Oil & Gas Solution

Safe Production/Efficient Operation

UK & IRELAND

OIL & GAS SOLUTIONS
UK & IRELAND

CONTENTS

OVERVIEW

CHALLENGE

In the oil and gas industry accidents tend to happen because of operational error, equipment failure or crime, which can cause loss of lives and problems for the economy.

Khuzestan, Iran May 6th, 2019
5 injured as fire engulfs two Iranian pipelines - the blaze occurred when the pipeline was under repair and a truck crashed into the pipeline spilling oil.
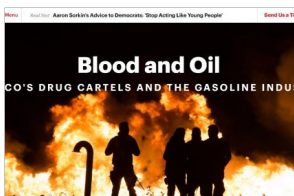

Niamey, Niger May 6th, 2019
55 dead 36 injured in oil tanker explosion - the truck crossed over the railway tracks as it left town and was hit by a train.

Sharon Springs, Kan. Dec 12th, 2016
5 injured (2 critically) after oil field explosion - workers were checking the gas when something caused the gas to leak and a spark ignited the gas.

Hidalgo, Mexico Jan 19th , 2019
89 dead in Mexico pipeline fire caused by fuel theft - the pipeline burst as a result of tampering by fuel thieves. The practice has cost the government billions of dollars over the years, with an estimated $7.4 billion in stolen fuel since 2016.
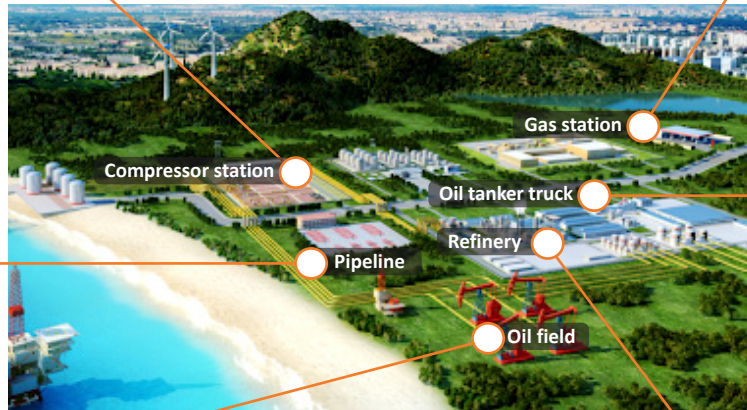
SOLUTION OVERVIEW

Personnel Safety

Vehicle Management

Equipment Protection

Sales Promotions

Perimeter protection

Personnel management

All-weather protection

Off-grid system

Drone inspection

Intrusion detection

Perimeter protection

Personnel management

Compressor station

Pipeline

Gas station

Oil tanker truck

Refinery

Oil field

Automatic refueling

Targeted Advertising

Optimised operation

Driver status monitoring

E-fence

Personnel management

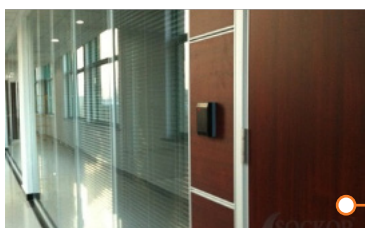Equipment inspection

Stable environment

Vehicle management
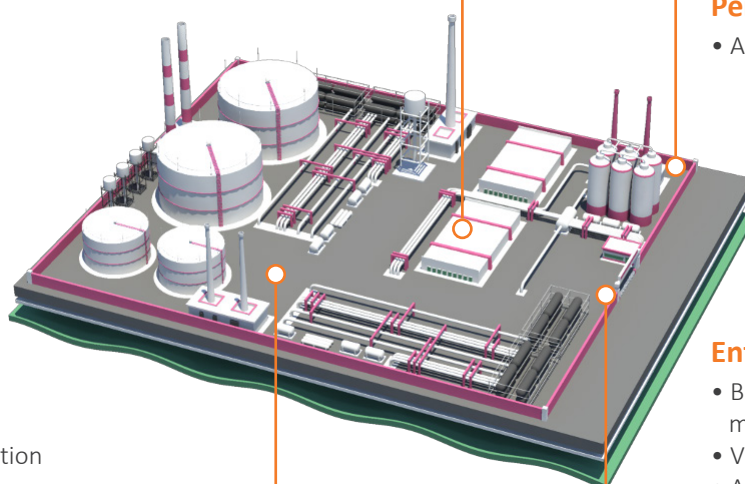
PERSONNEL MANAGEMENT

Workspace
- Access control
- Time attendance
- Lift control

Perimeter
- AI protection

Production Area
- Auto-tracking
- Personnel allocation
- High risk behaviour detection
- PPE detection

Entrance
- Body temperature monitoring
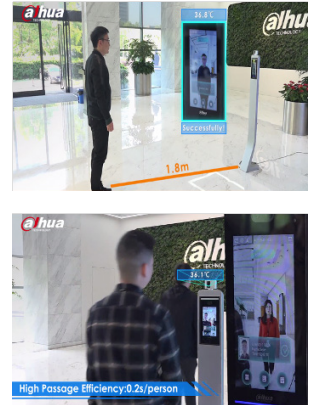- Visitor management
- Access control

TMAC

Process

Entrance Area

Temperature Measurement Area

Low Flow

Traditional Handheld Thermometer

Value

Contactless

Non-contact access control temperature monitoring distance range: 0.3m - 0.8m

High Accuracy

±0.3°C (with blackbody)

