



SparkVIEW

Substation Hot-Spot
Monitoring System

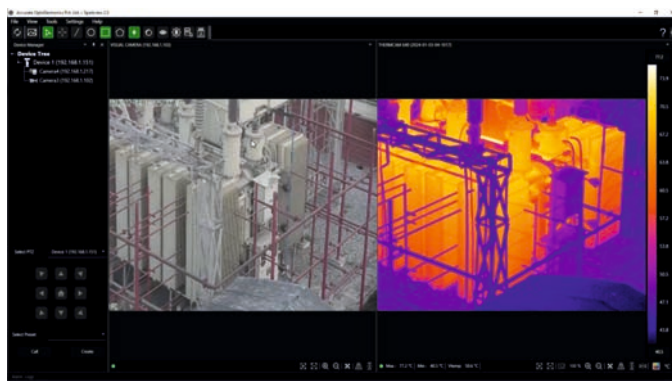
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SparkVIEW

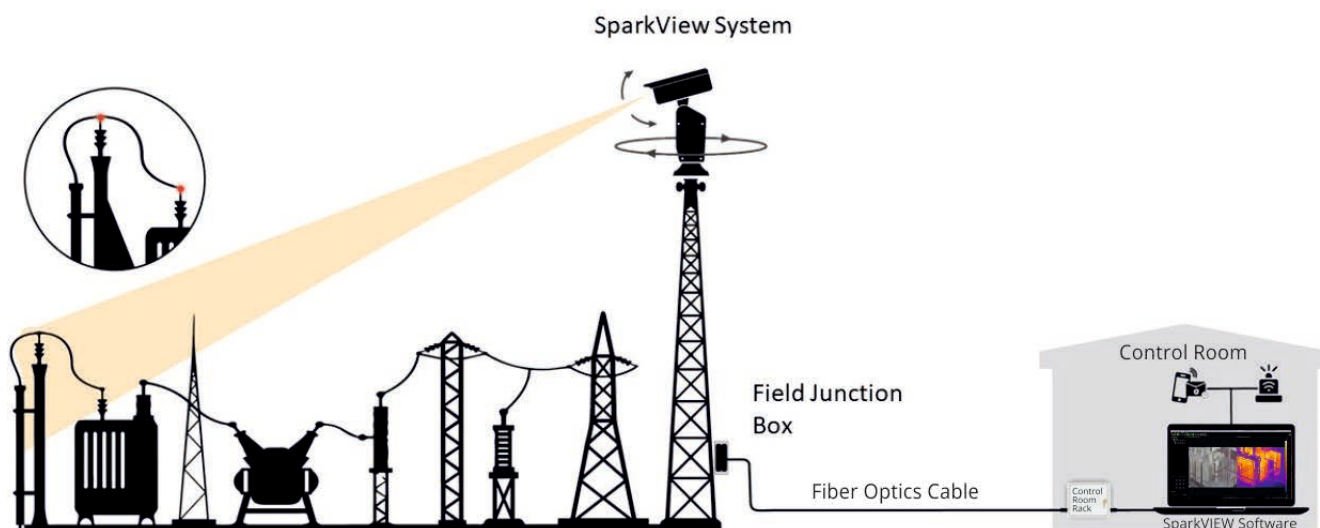
Tempsens's SparkVIEW: Substation Hot Spot Monitoring System is a high-resolution thermal imaging based automated hot-spot monitoring and reporting system for predictive maintenance. It detects hot-spots in switchyard or substation's several electrical equipment such as CT (Current Transformer), PT (Power Transformer), CB (Circuit Breakers), Surge or Lightning etc.

