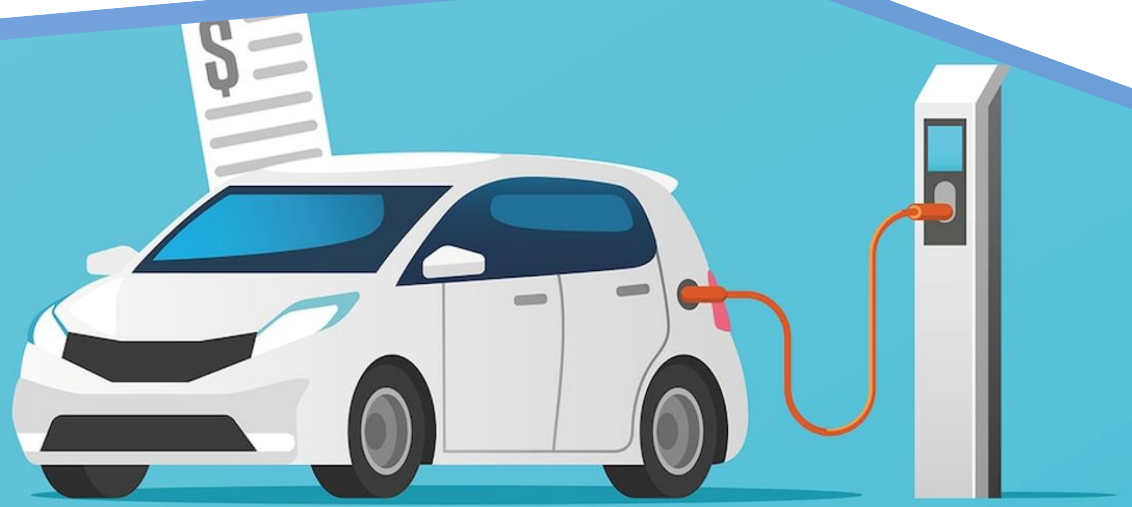
Thermal Solution for

ELECTRIC VEHICLE CHARGING STATION

FOCUSED ON YOUR SUCCESS

HIKVISION®

/01 Background



Industry Background

At present, the EV industry is in the process of developing intelligently.

Policy:

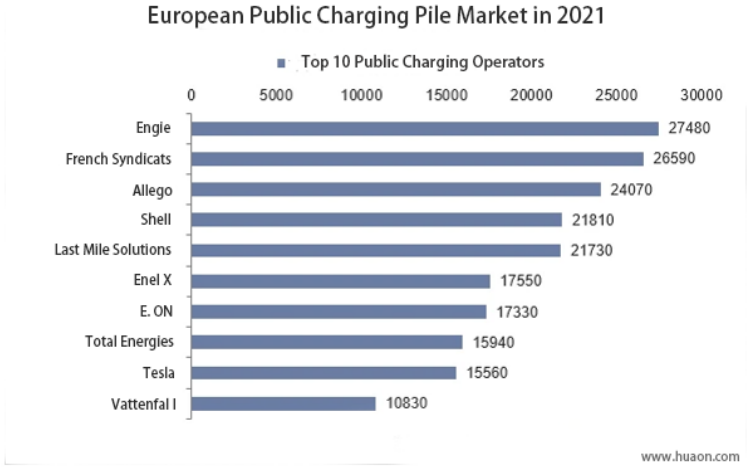
Europe will gradually stop the sales of fuel vehicles and switch to electric vehicles from 2025 to 2050; new Europe regulations stipulate that parking lots with more than 20 parking spaces must be equipped with a certain proportion of electric charging piles; countries allocate funds to support corresponding charging pile incentive policies.

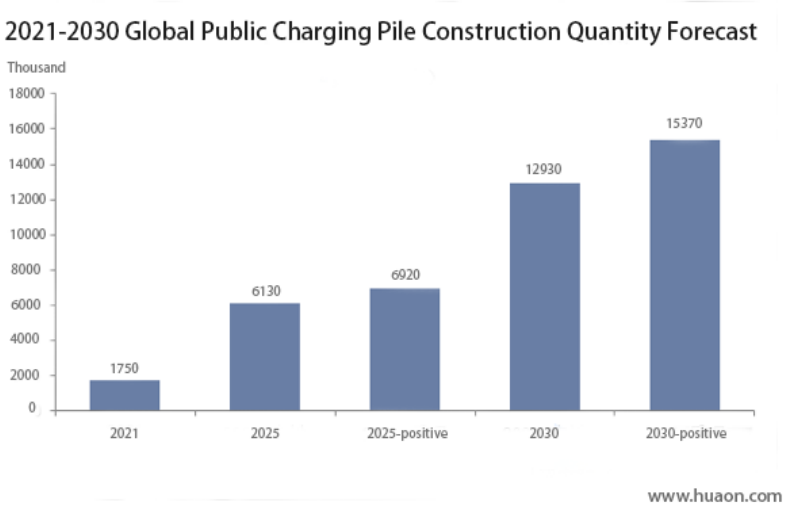
Trends and markets:

By the end of 2020, the 27 EU countries had 2.24 million electric vehicles and 226,000 public charging piles (89% were slow charging piles).