Quick Response

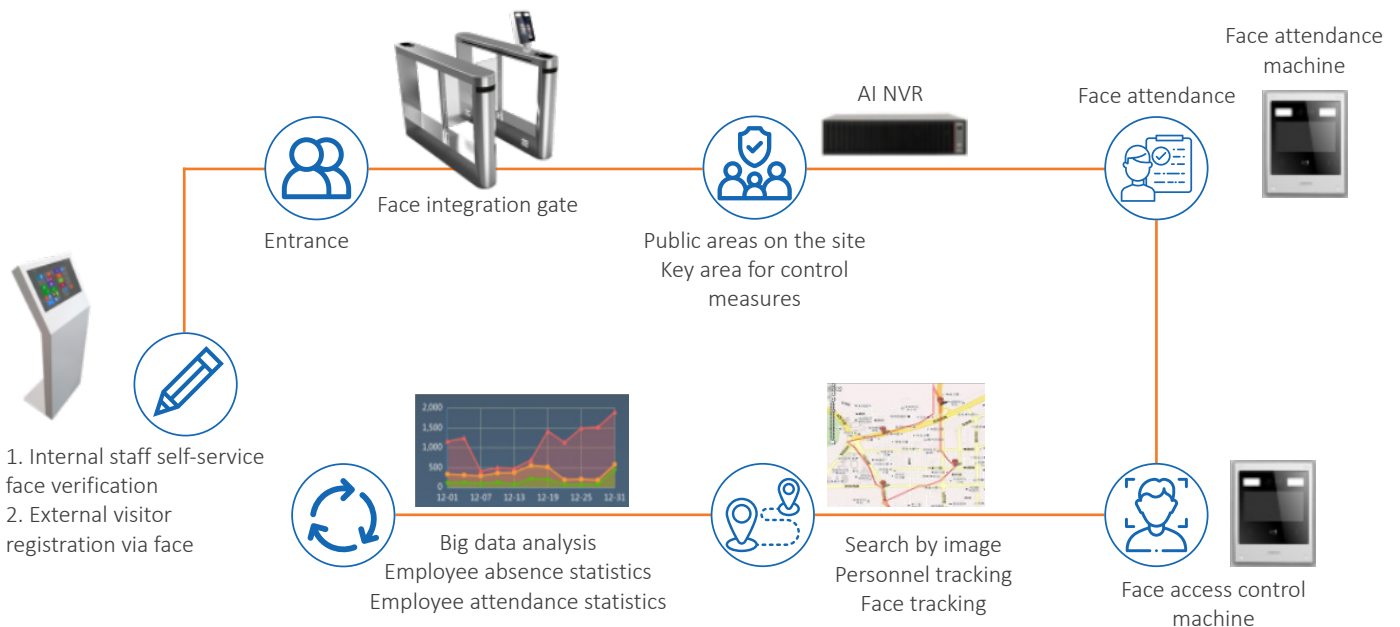Face recognition time: 0.2s Temperature monitoring time: 0.2s

Easy Installation

Easy to install and deploy

Good Compatibility

TMAC terminal can be integrated with third-party devices

VISITOR MANAGEMENT

Face integration gate

Entrance

AI NVR

Face attendance

Face attendance machine

Public areas on the site
Key area for control measures

1. Internal staff self-service face verification
2. External visitor registration via face

Big data analysis
Employee absence statistics
Employee attendance statistics

Search by image
Personnel tracking
Face tracking

Face access control machine

Problem

- Cannot search manual check-in records
- Hard to track visitors
- Cannot enter if forgetten ID cards
- Easy to copy cards

Values

- Doors open without needing a reception
- More secure than cards and fingerprints
- Eliminate counterfeiting

ACCESS CONTROL

Managing a wide variety of different access permissions.

01

Personnel Authority

Personnel can only operate in their own designated area and cannot enter restricted areas.

02

Lifts Control

Visitors are only able to exit lift on the floor of the person they are visiting and door won't open to other floors.

03

Locating Employees

Knowing where employees are at all times is critical. If an accident occurs, plant managers must know who was in the area at the time of the incident.

AI PERIMETER

Eliminate False Alarms From:

