



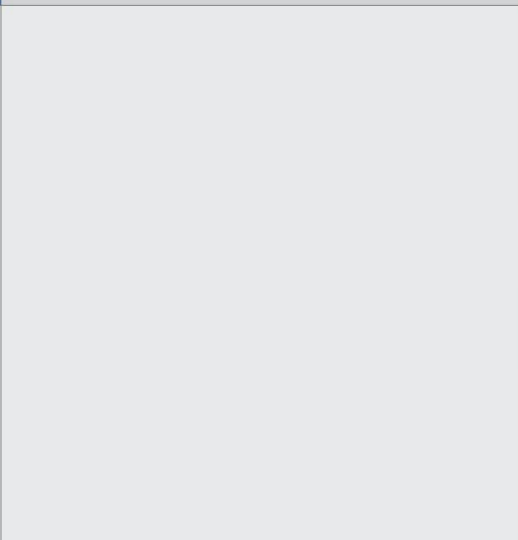
- Improved Safety
- Reduced Downtime
- Optimized Maintenance

# INDUSTRIAL ASSET HEALTH MONITORING



Making Industrial Assets Safer

- Non-intrusive Sensor
- Accurate Measurement
- Low-power Consumption
- Easy Installation
- Reliable Wireless Transmission
- Ruggedized Design
- Remote Monitoring
- Secure Data



## Theta Sensors Corporation

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Making Industrial Assets Safer



[www.thetasensors.com](http://www.thetasensors.com)

# THETA

Theta Sensors Corporation is an industrial IoT (IIoT) company specialized in innovative and industrial-grade wireless sensors. We provide health monitoring solutions for critical industrial assets to increase safety, uptime, and maintenance efficiency of industrial operations.

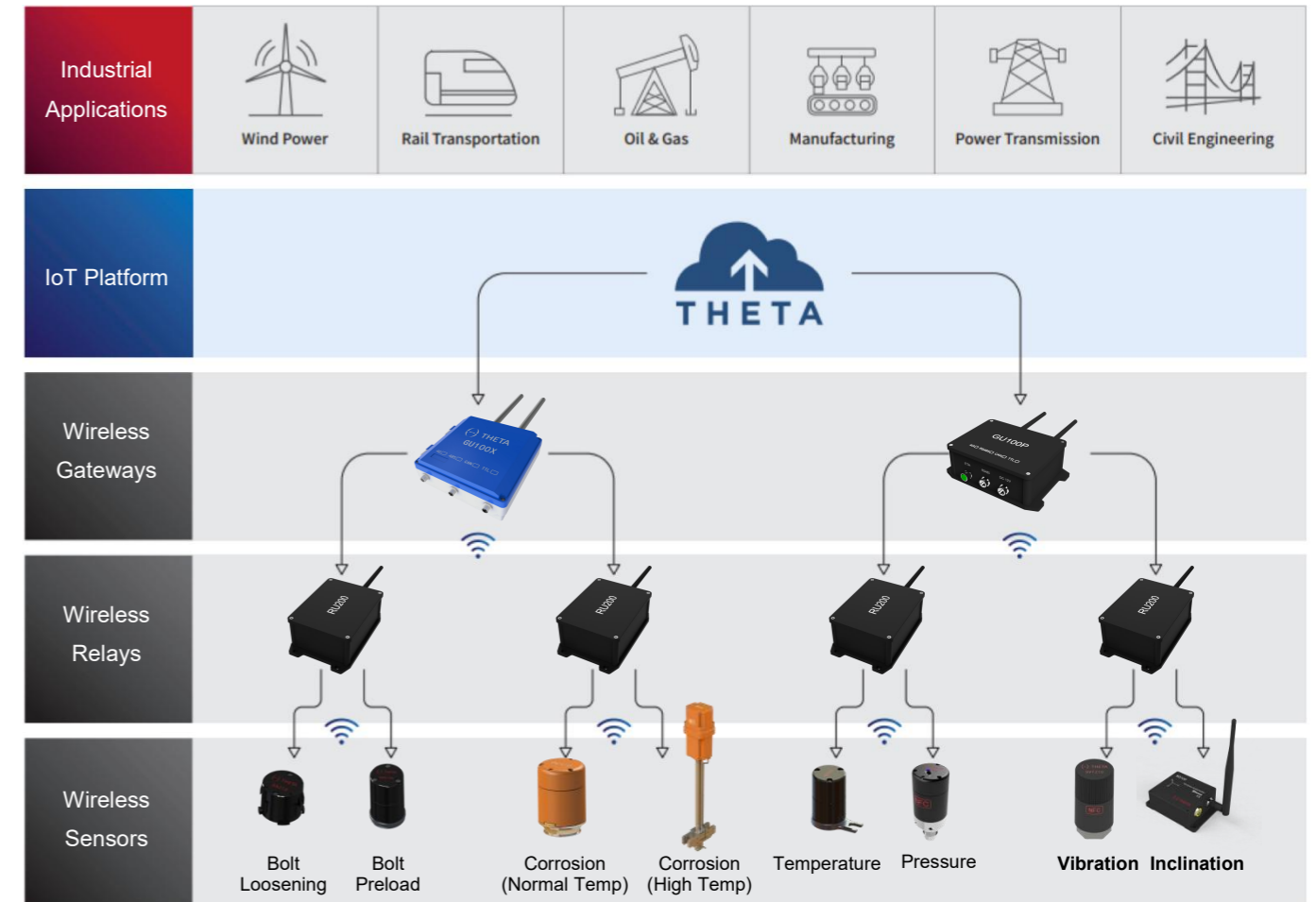
Based on non-intrusive sensing technologies, extremely low-power design, long-lasting internal batteries, and reliable wireless data delivery, our systems are designed for easy installation and continuous operation without maintenance for years in harsh industrial environment.

