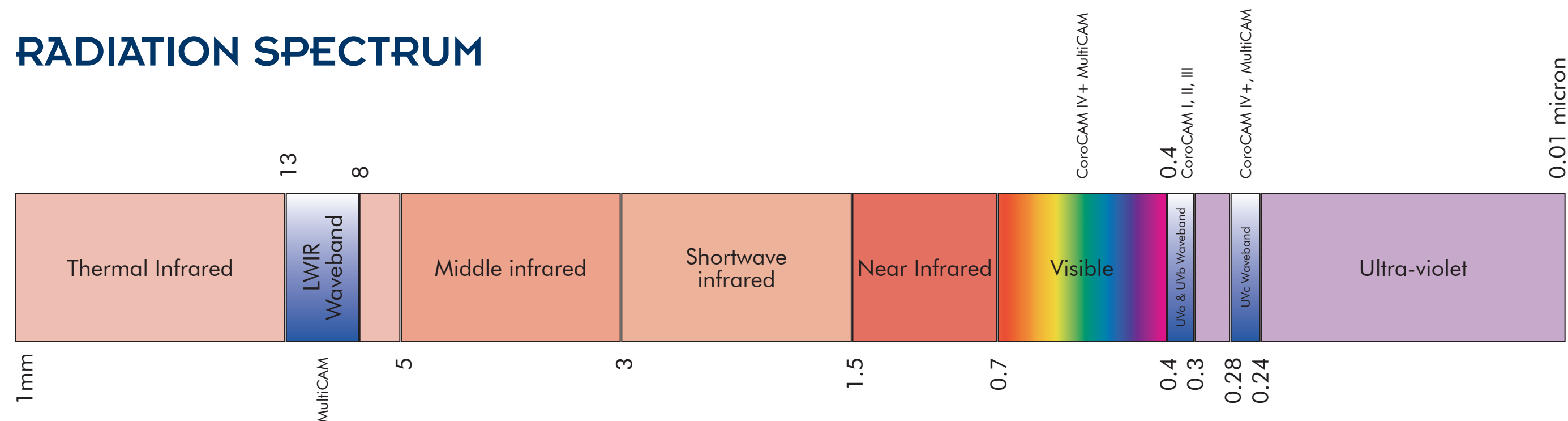


# Multi-Spectral Imager

R STOLPER

CSIR Materials Science and Manufacturing, PO Box 395, Pretoria, 0001  
RStolper@csir.co.za