According to the vision of the European Parliament: By 2025, the number of electric vehicles is expected to reach six times (11.2 million), and the number of public charging piles will reach one million.

And there will be more than 6 million public charging piles in the world by 2025





Industry Background

The rapid development has also brought many problems.

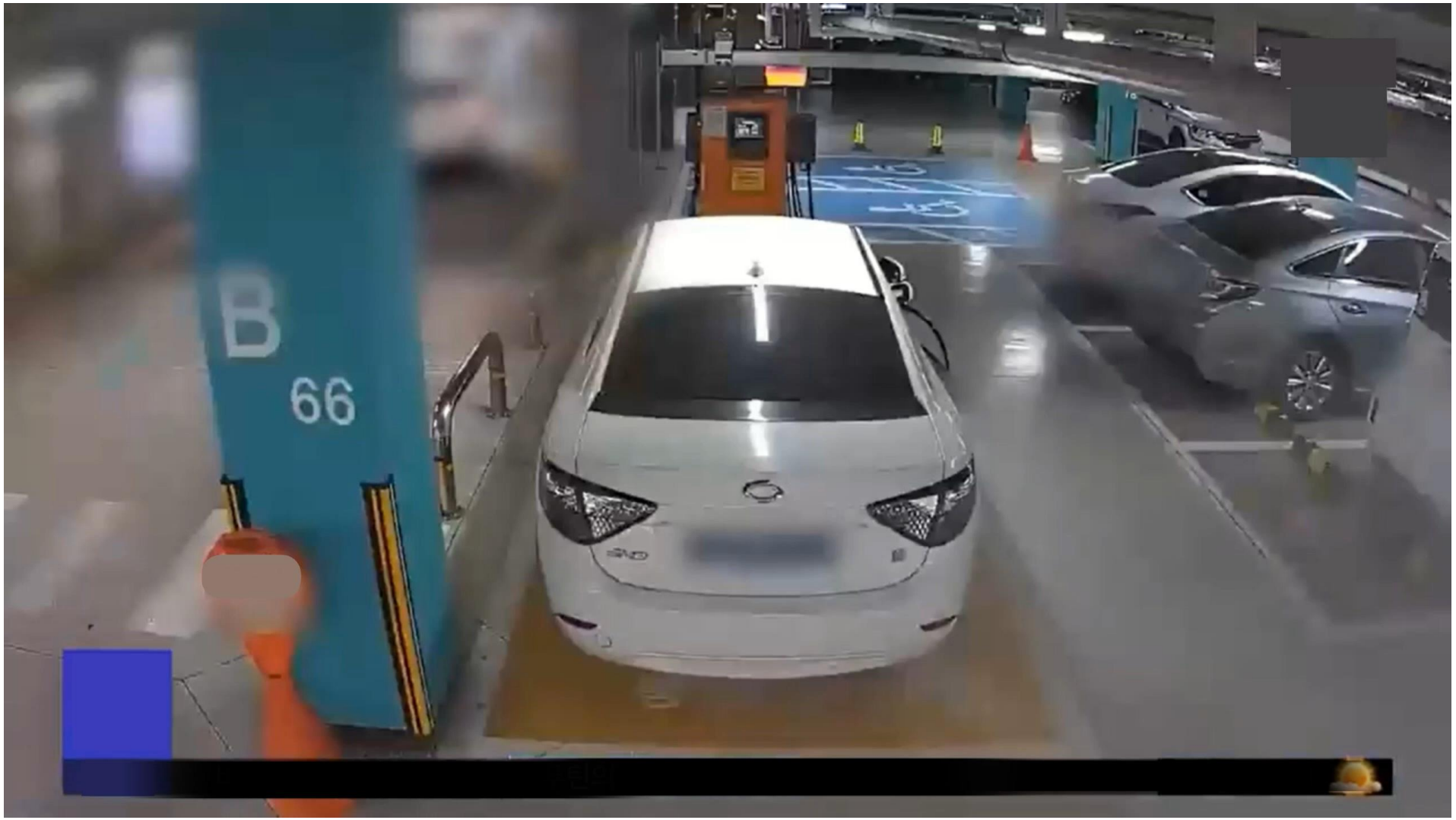
Challenges:

- 80% of EV fires occur during the charging process, once the EV is burned, the toxic smoke will spread rapidly upwards, which is very easy to cause casualties in the area, and even a group of casualties
- Fire risk exists in all types of electric vehicle charging, including car, bus, truck, e-scooter, electric two/three-wheeler, etc.