< 1 %   < 2 %   > 9 3 %

False Positives Rate

False Negatives Rate

Human Detection Accuracy Rate

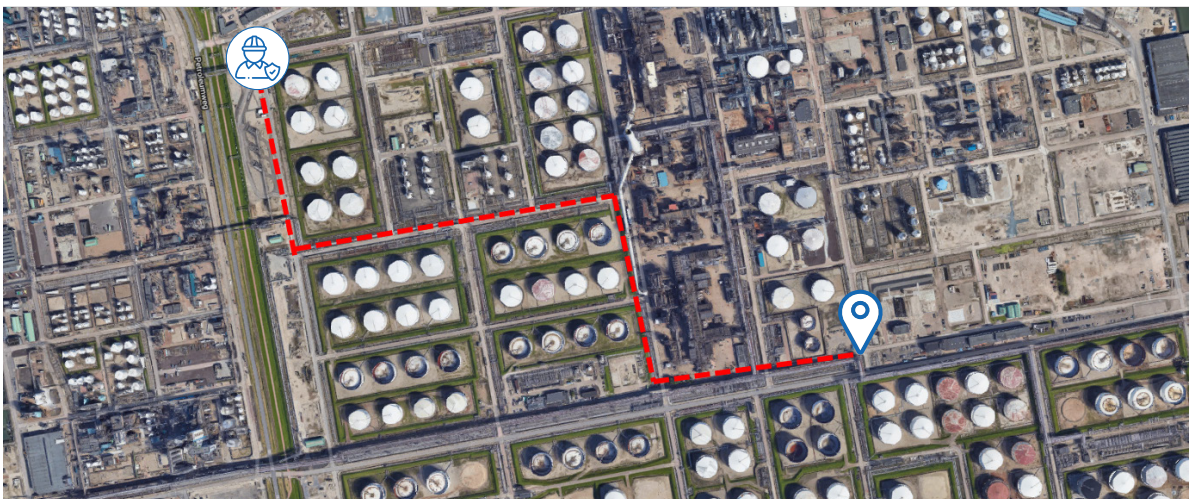Vehicle Detection Accuracy Rate

AUTO-TRACKING

Problems

- Operational works are poorly monitored
- Workers enter high risky area around the pumping unit without notice
- Oil theft in low light conditions

Values

- Auto-tracking when people are detected
- Alarm when crossing over a boundary
- Starlight cameras guarantee perfect images at night
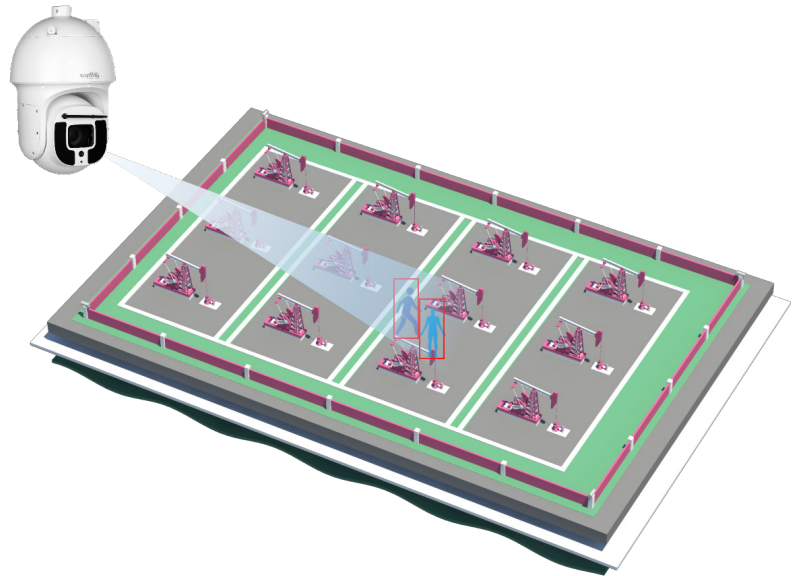
TRACK PERSONNEL

Blacklist/Whitelist/Stranger

One person is in charge of a certain area. If the person appears in another area, an alarm will go off to remind them.

Track Personnel

Track a person's route with the help of their personnel information and stored facial image.

HIGH RISK BEHAVIOUR

Smoking Detection
Smoking will easily cause fire so it should be strictly prohibited.

Call Detection
Making telephone calls will also trigger alarm.

Operation Control
The operation of the staff will be monitored to ensure that they follow standards.

Thermal Camera

PPE DETECTION

- Wearing proper PPE such as hardhats and long sleeve uniforms is required.

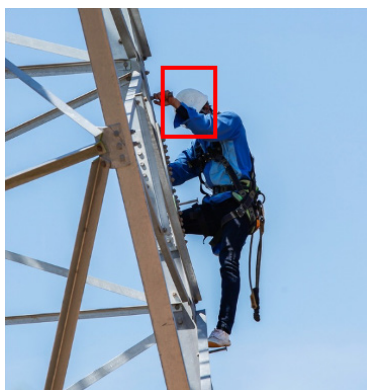- You can also track historic recordings for PPE violations.

Hard Hat Detection

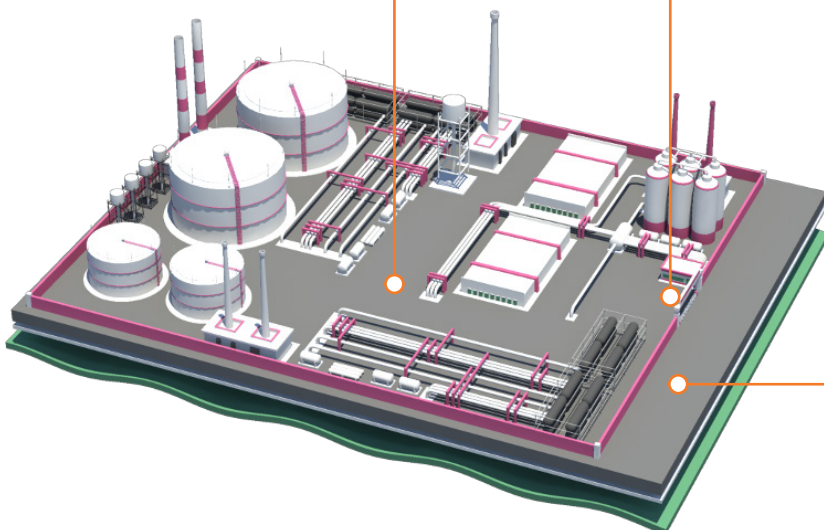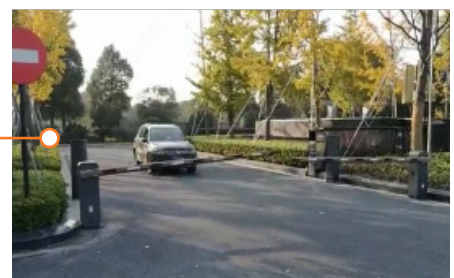**Long-sleeve Detection**

Historic Tracking

VEHICLE MANAGEMENT

Factory Road
• Blacklist/whitelist
• Vehicle tracking
• Speeding reminder
• Illegal parking

Entrance
• ANPR camera
• UVSS system

Oil Tanker
• Road safety
• Unsafe driving detection
• Prevent oil theft

AI ANPR

Recognition Result   **Vehicle Snapshot**   **Vehicle Data**

- **≥98%** video capture rate (forward facing), which is a significant improvement.