## RADIATION SPECTRUM

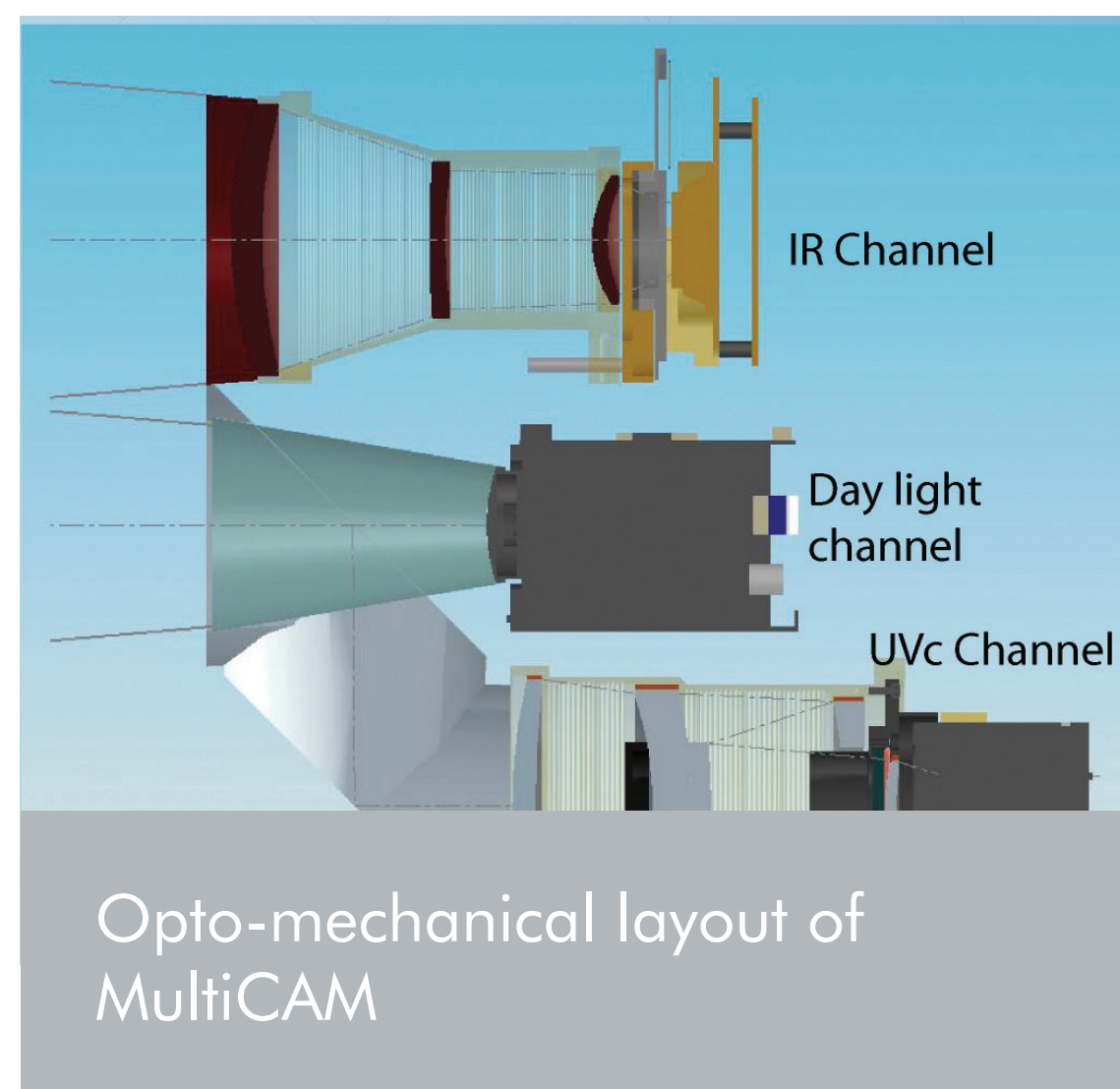