Necessity:

- Due to public concerns caused by policy blessings and social incidents such as electric vehicle fires, the fire prevention of charging station has become a demand that parking lot management has to consider.
- And due to the characteristics of charging piles gathered, the fire will spread rapidly and cause huge economic losses and personal dangers.
- **At present, thermal solution can detect fire as quickly as possible, and is the best solution to prevent fire from spreading.**

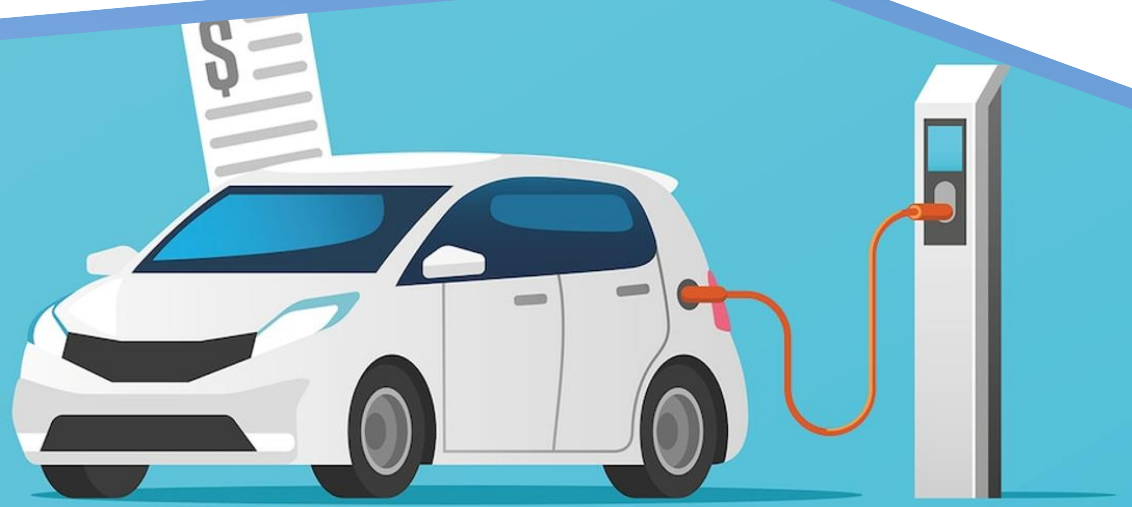
Industry Background



/02

Solution

- Thermal Value
- Solution
- Performance
- Application



Thermal Core Value

		Cost	Advantage	Disadvantage
	**Smoke Detector**	Low	-	Dust will gather in the detection chamber and cause false alarms, wind might take away smoke
	**Heat Detector**	Low	Reliable	Distance is too short, usually up to 10m, detection time is too long when roof is high
	**Linear Heat Detection Cable**	Medium	Robust, high accuracy	Application limited to machinery, not waste pipe temperature
	**Flame Detector**	High	Robust, high accuracy	Coverage up to 25m, can not cover long distance
	**Thermal Camera**	High	High Accuracy, Wide coverage, Long Distance, Visible alarm, Flexible rule, early warning. Video evidence. Optical video to check if human inspection is correctly carried out	-

Advantages from Hikvision's Thermal Camera

Early-warning

- In Hikvision's thermal solution, thermal imaging camera can monitor temperature change and perform fire detection timely before the fire spreads. And by thermal imaging, it's also easier to locate heat spots quickly and the alarm will be triggered to notify staff in time to minimize the losses.

Advantages from Hikvision's Thermal Camera

Smart

Smoke detection

Fire detection

Fire Detection and **smoke detection**.

- Smoke detection can quickly detect the smoke that occurs when the battery catches fire.
- Fire detection can detect flames emitting from the underside of the vehicle or at the battery vents.

Reduce False Alarm

Forklift filter

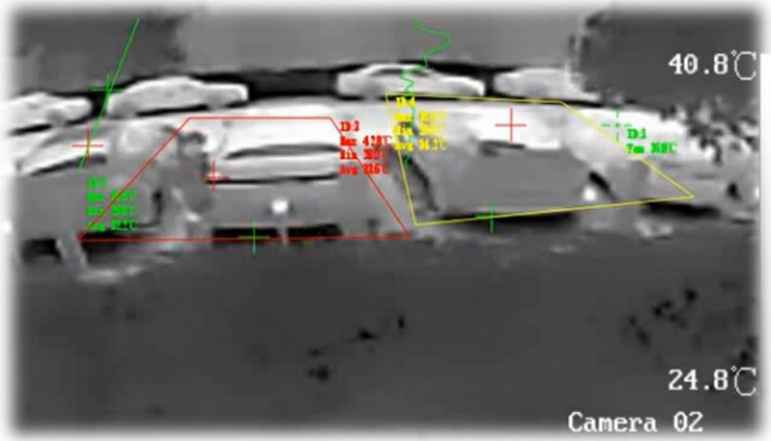
Sun-reflection filter

Sun-reflection filter and **forklift filter**

Reduce false alarm generated by the environment.

