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Checking catenaries with infrared thermography

Catenary maintenance, a major concern

In France, the rail network comprises more than 15,600 kilometres of electrified lines which need a reliable, steady and high-quality power supply. Today, the increasing power of the trains, the development of rail traffic and the opening of the rail network to competition are leading to more maintenance work on the power supply stations and catenaries.

Directly affected by this more intense operation, the **catenary connection zones** are **sensitive points which need careful checking.** These interfaces are located at the connections between the catenaries and at the two points of contact between the catenaries and the power cables.

At this level, abnormal overheating may occur due to faulty connections or higher current surges. Undetectable by the naked eye and located high above ground, such overheating is difficult to identify without the help of high-performance instruments.

- Preventive maintenance
- Electrical monitoring
- Temperature checking
- Troubleshooting

Thermal imaging, a reliable, accurate detection solution

To identify abnormal overheating of the connectors and connection zones, **high-resolution thermal imaging** is ideal. It can be used to check and detect even the smallest areas of overheating ten metres above ground level both reliably and safely.

With its excellent **thermal sensitivity of less than 0.05°C, the C.A 1888 infrared camera** can detect the slightest temperature difference.

For example, when there are high current requirements due to dense traffic, the cables heat up more. As a result, if the connection zone has structural faults, there will be more overheating which must be identified, analysed and rectified. Designed for use in severe environments, **the C.A 1888 Bluetooth thermal camera** with its telephoto lens is ideal for such situations involving a high-voltage environment, long-distance sighting and small items to be checked.

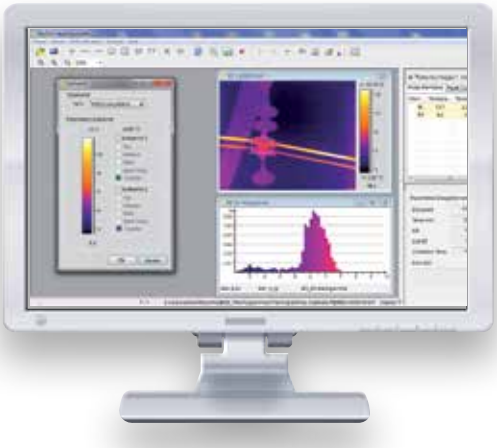
Using the **C.A 1888 with its telephoto lens** to reveal all the problem areas

TECHNICAL PERFORMANCE

The C.A 1888 is equipped with an uncooled microbolometer detector which provides extremely sharp thermal images with a resolution of **384 x 288 pixels.** When used with its **12° x 9° telephoto lens,** this camera can clearly identify the temperature difference of objects more than 10 metres above ground level, with a spatial resolution of **0.55 milliradian.** To make it easier to pinpoint overheating, this thermal camera is equipped with the MixVision function, a technology which allows you to merge the thermal and real images. In this way, users can choose how to view the target: as a thermal image, a real image or a mix of the two.

Another advantage is that it allows you to adjust the transparency of the thermal image in relation to the real image.

The points or areas with problems can then be identified immediately. To help users take notes in the field, **the C.A 1888 Bluetooth camera** is equipped with a **voice annotation** system. This makes it possible to record 30 seconds of voice comments per image. Each comment is then linked to the thermogram which can be retrieved later when processing the data.



PROCESSING OF THE DATA

With the **RayCAm Report software**, users can easily import images and make use of a palette of high-performance processing tools. It is equipped with a very simple interface for:

- **Analysis of the thermograms using the following tools:**
  - Cursors (automatic display of the temperature at the chosen point).
  - Thermal profile (automatic display of the Min/Max/Avg temperatures on the line).
  - A square or circle for area analysis.
  - Results tables which quickly and automatically show all the information/analytical tools on the thermogram.
  - Polygons and polylines to analyse certain areas in the thermogram more precisely...
- **Generation of customized reports**

PRODUCT ADVANTAGES

C.A 1888 Bluetooth with telephoto lens

- Spatial resolution (IFOV): 0.55 mrad
- Telephoto lens: 12° x 9°
- Infrared matrix - 384 X 288 - 110,592 pixels, 8-14 microns
- Thermal sensitivity (NETD): 0.05 °C at 30 °C
- Measurement range: - 20 °C to +600 °C
- Measurement frequency: 50 Hz
- MixVision mode for viewing the IR image, the real image and the merged IR/real image
- Temperature profile, Min./Max./Avg. on area, isotherm, temperature differential
- Influencing quantities: emissivity, environmental temperature, distance, relative humidity
- Voice comments
- RayCAm Report software for analysis and report creation
- Battery life: 2 x 3 hours

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