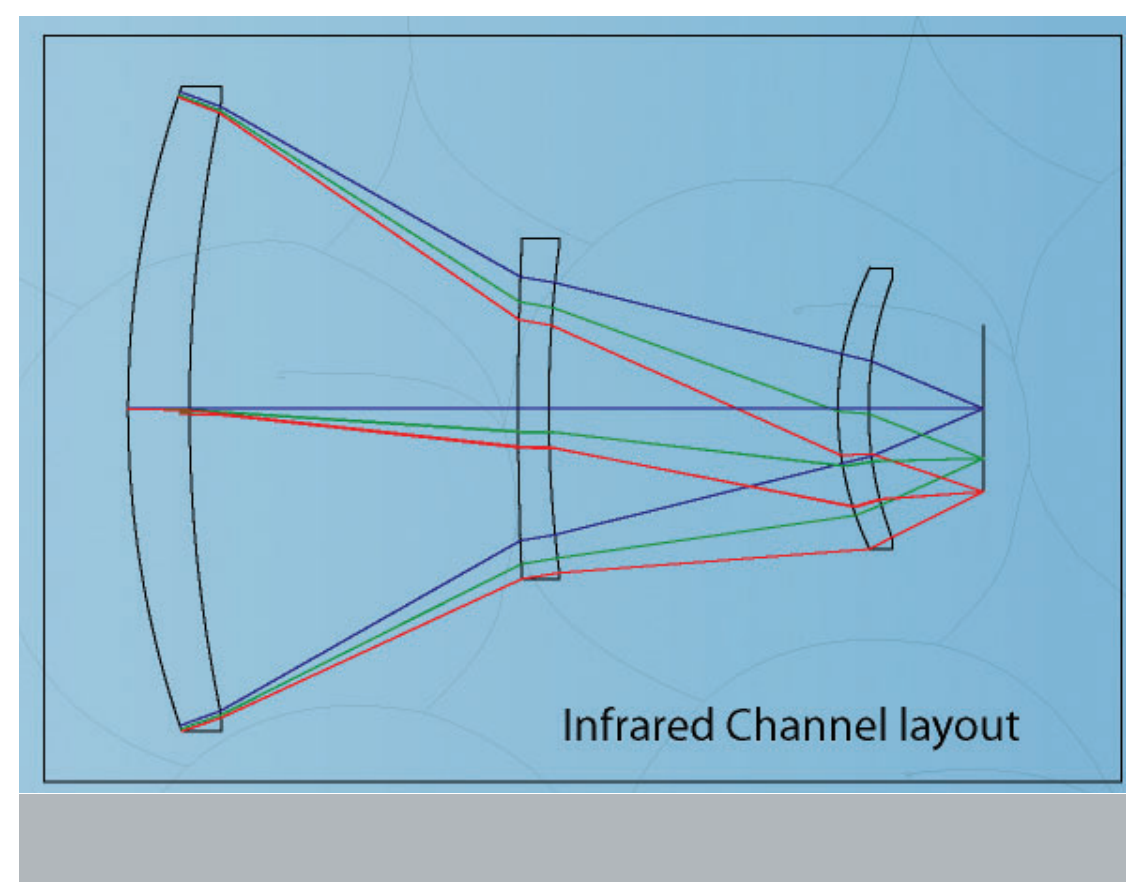
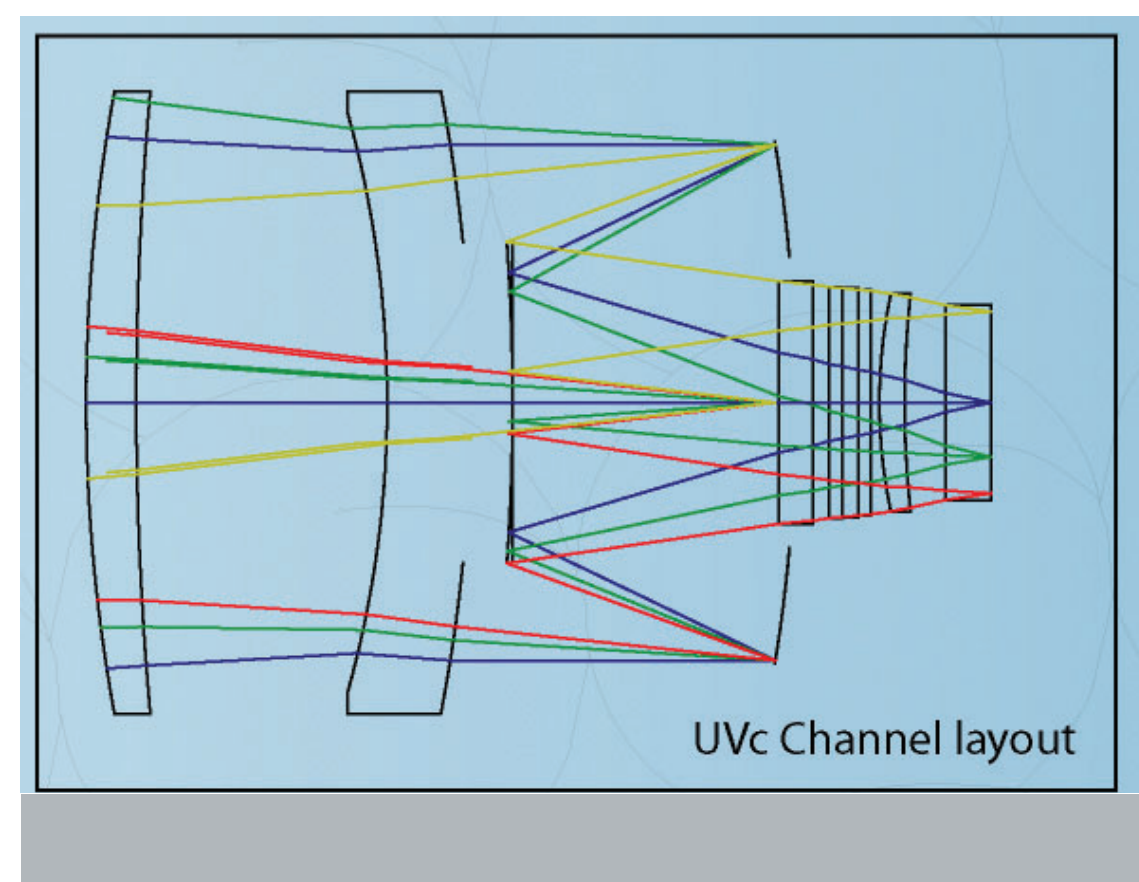