- **≥95%** recognition accuracy rate for certain areas in Europe.

- The majority of countries and areas in Europe, South America, Mid and South Asia are supported.

UVSS BLOCK THE UNWANTED

Under Vehicle Scanning System

In case the vehicle has a hidden bomb, weapon or anything else illegal under the car, the UVSS system can detect dangerous vehicles with abnormal loads.

Users can also compare the under carriage image of a vehicle when they arrive and before they leave.

VEHICLE CONTROL

Blacklist/Whitelist
Unauthorised vehicles are strictly forbidden in certain areas.

Speeding Reminder
Prevent speeding with a reminder.

Vehicle Tracking
Find vehicles using number plate.

Illegal Parking
Vehicles are only allowed to park in designated areas.

ROAD SAFETY

There are cameras installed in all directions on the truck including internal, external, forward-facing and rear-facing. 360° images will be displayed on the truck monitor. For example, when you make a turn, the corresponding external camera image will display on the monitor. Plus, the mobile recorder can detect if the vehicle is speeding.

Mobile Recorder

Screen, Intercom & Alarm Button

Mobile Camera

UNSAFE DRIVING

Statistics show that 90% of accidents happen as a result of poor driver behaviour such as driver fatigue, making phone calls and smoking whilst driving. Oil tankers are heavier with a higher centre of gravity and can be more dangerous.

- Driver behaviour is analysed on the Driver Status Monitor (DSM). The remote monitoring centre will receive an alarm and can notify the driver with two-way audio.

- The DSM also has a timer function, for example driving for 2 hours and resting for 15 minutes. A voice message will be played if the driver is detected as being tired.

DSM

PREVENT OIL THEFT

Oil theft is usually committed by internal staff who have access to the oil output, often working with partners to steal oil with external pipes.

Once the built-in GPS detects the oil tanker has driven off the normal route, staff at the control centre will check the on-board video of this particular vehicle.
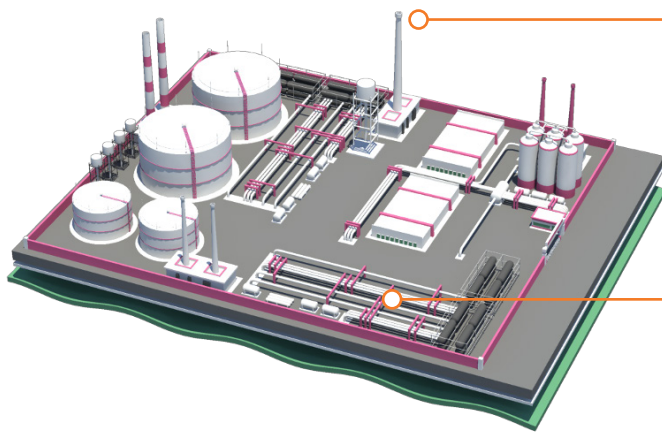

Abnormal Route

Check Integrated Video

Take Appropriate Measures
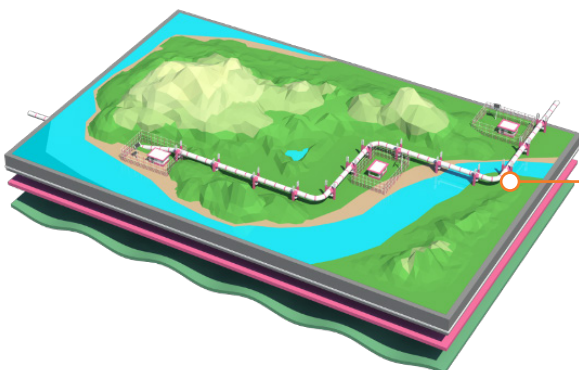
EQUIPMENT MANAGEMENT

High Vantage Point

- Panoramic view
- Prevent fire accidents
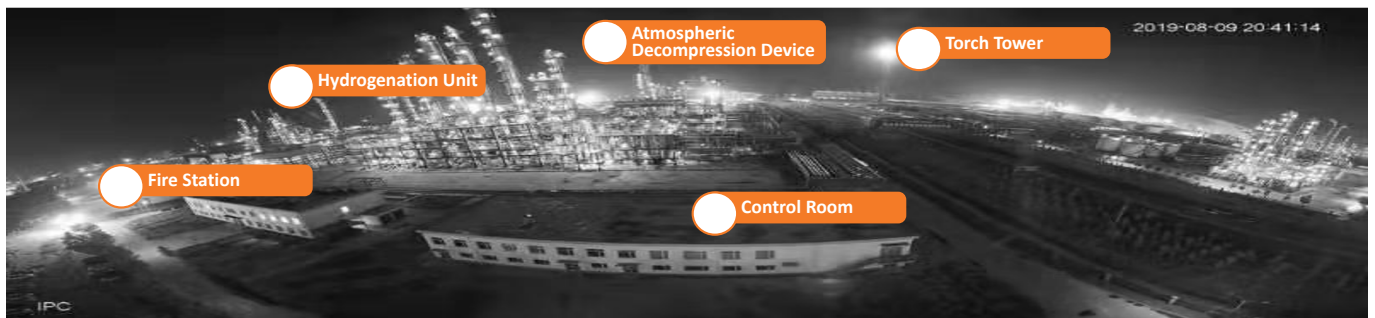