Advantages from Hikvision's Thermal Camera

High Accuracy



The accuracy is highly ensured, reaching max (±2°C or ±2%, -20 to 550°C) for thermography product and (±8°C, -20 to 150°C) for security product. Temperature difference fluctuation is small, and stability is satisfactory.

Flexible Rules

Support accurate temperature measurement rules such as points, lines, and frames. Flexible rules meet the requirement of thermography of key areas and special points, which hugely increases effectiveness. With 10 areas, 10 points and 1 line.

Solution

Fire Early Warning

**The outdoor environment is complex, it is recommended to use the solution indoors*

Bullet or turret covers multiple charging piles, cables, and front of the vehicles to measure temperature for rapid fire prevention.

Long focal length bullet performs overall fire situation detection while daily monitoring.

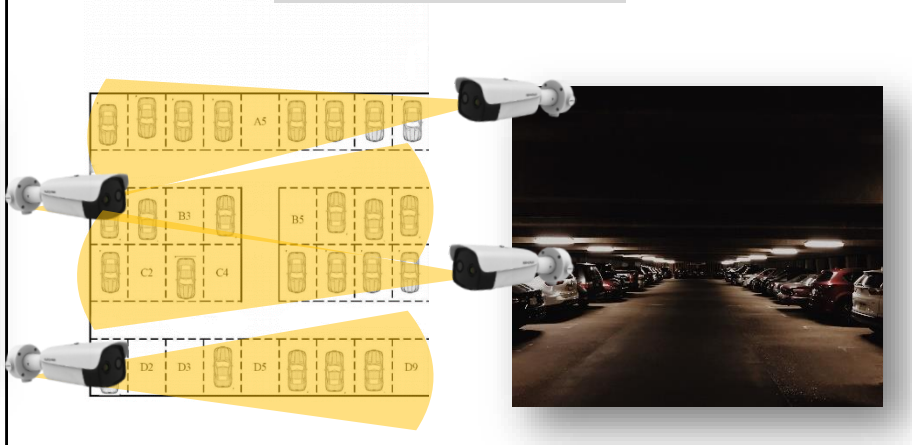
STEP 1

temperature measurement

Thermal bullet or turret near the charging pile to cover the front of 2 or 3 vehicles, charging piles and charging lines to detect abnormal temperature and fire during the charging.