## DESIGN FEATURES



- Single Camera incorporating three optical channels;
- Three spectral wavelengths:
- UVc: 240-280nm for locating corona discharges
- Visible: 400-700nm for visual inspection
- Thermal infrared: 8-13 micron for locating hot spots;
- Portable and ergonomic;
- UV image displayed over visible image;
- Infrared Image; and
- Uncooled microbolo meter detector

## TECHNOLOGY OVERVIEW



## Design Principals

- Compact;
- Light weight; and
- Performance and User application driven for the high voltage industry.
- UVc and Visible channel are boresighted with two beamsplitter windows; and
- The IR system is boresighted.

## APPLICATION

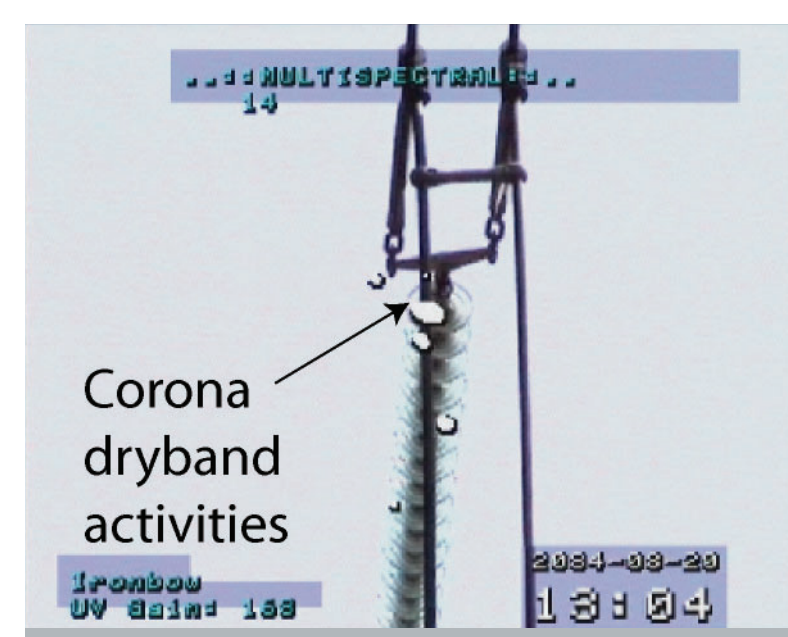
### High-voltage environment

- Detecting loose strands, bolts and nuts;
- Detecting Corona discharges on insulator discs;
- Detecting and locating spark gaps;
- Detecting and locating RIV sources;
- Audit sub-stations and transmission lines for audio noise and Corona activities.