Key components of SparkVIEW

- PT-Drive with Enclosure
- Visual Camera with optical zoom
- Thermal Camera
- SparkVIEW Software



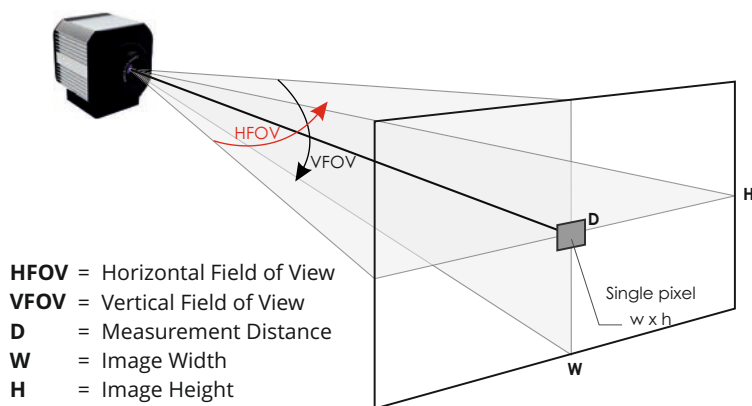
Camera Installation



1. The system will be installed on an approx. height of 2-3m above the highest component with proper electrical grounding.
2. This system works on Ethernet communication. The camera unit is connected to a gigabit switch with fiber optic output options.
3. The fiber optic cable is extended up to the control room and then to another gigabit switch with FO input and Ethernet output.
4. The output will be connected to PC/Server installed with SparkVIEW software.
5. Identify set points and create a scanning/Thermal reading schedule.

SparkVIEW

Lens Options in Thermal Camera



Measurement Field & Spot Size for ThermCAM-384

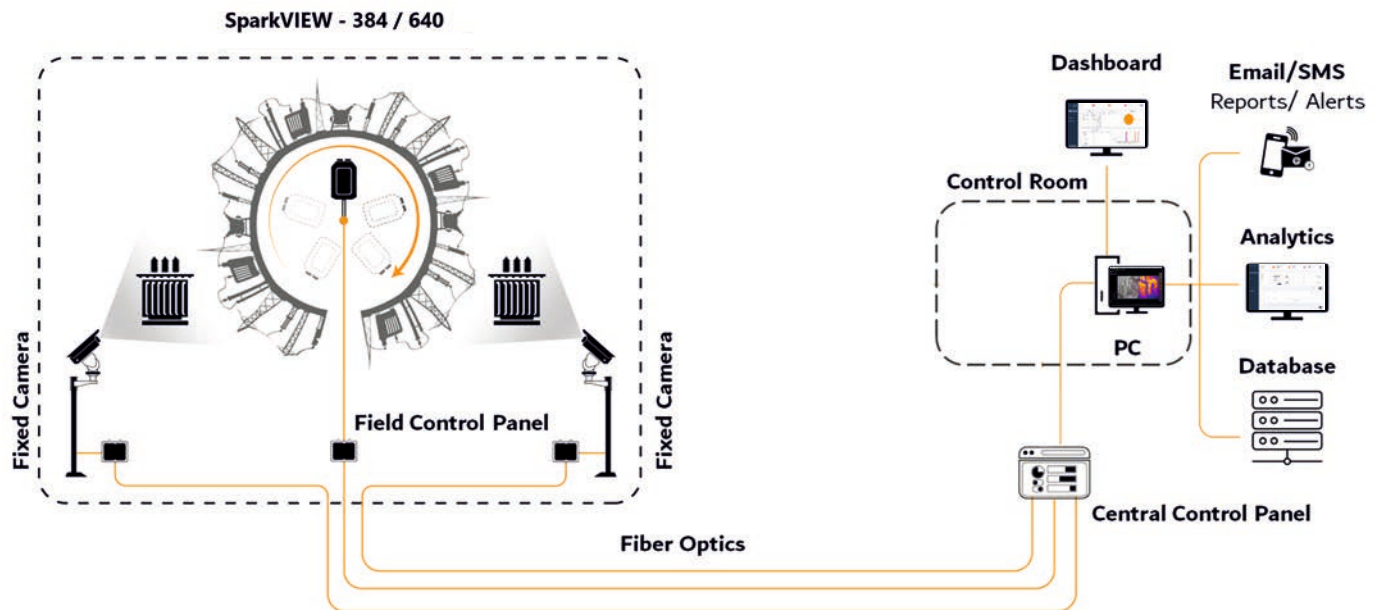
Distance of Object	Measurement Field (W x H)			
	50 mm lens (7.5° x 5.6°)	35 mm lens (10.6° x 8.6°)	25 mm lens (14.8° x 11.2°)	13 mm lens (28.1° x 21.3°)
5 m	0.6 m x 0.5 m (Spot size: 1.7 mm)	0.9 m x 0.7 m (Spot size: 2.5 mm)	1.3 m x 0.9 m (Spot size: 3.4 mm)	2.5 m x 1.8 m (Spot size: 6.5 mm)
10 m	1.3 m x 0.9 m (Spot size: 3.4 mm)	1.8 m x 1.5 m (Spot size: 5.0 mm)	2.6 m x 1.9 m (Spot size: 6.8 mm)	5.0 m x 3.7 m (Spot size: 13.0 mm)
30 m	3.9 m x 2.9 m (Spot size: 10.2 mm)	5.6 m x 4.5 m (Spot size: 15.0 mm)	7.8 m x 5.9 m (Spot size: 20.3 mm)	15.0 m x 11.2 m (Spot size: 39.1 mm)
50 m	6.5 m x 4.9 m (Spot size: 17.0 mm)	9.3 m x 7.5 m (Spot size: 25.1 mm)	12.9 m x 9.8 m (Spot size: 33.9mm)	25.0 m x 18.8 m (Spot size: 65.2 mm)