Device Area

- Protection for all environments
- Industrial television
- Predictive maintenance
- Intelligent identification

Pipeline

- Pipeline intrusion detection
- Ultra long range detection
- Off-grid system

PANORAMIC VIEW

- Thermal Power Plant
- Torch Tower
- Atmospheric Decompression Device
- Control Room

- Hydrogenation Unit
- Atmospheric Decompression Device
- Torch Tower
- Fire Station
- Control Room

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PREVENT FIRE ACCIDENTS

A small spark can cause a disastrous fire. Therefore, it is highly important to take fire control measures as soon as the location of the fire is detected.

Detect Location of Fire
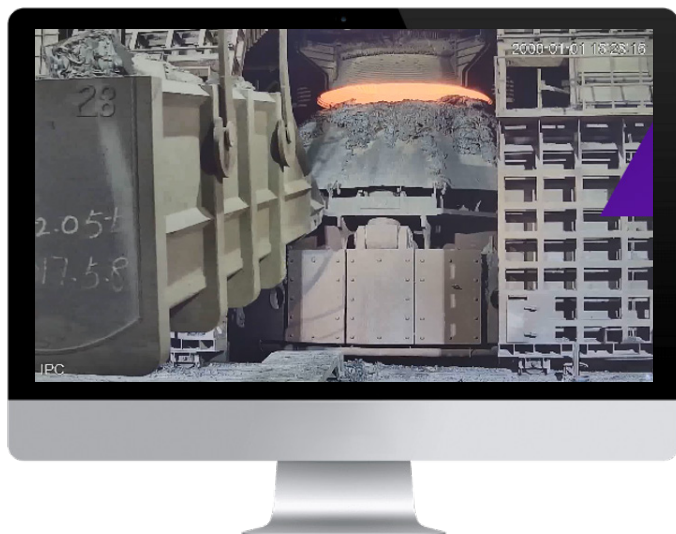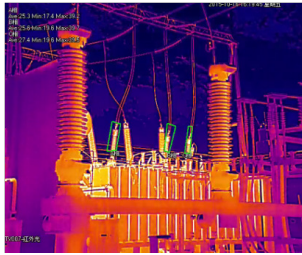
Generate Alarm

Dispatch Emergency Team

SEE INACCESSIBLE AREAS

Working alongside the production system, real-time HD video offers clear images of the industrial process without physically being in the equipment area.
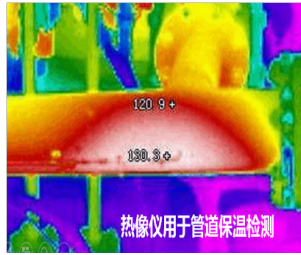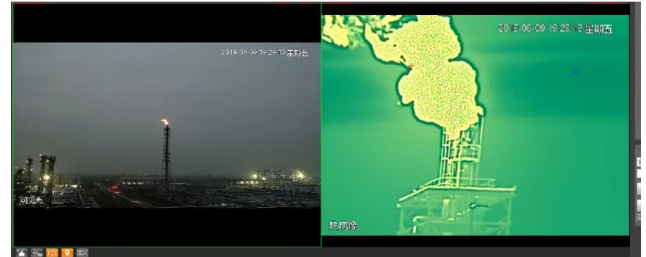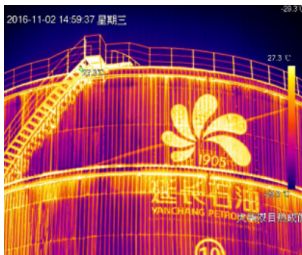
Industrial Television

PREDICTIVE MAINTENANCE

High temperature of the equipment

Abnormal temperature of the pipe

Flame detection of Flare Tower (using thermal camera)

Equipment apperance inspection

Flame detection of Flare Tower (with visible camera)
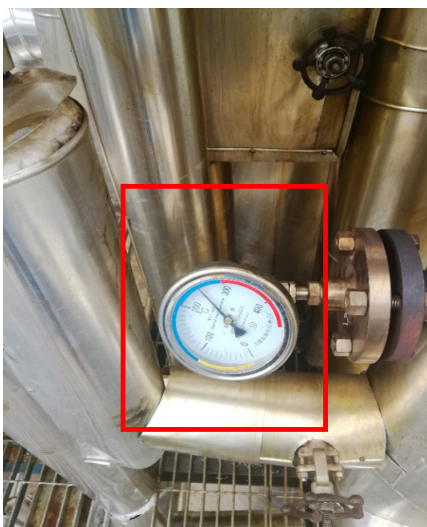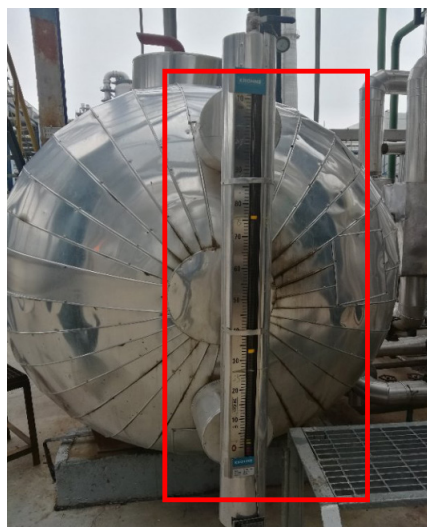