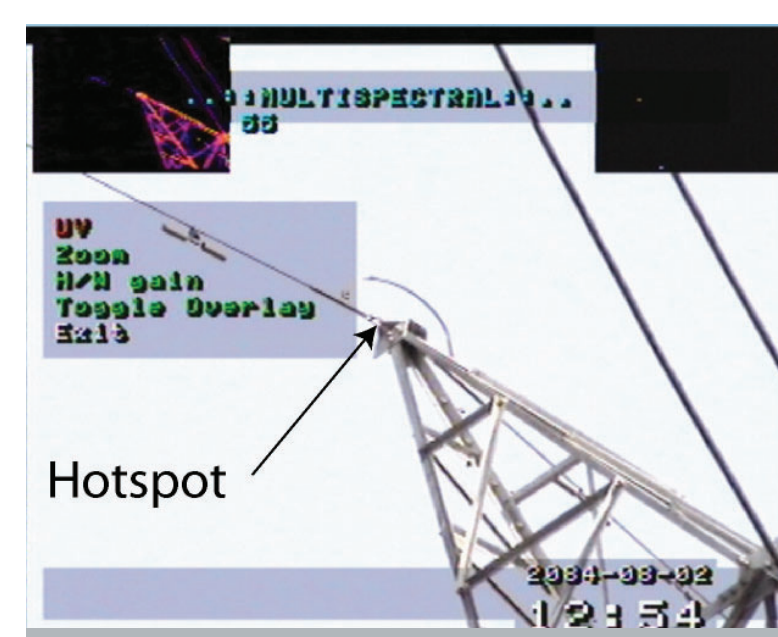
## RECORDINGS / APPLICATIONS



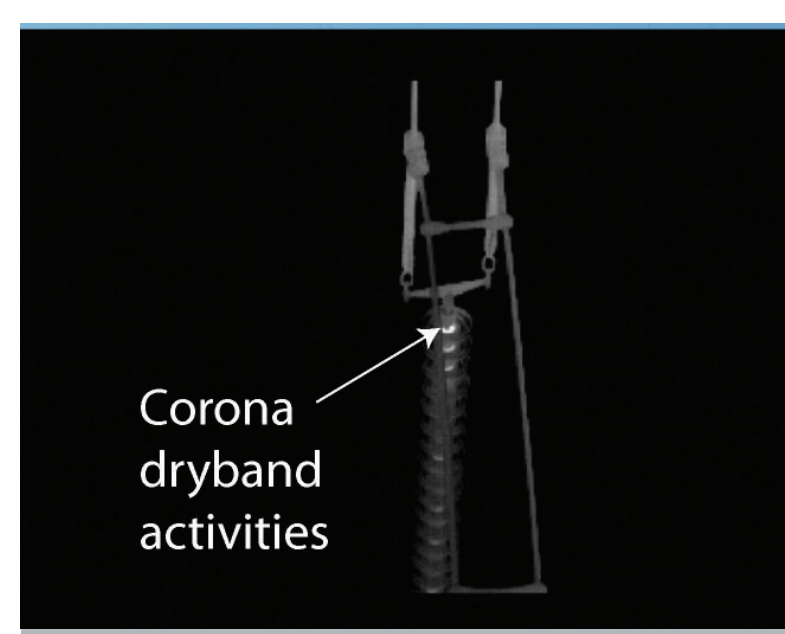
UV, IR and Visual image from MultiCAM



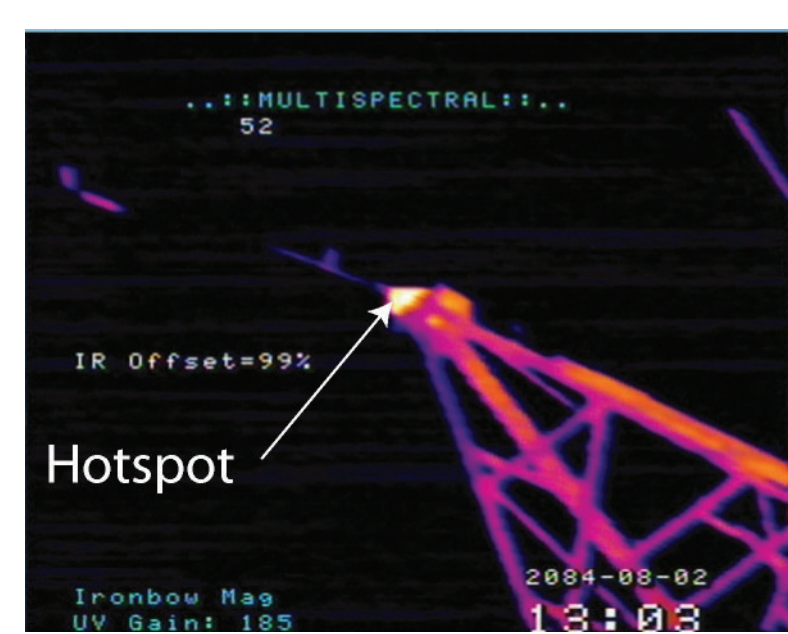
UV and Visual image from MultiCAM



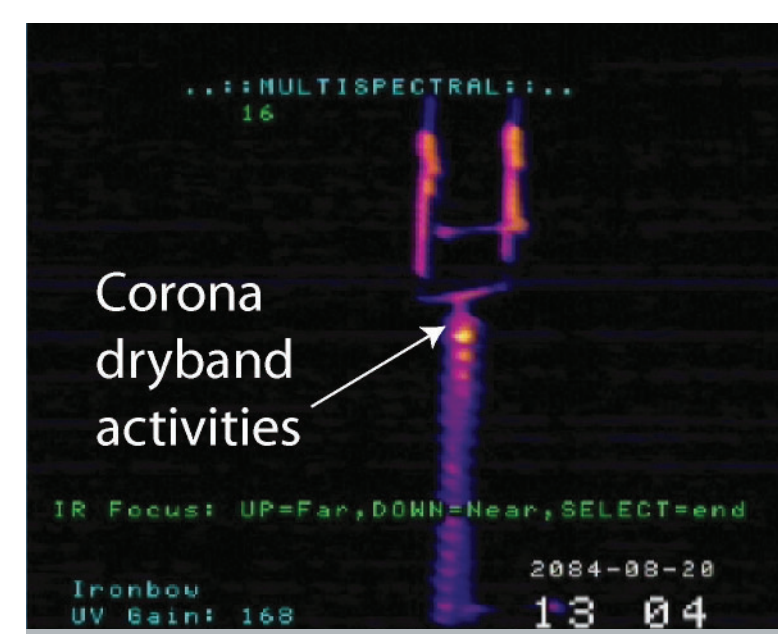
UV, IR and Visual image from MultiCAM



IR image from MultiCAM



False colour IR image from MultiCAM



False colour IR image from MultiCAM



CoroCAM I



CoroCAM II