STEP 2

overall monitoring



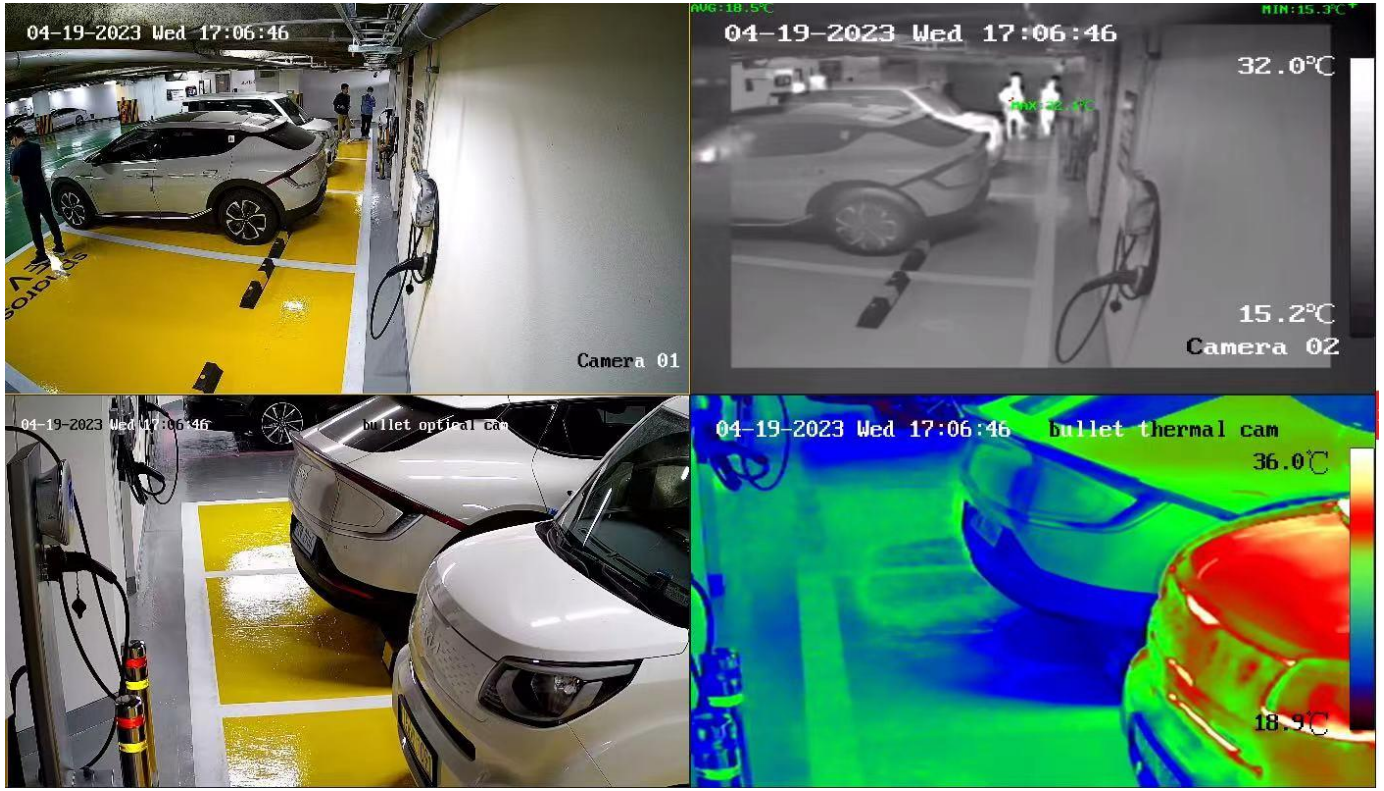
Several long focal length bullets perform overall fire situation detection while daily monitoring. When an area with fire is found, The bullet can confirm the overall situation of the charging station.

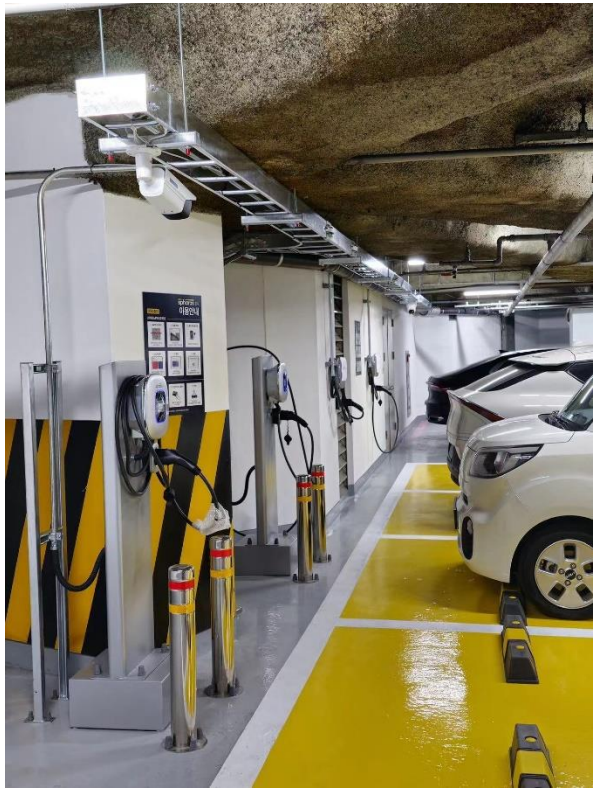
Recommended alarm temperature settings: **Pre-alarm threshold: 70°C** **Alarm threshold: 100°C**

**For reference only, please refer to the actual situation for the specific temperature setting*

Recommended detection target for temperature measurement: **Charging piles, cables, and front of the vehicles**