Equipment flame detection

Smoke detection
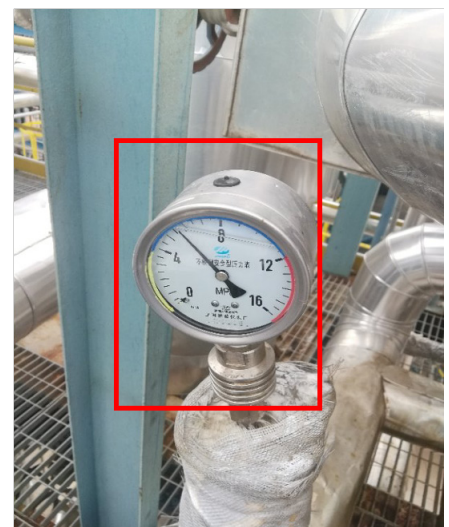
INTELLIGENT IDENTIFICATION
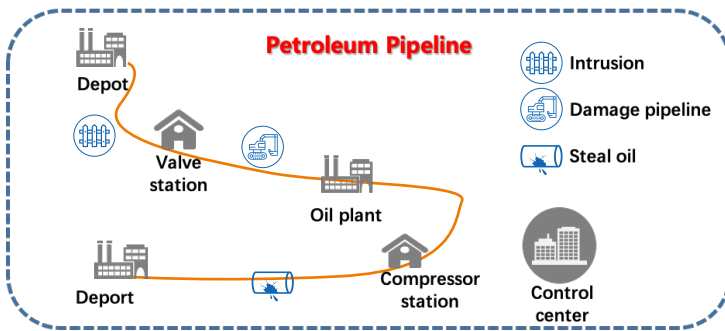
Various Meters and Gauges

Thermometer

Level Gauge

Pressure Gauge

PIPELINE INTRUSION DETECTION

Petroleum Pipeline

Depot

Valve station

Oil plant

Deport

Compressor station

Control center

Intrusion

Damage pipeline

Steal oil

Perimeter Precautions

Congregating around the pipeline may cause accidents

Construction vehicles may cause accidental damage to equipment
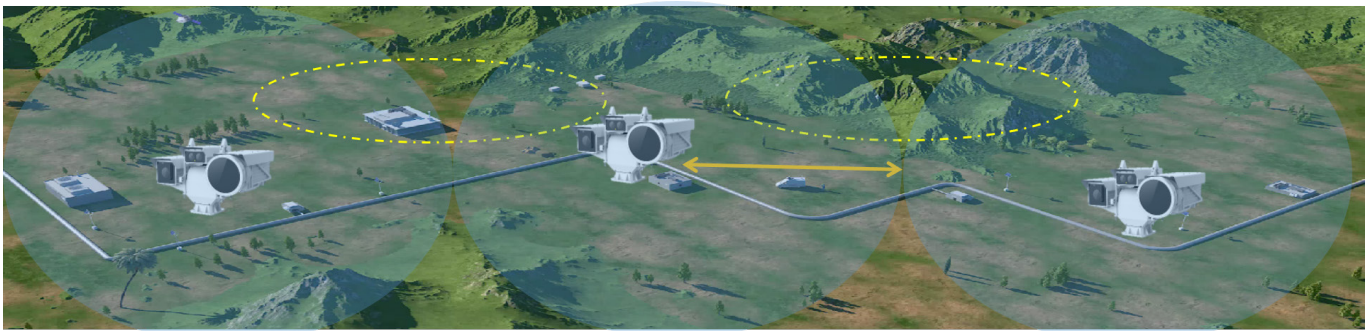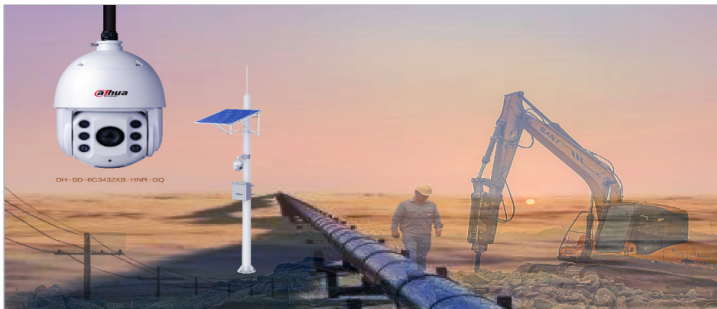
Cooled thermal camera covers ultra long range

- Vehicle recognition distance ≥ 17KM
- Human recognition distance ≥ 8KM

Drone reduces inspection work

- People should be kept away from dangerous areas around the pipeline
- A drone on autopilot can fly a programmed route dramatically saving on staff inspection costs