## HISTORY

### CoroCAM I

- Night corona detection;
- Very portable;
- Video recordings.

## CoroCAM II

- Day/Night corona detection;
- Remote Control;
- Image processing;
- Research database of:
- Corona images
- Voltage and leakage currents
- Date/time and comments.



CoroCAM III



Coro05 MS2B 028

## CoroCAM III

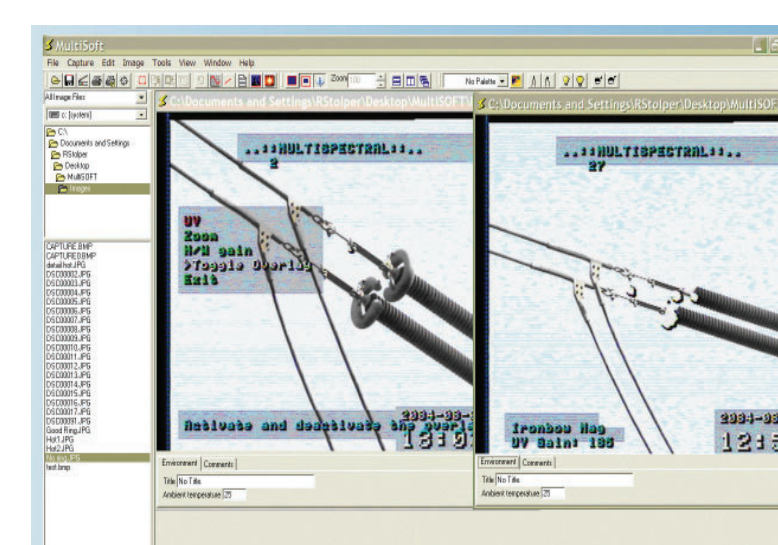
- Low light/Night corona detection;
- Very portable;
- Optional remote control and database.