Measurement Field & Spot Size for ThermCAM-640

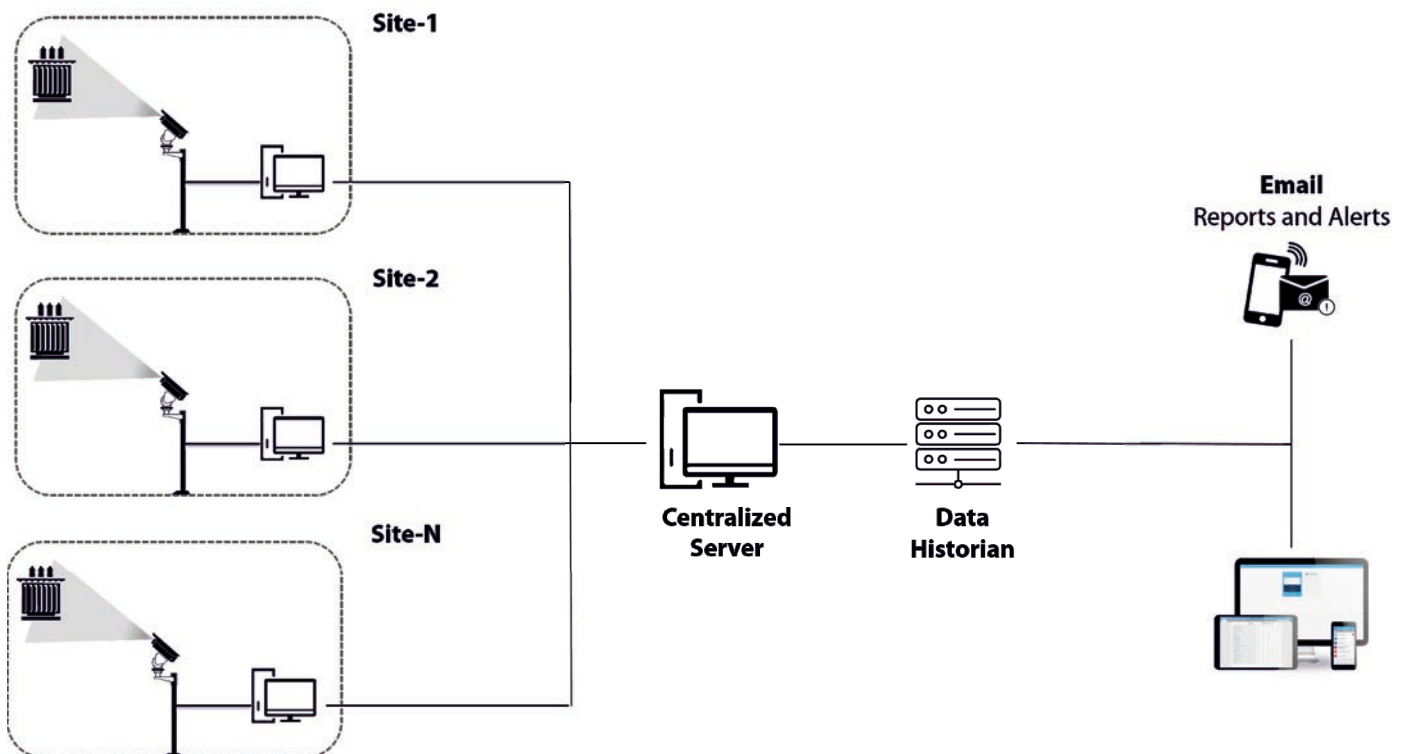
Distance of Object	Measurement Field (W x H)			
	75 mm lens (5.8° x 4.4°)	50 mm lens (8.8° x 6.6°)	35 mm lens (12.5° x 9.4°)	25 mm lens (17.3° x 13.1°)
10 m	1.01 m x 0.77 m (Spot size: 1.59 mm)	1.54 m x 1.15 m (Spot size: 2.40 mm)	2.19 m x 1.64 m (Spot size: 3.42 mm)	3.04 m x 2.29 m (Spot size: 4.77 mm)
30 m	3.04 m x 2.30 m (Spot size: 4.78 mm)	4.62 m x 3.46 m (Spot size: 7.21 mm)	6.57 m x 4.93 m (Spot size: 10.27 mm)	9.12 m x 6.88 m (Spot size: 14.31 mm)
50 m	5.07 m x 3.84 m (Spot size: 7.96 mm)	7.69 m x 5.76 m (Spot size: 12.02 mm)	10.95 m x 8.22 m (Spot size: 17.12 mm)	15.21 m x 11.48 m (Spot size: 23.85 mm)
70 m	7.092 m x 5.38 m (Spot size: 11.14 mm)	10.77 m x 8.07 m (Spot size: 16.82 mm)	15.33 m x 11.51 m (Spot size: 23.97 mm)	21.30 m x 16.07 m (Spot size: 33.38 mm)