Highly qualified engineers and technicians design custom hardware and software solutions for projects with unconventional monitoring, data collection, or data storage and analysis requirements.

Each system is tested and calibrated before shipment for quality assurance and reliability. We value product quality and reliability and customer satisfaction above everything else.

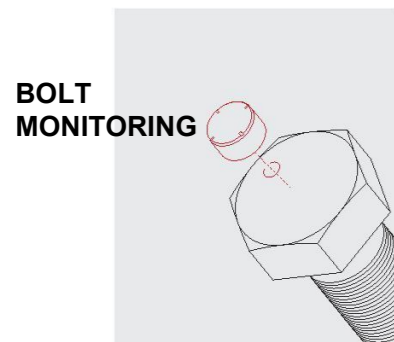
# THETA SENSORS CORPORATION

## SYSTEM ARCHITECTURE

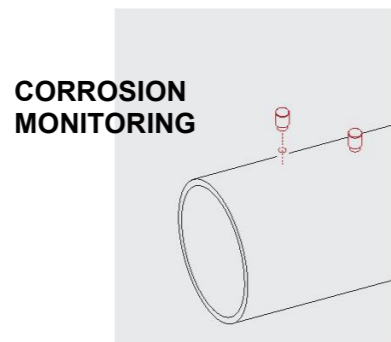


## INDUSTRIAL ASSET HEALTH MONITORING

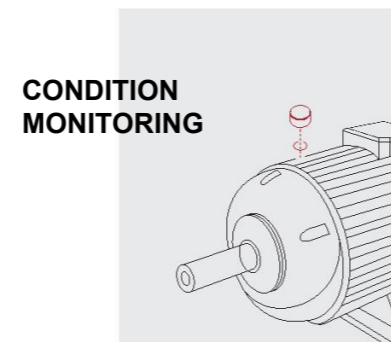
### BOLTsense



### PIPEsense



### MOTOSense

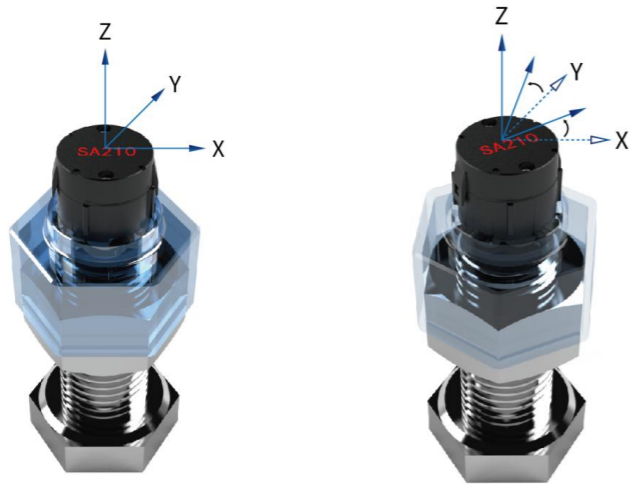


## FEATURES AND BENEFITS

- Non-intrusive** ⇨ No impact on the structure or strength of the asset.
- Accurate** ⇨ Low noise, interference resistant and highly accurate.
- Easy-to-install** ⇨ Cable-less; compact and lightweight; easy mounting methods.
- Wireless** ⇨ 2.4GHz wireless sensor network; Capable of transmitting data reliably.
- Low-powered** ⇨ Built-in battery with 3-10 years of life for normal usage.
- Ruggedized** ⇨ Waterproof, dustproof, shockproof, and corrosion-resistant; suitable for harsh industrial environment.
- Accessible** ⇨ Remotely accessible anytime, anywhere; automatic alarm; maintenance free.
- Convenient** ⇨ Bluetooth compatible and connected via mobile APP.