Performance

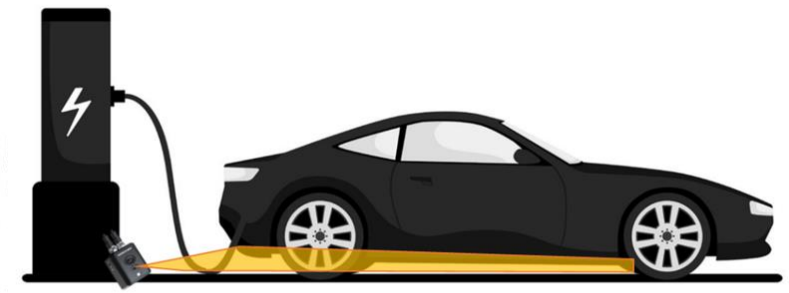




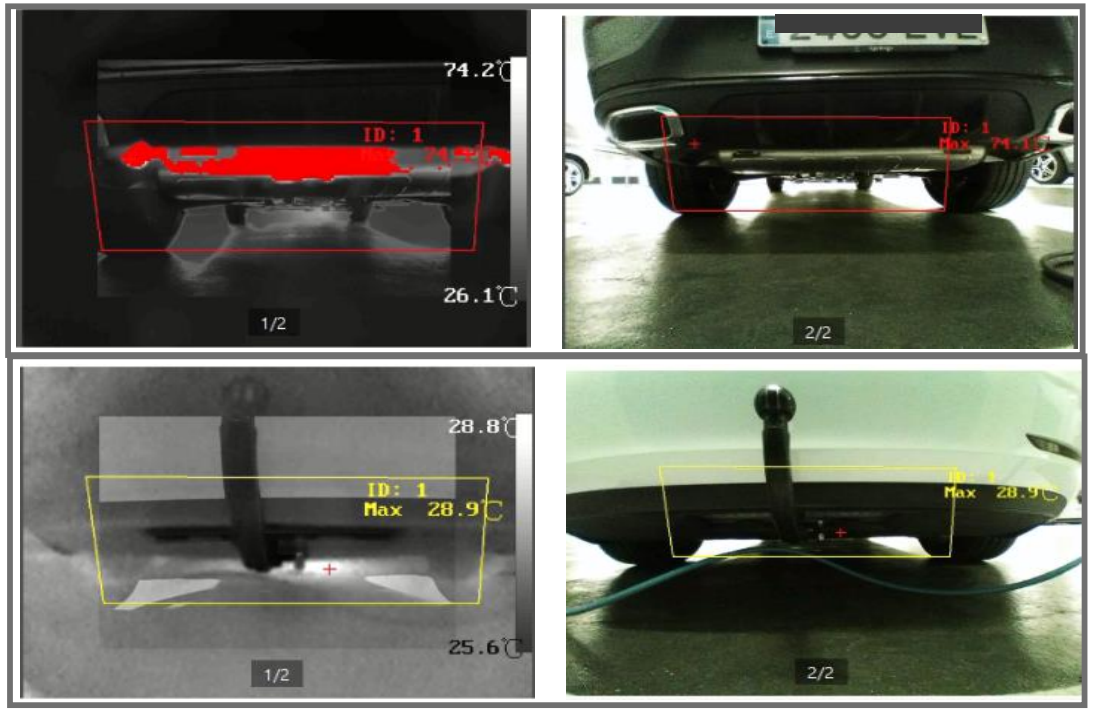
Solution

Battery Temperature Measurement

- Bi-spectrum camera (thermal + visible spectrum) of small dimensions and high performance.
- Located at the foot of the charger and oriented towards the vehicle
- Monitoring of the vehicle's underbody where the batteries are located



Cube Camera



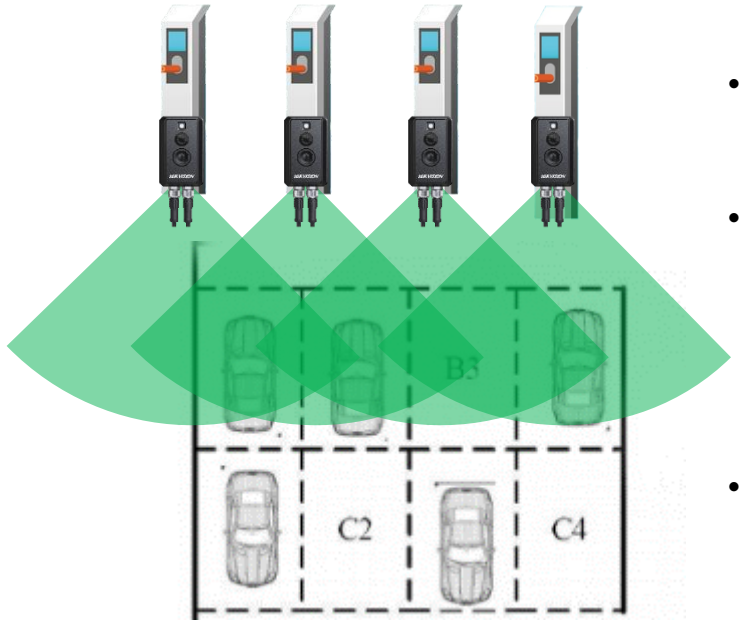
Recommended alarm temperature settings: **Pre-alarm threshold: 100°C** **Alarm threshold: 120 °C**

**For reference only, please refer to the actual situation for the specific temperature setting*

Recommended detection target for temperature measurement: **Vehicle's underbody where the batteries are located**

Solution

Integrate with charging pile



- The cube camera has wide view.
- It can be integrated inside the charging pile to monitor the condition of each vehicle.
- This solution is not limited by the installation environment.