ULTRA LONG RANGE DETECTION
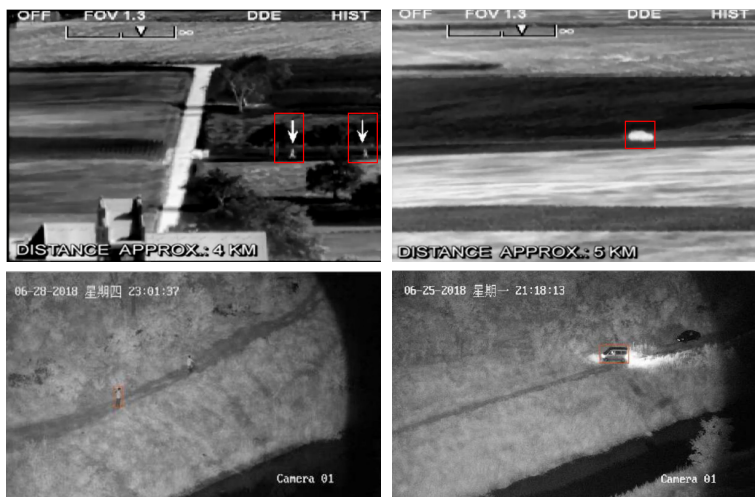
- **Ultra-long range**
- **Works in all environments**
- **Deep-learning algorithm**
- **Smart alarm integration**
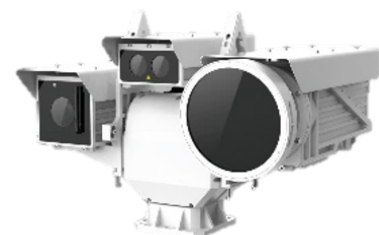
OFF-GRID SYSTEM

5.8G Wireless

- 0-20Km distance
- Max 867Mbps bandwidth
- IP66 ingress protection
- -40°C~70°C working temperature
- Hidden SSID
- Remote Platform Management

Solar Panels

- Conversion rate up to 18%
- Lightning protection max 40KA

CCTV Security

- Smart track, PTZ, IPC, radar, etc.

Distribution Box

- Controller, PoE switch, Lightning protection, air switch, etc.
- Platform management

Continuous Surveilance
with no power or network

Gel Battery

For different loads and uninterrupted power on rainy days.

SALES MANAGEMENT

Convenience Store
- Alarm at the cashier desk
- Targeted advertising
- Retail BI solution

Unloading Area
- Fire detection
- Explosion-proof
- Smoking detection

Office
- Access control
- Time attendance
- Station control centre

Parking & EV Charging Zone
- Overtime parking alarm
- EV recognition
- EV data collection
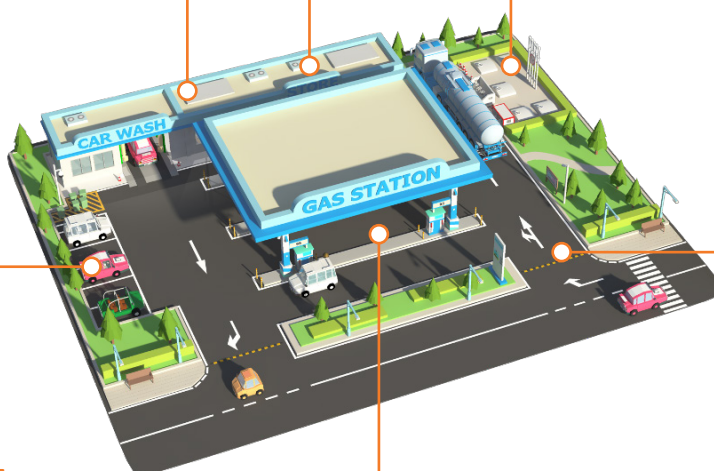
Refueling Area
- Audio recording
- Fire detection
- Vehicle recognition

Entrance & Exit
- Vehicle recognition
- Vehicle flow analysis
- Black and VIP list

CUSTOMER INSIGHT

Blacklist Vehicle Alarm

Locate Target Vehicle Quickly

Customised Service for VIP Clients

Optimised Operation with Flow Analysis

Remote Fuel Price Check

AI MAKES PAYMENT EASIER

Number Plate Recognition

Plate number: xxxxxx

Remote Fuel Price Control

The station system will remotely adjust the price for each individual customer.

Targeted Advert Display

Adverts related to the customer will be displayed while the customer is waiting.

DEMO VIDEO

Cash & Card Free

Face Recognition

Member ID: 1236456

Member Information

Identity: Mr. XX
Gender: Male
Age: 35
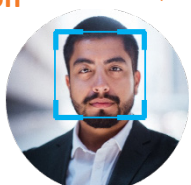
Fuel Pump Unlocked

Once the vehicle recognition and face recognition results are confirmed, the fuel pump will be unlocked.

SMART RETAIL FOR BI

People Counting

By knowing how many people visit the store, users can optimise operations with information such as entry rate, conversion rate and customer flow analysis.

Heat Map Fusion

It is important to know which areas in your store are visited most so that you can design a better store layout to generate more interest and increase revenue.

PROFITABLE ADVERTISING

From paper to digital

From manual to automatic

Targeted Advertising

Gender: Female
Age: Youth
Glasses: No
Expression: Happy

CASE STUDIES

BRUNEI PMB REFINERY

Background

Hengyi Group actively responds to the "Belt and Road" initiative and jointly builds a 10-million-ton refining and chemical integration project with the Brunei government.
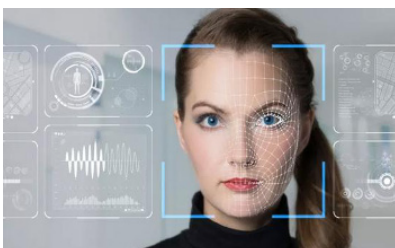
Solution

Dahua provided CCTV, access control, (entrance & exit), video wall, storage and servers in 86 locations areas for this project.