## CoroCAM IV+ / CoroCAM 504

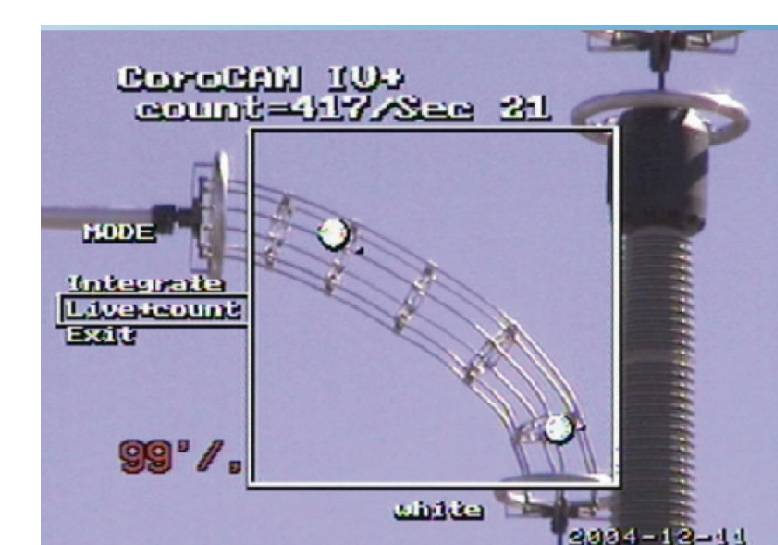
- All daylight conditions including full sunlight;
- Fully automated for changing light conditions;
- Switches between visible and corona image;
- Combined visible and corona video output;
- Portable and ergonomic.

## REPORTING TOOL: MultiSOFT

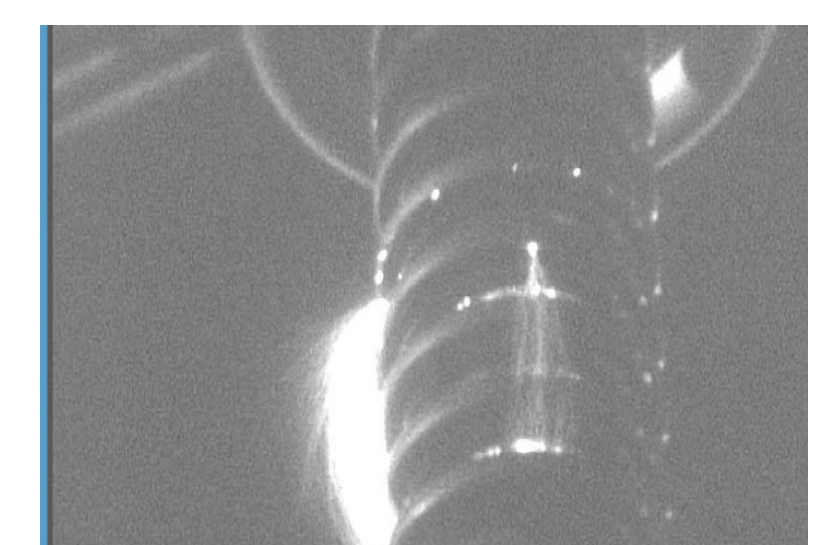
- Image handling software for grabbing, processing and retrieving recordings.