SparkVIEW

Automated and Remote Monitoring System



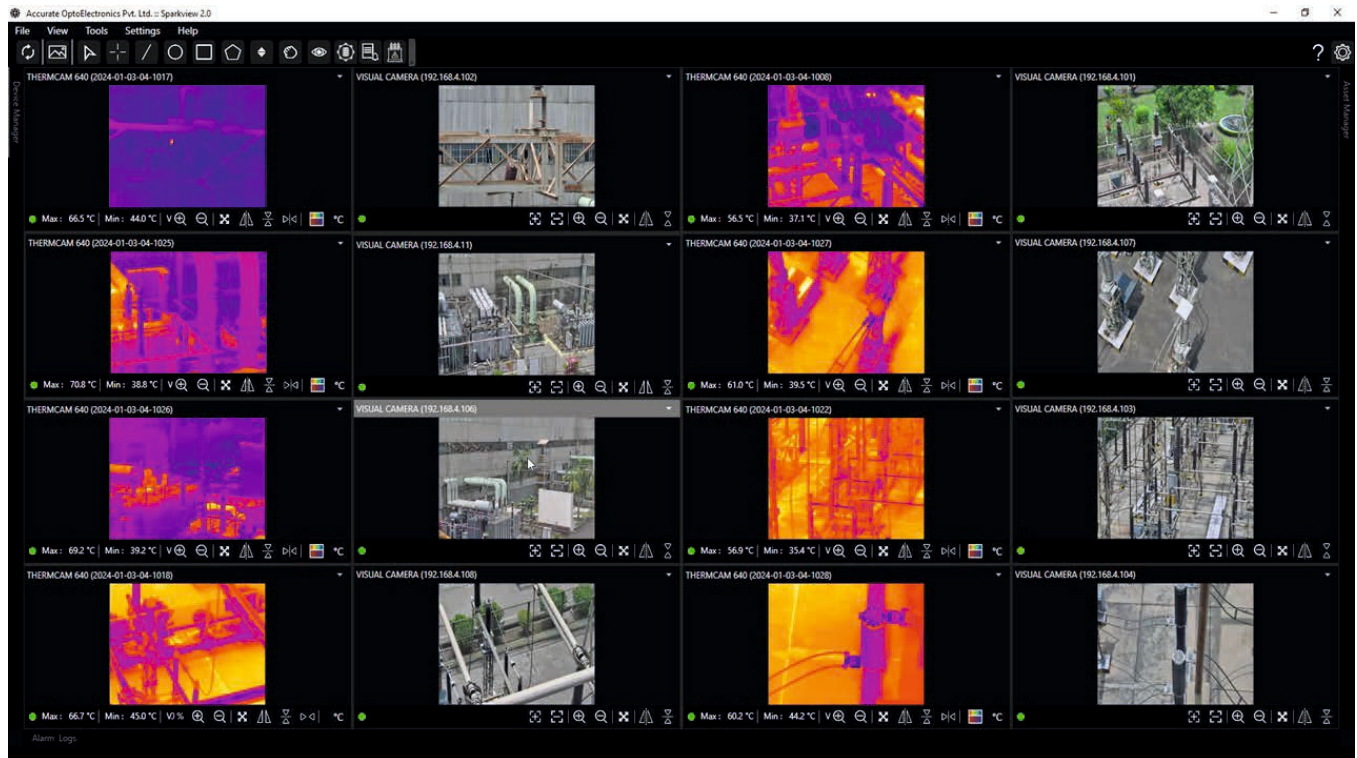
Centralized Server for Multiple Site Locations



SparkVIEW

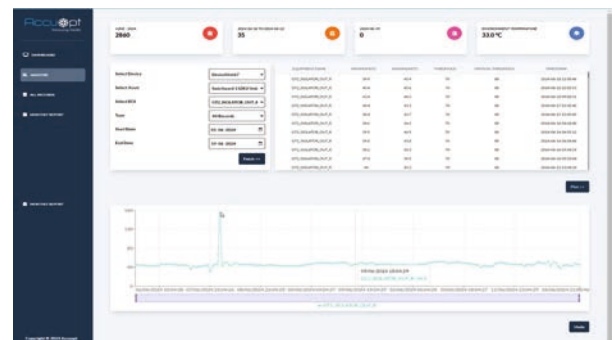
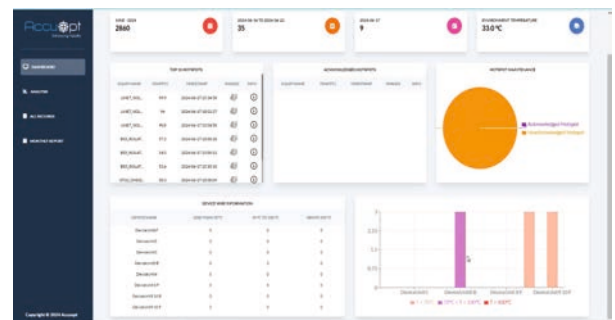
Software Configurations

SparkVIEW software comes with several features like PTZ control, alarm and alerts on hot-spot detection, charts and analytics features for data analysis



SparkVIEW Software Basic Features

1. **Auto Scanning Mode** : Periodically scans the temperature of set points.
2. **Manual Mode** : User can manually operate the camera function.
3. **Pan-Tilt Controller** : Control the Pan-tilt direction or Go to predefined presets
4. **ROIs** : Upto 50 ROIs to measure temperature of partial region of thermogram.
5. **Alarm Indication & Audio Alerts** : Audio & Display based alarm indication with junction name.
6. **Email/SMS Alerts** : Email/SMS alert, when temperature exceeds critical value.
7. **Reporting Software** : Displays the temperature data of Hotspot/All Records
8. **Analytics** : Displays the temperature data in trend chart
9. **Dashboard** : Interactive dashboard, highlighting data analytics
10. **Automated Reports** : Automatically generates shift wise and monthly reports and sends email to configured email ID.
11. **Excel Export** : Report data & Trend chart can be exported in excel for analysis purposes.