Recommended alarm temperature settings:

Pre-alarm threshold: 70°C **Alarm threshold: 100 °C**

**For reference only, please refer to the actual situation for the specific temperature setting*

Recommended detection target for temperature measurement:

Vehicle's underbody where the batteries are located

Solution

Charging status detection *In the plan*

- Check if the vehicle is charging after the parking space is occupied.
- If the car does not start charging within the stipulated time, a fine will be prompted.

developing in AI open platform

- Check **if the vehicle is an electric vehicle** after the parking space is occupied.

ANPR needs to cooperate with the platform to realize

- Check the staying time of the car in the parking space. If the car stays longer than the setting time, the message will be transmitted to the management platform

Application

Indoor Charging Station

Shopping Mall Parking Lot

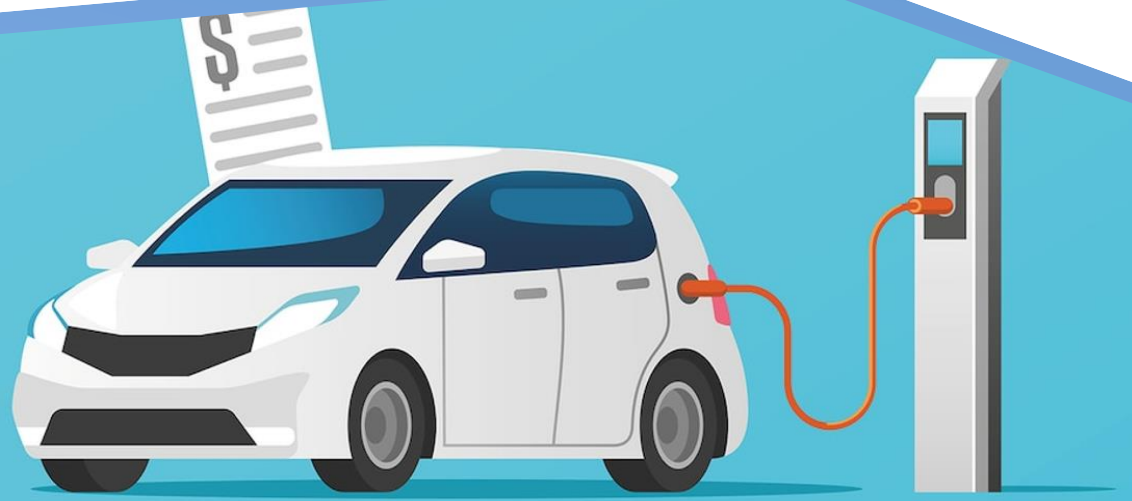
Underground Parking Lot

Public Vehicle Charging Station

/03

Product Showcase

- Product Showcase
- Topology



Product Showcase

Thermal & Optical
Bi-spectrum Turret Camera

- Resolution: 256 × 192@25 fps
- Focal length: 2/3/7 mm
- Temperature Range: -20~550℃
- Temperature Accuracy: ±2℃/±2%
- Temperature Measurement
  (Object: 0.2 × 0.2 m):
  7 m/11.7 m/23.3m

DS-2TD1228T-2/QA
DS-2TD1228T-3/QA
DS-2TD1228T-7/QA

Thermal & Optical
Bi-spectrum Cube Camera

- Resolution: 160 × 120@25 fps
- Focal length: 2/3 mm
- FOV (H x V): 90° × 66.4 / 50° × 37.2°
- Temperature Range: -20~550℃
- Temperature Accuracy: ±2℃/±2%

DS-2TD3017T-2/V
DS-2TD3017T-3/V

Product Showcase

Thermal & Optical
Bi-spectrum Bullet Camera

- Resolution: 256 × 192@25 fps
- Focal length: 3/7/10 mm
- Temperature Range: -20~550℃
- Temperature Accuracy: ±2℃/±2%
- Temperature Measurement
  (Object: 0.2 × 0.2 m):
  11.7 m/23.3 m/32.3 m