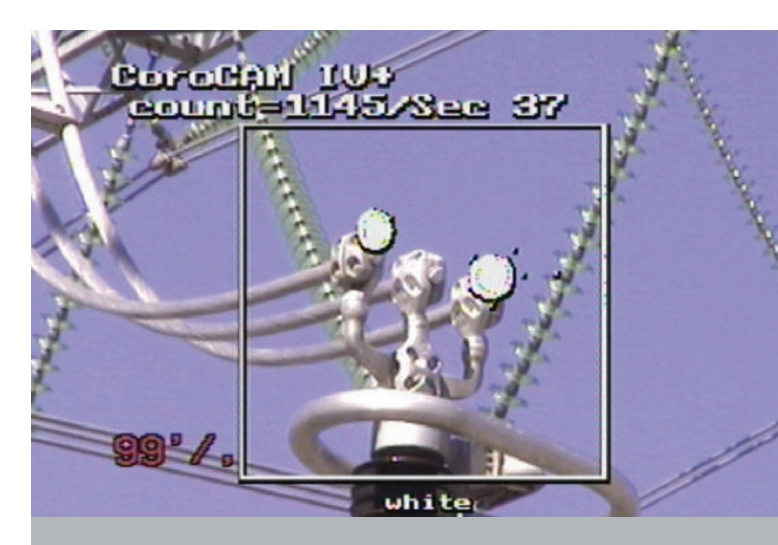
MultiSOFT Reporting tool



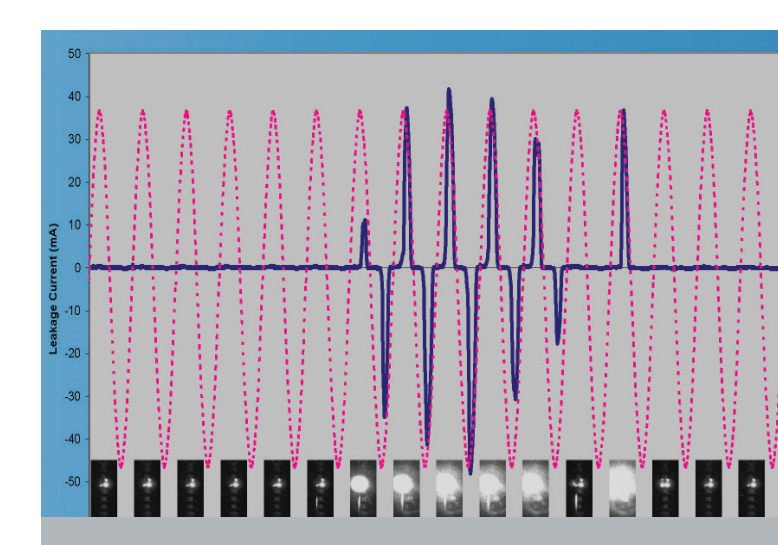
Recordings from CoroCAM IV+



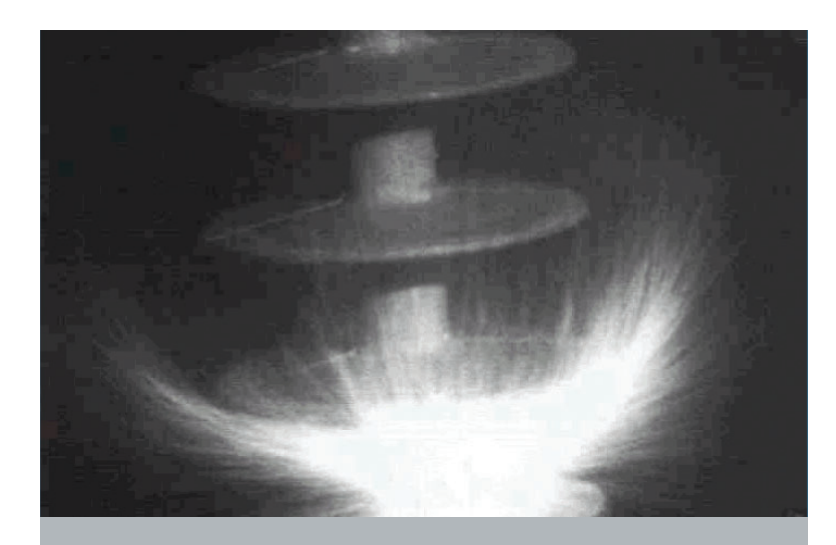
Surface discharges on a ceramic support structure



Recordings from CoroCAM IV+



Insulator: voltage and leakage current combined with its physical discharges



Punctured rubber shed

## R & D CONDUCTED FOR ESKOM