Value

The project helps Brunei become a hub for crude oil refinery and refined product exports.

REFINING-CHEMICAL INTEGRATION PROJECT FOR ZHEJIANG PETROLEUM (ZPC)

Background

The project is the fifth biggest refinery plant in the world with 40 million tons' production per year.

Solution

The system front-end used cameras from Dahua's explosion-proof series, thermal imaging PTZs, drones, etc. A cloud storage system, LED large-screen display system and converged communication system were also added.

Value

Dahua provided a strong foundation for the construction of a smart factory.

OTHER CASE STUDIES

BP plc (British Petroleum)

Dahua Technology developed a solution based on AI technology, from engineering design to innovative business development. Digital signage, fuel pump control, cash security and the ability to invest in different payment services in the future were all aspects of the project.

TanQyou

Dahua Technology helped the client to build a safe and innovative fuel station. Customised services included vehicle and face double verification to unlock fuel pump, targeted advertising displays and remote fuel price checks. The cooperation of the two companies is on-going.

China National Petroleum Corporation (CNPC)

The West-East gas transmission pipeline constructed by CNPC has the longest and largest calibre in China. From 2008 to 2015, Dahua video surveillance, perimeter alarm and industrial television systems protect the first-line, second-line and third-line of the pipeline. Dahua has protected a pipeline as long as 4,200km, ensuring a steady gas supply to mid and east China.

Daqing Oilfield Corporation

Daqing Oilfield is the world's largest tertiary oil production base. Daqing Oilfield has more than 90,000 oil wells and boasts 27 consecutive years of crude oil production reaching 50 million tons. For the project Dahua provided CCTV and a perimeter alarm system to help build a digitised oilfield.

Angot Oil Field

The project is located in northern Afghanistan, including Gothic (Angot) and Kashi in Cameroon (Kash-kal). Dahua provided speed domes on the front end for auto-tracking and DVRs for back-end storage.

Italy Tessenderio Chemical

Dahua upgraded the customer's former analogue system to a compatible HD IP system. The solution chosen met the client's needs perfectly. Thanks to high definition images (up to 8Mp), the client can now check every detail and monitor 24 hours a day, 7 days a week.

KEY PRODUCTS

EPC245U-PTZ-IR

Anti-corrosion Camera

- 1/2.8" 2Megapixel STARVIS™ CMOS
- Powerful 45x optical zoom
- 316L stainless steel housing
- Starlight technology
- IR distance up to 200m
- IP68, ATEX

SD60230U-HNI-SL

Anti-corrosion Camera

- 1/2.8" 2Megapixel STARVIS™ CMOS
- Powerful 30x optical zoom
- Starlight technology
- Auto-tracking and IVS
- IP68, IK10, NEMA 4X
- Material: 316L Stainless steel

PSDW8842M-A180

Panoramic Camera

- Panoramic: Four 1/1.8'' 2 Megapixel progressive scan CMOS
- PTZ: One 1/1.8'' 4 Megapixel progressive scan CMOS
- Supports 180-degree panoramic view
- IR distance up to 400m
- Smart tracking, Crowd map

TPC-PT8621A

Thermal PTZ Camera

- 640×512 VOx uncooled thermal sensor technology
- Athermalized lens (thermal), focus-free
- 1/2.8" 2 megapixel progressive scan CMOS
- Supports fire detection and alarm, including smog
- Max 140°/s pan speed, 360° endless pan rotation

IVSS7024DR-8I

Intelligent server

- Max 512Mbps incoming bandwidth
- 256-channel IP video access
- Up to 128-channel perimeter protection
- Up to 64-channel face recognition with normal IPC
- Up to 160-channel face recognition with face detection IPC
- Up to 32-channel video metadata
- Up to 50 face databases with 300,000 face pictures in total

DSS PRO

VMS Platform

Easy Expansion
- Distributed hardware extension.

High Reliability
- Supports hot standby for master server

High Compatibility
- Devices included: Network camera, network speed dome, decoder, NVR, DVR, ANPR, access control device, VDP, alarm controller, etc.

Address & Telephone

Dahua UK & Ireland (Head Office)
Quantum
60 Norden Road
Maidenhead
Berkshire
SL6 4AY

Tel: +44 (0) 1628 613 500

Technical Hotline: +44 (0) 1628 613 500

Dahua UK & Ireland (Leeds Office)
Ground Building
No.3 White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Official Website

www.dahuasecurity.com/uk

Dahua Email Contacts

Sales: sales.UK@dahuatech.com

Tech: support.UK@dahuatech.com

Social Media

Linked in
Dahua UK & Ireland

facebook
Dahua UK & Ireland

You Tube
Dahua UK & Ireland

Dahua UK & Ireland

Driving Innovation to an AIoT Future

* AIoT is the convergence of Artificial Intelligence (AI) and the Internet of Things (IoT) where connected devices meet human interface. This is enabling unlimited possibilities through the integration of connected devices and security solutions.

DAHUA UK & IRELAND

Quantum, 60 Norden Road, Maidenhead, Berkshire SL6 4AY
Tel: +44 (0) 1628 613 500
sales.UK@dahuatech.com
support.UK@dahuatech.com