DS-2TD2628T-3/QA
DS-2TD2628T-7/QA
DS-2TD2628T-10/QA

Thermal & Optical
Bi-spectrum Bullet Camera

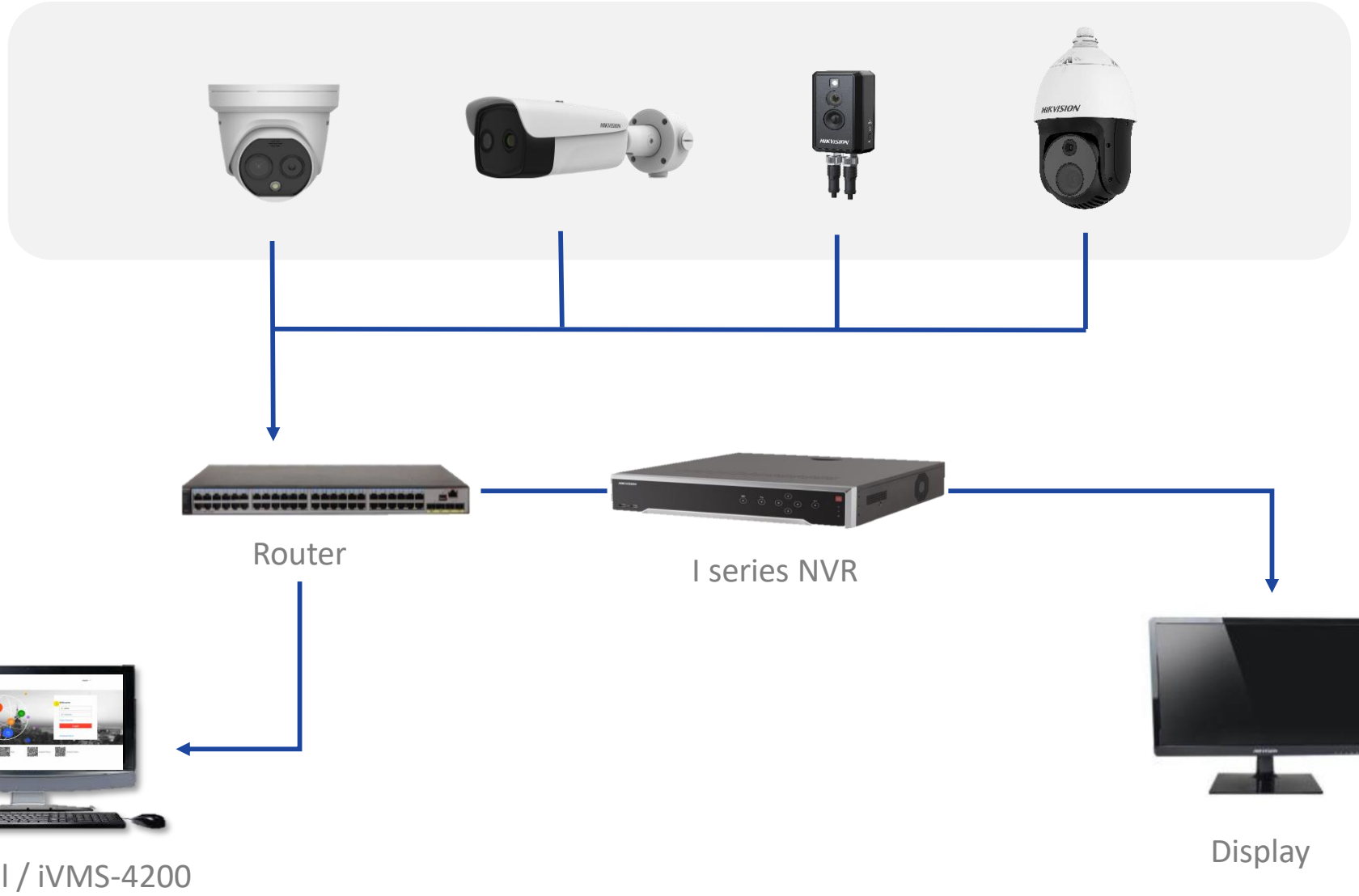
- Resolution: 384 × 288@25 fps
- Focal length: 7/10/15 mm
- Temperature Range: -20~550℃
- Temperature Accuracy: ±2℃/±2%
- Temperature Measurement
  (Object: 0.2 × 0.2 m):
  16.5 m/23.5 m/35.3 m

DS-2TD2637T-7/QY
DS-2TD2637T-10/QY
DS-2TD2637T-15/QY

Range

	Temperature Measurement (Object: 0.2 × 0.2 m)	Fire Detection (Object: 0.2 × 0.2 m)
DS-2TD1228T-2/QA	7 m	25.2 m
DS-2TD1228T-3/QA DS-2TD2628T-3/QA	11.7 m	43.2 m
DS-2TD1228T-7/QA DS-2TD2628T-7/QA	23.3 m	82.8 m
DS-2TD2628T-10/QA	32.3 m	161.7 m
DS-2TD2637T-7/QY	15.2 m	65 m
DS-2TD2637T-10/QY	23 m	97 m
DS-2TD2637T-15/QY	35.2 m	150 m
DS-2TD3017T-2/V	6 m	
DS-2TD3017T-3/V	3 m	

Network Topology



THANKS

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