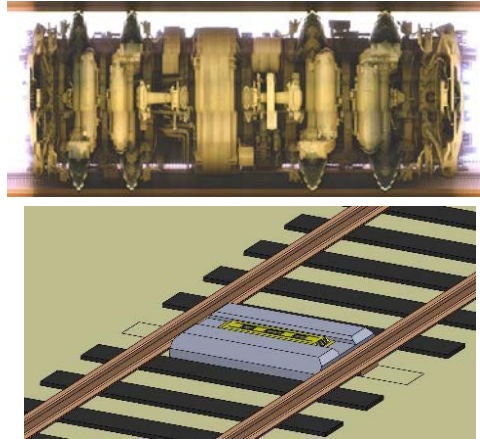
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## WG Under Train Carriage Inspection System



Under Vehicle Imaging System developed for Train Rolling Stock inspection requirements.

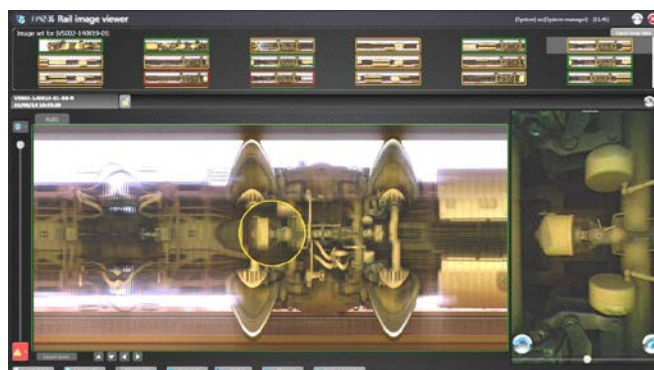
Using the same multi-camera configuration as the Westminster systems used to inspect road vehicles, it provides operators with high quality colour images.

As can be seen from the images, the complete under view image shows all of the major features from end to end and rail head to rail head. The zoom image shows the level of detail required for more exacting inspections. The zoom image is a complete frame from one of the 5 cameras. It still has all of the original pixels which allows features as small as 1mm to be resolved.

The system is available for temporary and fixed installations. The portable version can be moved around in the boot of a car and installed by 2 people in less than 10 minutes. The user interface is simple and intuitive. The image of the complete train is split into sections to simplify the inspection procedure.

To simplify the display, the image of the train is segmented. Each segment is displayed as an icon on the inspection screen. The operator selects icon of the segment of the train he/she wants to inspect and it is displayed in the Main View of the screen.

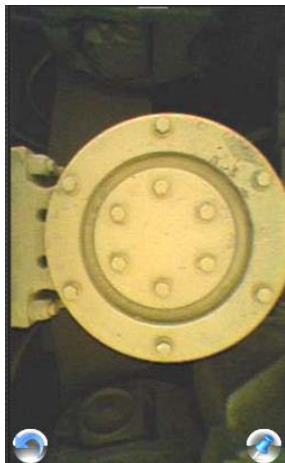
Optionally, the operator can display the Zoom image. The Zoom image will either be displayed on the same display as shown below or on the optional second display screen.



One of the many benefits of the multi-camera configuration is to allow the operator to see around objects. This is useful for routine inspection and security operations, as shown in the following frame sequence:



Frame from Camera 2



Frame from Camera 3



Frame from Camera 4

## CONTROL UNITS

- The WG Control Units (CU) are 19" rack compatible and use high performance Windows computers running the Soft-Rail software.
- The CUs for portable systems are housed in wheeled moulded cases and are complete with a high brightness 19" display.
- The CU's for fixed installations are typically a desktop control unit and one or more LCD displays.

## SOFTWARE

- The WG-R software, will also provide all of the features of the standard WG software:
- A composite image is constructed from all of the frames from each camera in the camera unit.
- Zoom at the original resolution for detailed frame by frame inspections
- Up to 12x zoom of the selected frame
- See around objects using frame sequences around the object
- Alter the length to width ratio of the main image
- Add notes to the file. This is often used when a suspect mark is added. Archival of the image with all of the original frame data.
- Search of the archive by location, date and time.

## CONFIGURATIONS

There are two standard configurations:

- WG-RP for portable requirements
- WG-RS for permanent installations.

## SURVEY UNITS

- The WG Survey Unit (SU) for Rail applications uses 5 cameras.
- The WG-RP uses the standard SU and the Rail Adapter Module which has additional LEDs providing approximately 3 times as much light as the WG-P SU alone.
- The WG-RS can be designed to fit between the rails and to meet the appropriate national or regional rail industry standards and will protect the CU from physical hazards.

## BENIFITS

- WG-R produces a fully searchable under vehicle composite image.
- The Zoom images can show features of less than 3mm in size.
- Each image set is archived.
- All inspection data is recorded and date / time stamped.
- All of the scans of trains at a depot can be inspected locally or at a central location.
- The SU is surface mounted and can be located in stations or depots – there is no requirement for an inspection pit.
- WG-RP is fully portable – it can be moved from site to site in a car.
- Using the WG UVIS may save time and reduce the number of skilled staff required to inspect rolling stock.