Location	Status	Temperature	Time
TH101	Normal	28.0	2024-01-03 10:17
TH102	Normal	35.0	2024-01-03 10:17
TH103	Normal	33.0	2024-01-03 10:17
TH104	Normal	32.1	2024-01-03 10:17
TH105	Normal	31.0	2024-01-03 10:17
TH106	Normal	30.5	2024-01-03 10:17
TH107	Normal	29.8	2024-01-03 10:17
TH108	Normal	29.2	2024-01-03 10:17
TH109	Normal	28.5	2024-01-03 10:17
TH110	Normal	27.8	2024-01-03 10:17
TH111	Normal	27.2	2024-01-03 10:17
TH112	Normal	26.5	2024-01-03 10:17
TH113	Normal	25.8	2024-01-03 10:17
TH114	Normal	25.2	2024-01-03 10:17
TH115	Normal	24.5	2024-01-03 10:17
TH116	Normal	23.8	2024-01-03 10:17
TH117	Normal	23.2	2024-01-03 10:17
TH118	Normal	22.5	2024-01-03 10:17
TH119	Normal	21.8	2024-01-03 10:17
TH120	Normal	21.2	2024-01-03 10:17

Technical Specifications

Thermal Camera	
Resolution	384 x 288, 640x480 Pixels
Detector	Un-cooled FPA detector
Pixel Pitch	17μm, 12μm
Wavelength	8-14 μm
Temperature Range	0-250°C/100-1000°C (Switchable via Software)
Emissivity Correction	0.01 to 1.0
Sensitivity/NETD	<50mK f1.0, 30Hz 300 K
Accuracy	±2°C or ±2% (whichever is greater)
Lens Options	25mm, 35mm, 50mm, 75mm
Visual Camera	
Resolution	1920 x 1080 Pixels (2MP), 2688 x 1520 Pixels (4MP), 3840 x 2160 (8MP)
Image Sensor	1/1.8"CMOS, 1/2.8"CMOS
Zoom	20X, 40X optical zoom
Pan and Tilt Enclosure	
Number of Presets	Upto128
Rotation Range (Pan & Tilt)	PAN 360° continuous rotation. Tilt 125°(-85°~+40°) / 128°(-88°~+40°)
Rotation Speed (Pan & Tilt)	PAN 0.2°~80° per sec. / 0.06°~30° per sec. Tilt 0.2°~40° per sec. / 0.06°~ 20° per sec.
Preset Speed	PAN 80° per sec. / 30° per sec. Tilt 20° per sec. / 40° per sec.
Communication	Ethernet
Repeatability (Preset Accuracy)	≤0.05°
Output/Interface	
For Video	Ethernet
For PTZ system	RS-485
Protocol	PELCO/DD, IEC 61850
Power	
Power consumption (Typical-Maximum)	Neutral product consumption≤50W; With extra freezing-proof consumption ≤100W
Input Voltage/Frequency	24V AC/50 Hz (220VAC to 24 VAC conversion is done in the Junction Box)
Environmental / Mechanical Specifications	
Ambient Temperature	-30°C~+60°C
Storage Temperature	-30°C~+60°C
Operating /Storage Humidity	0~95% non-condensation
EMI/EMC Compliance	IEC 61000-4-4, IEC 61000-4-2, IEC 61000-4-8
Protection Class	IP67
Weight	<25kg (including Thermal+Visual camera & cable)
Enclosure Material	Aluminum



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