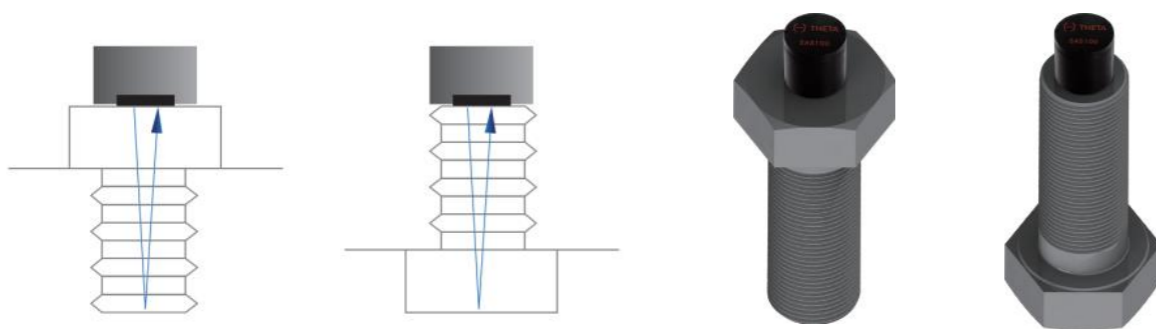
# BOLT MONITORING

## Bolt Loosening Monitoring



The sensor is non-intrusively installed on the nut, utilizing advanced signal processing technology and algorithms to quickly and accurately measure the nut's rotation angle relative to the bolt, thereby providing an accurate assessment of the bolt's fastening condition.

## Bolt Preload Monitoring

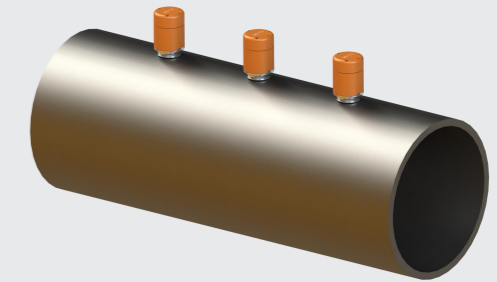
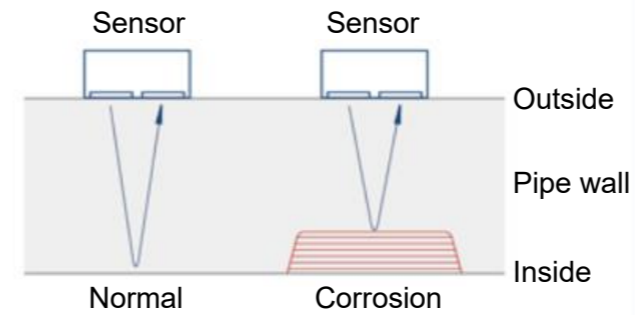


The sensor is non-intrusively installed on one end of the bolt. It emits ultrasonic waves into the bolt's interior, and upon reaching the other end or a fracture surface of the bolt, these waves are reflected back and received by the sensor for processing. With the aid of advanced signal processing technology and temperature compensation algorithms, the sensor can accurately calculate the preload and subsequently determine the bolt's condition, such as loosening, fatigue, or fracture.

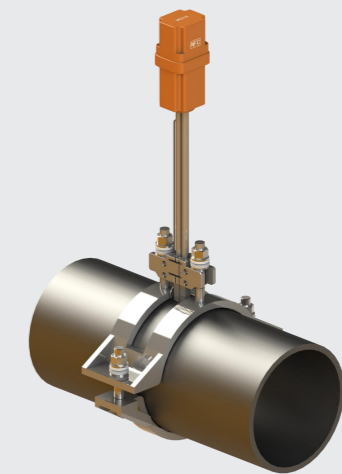
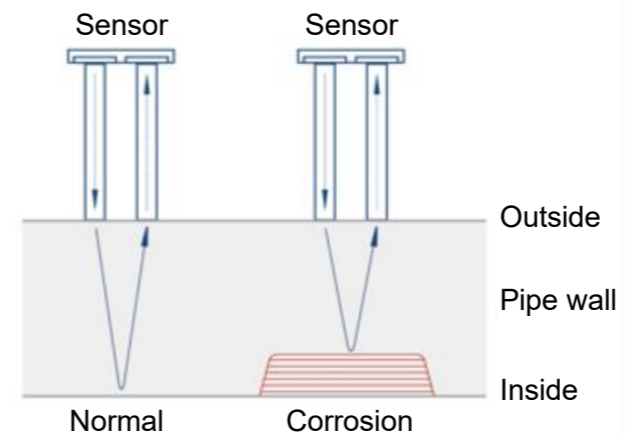
# CORROSION MONITORING

By employing non-intrusive ultrasonic sensors and advanced signal processing technology, the corrosion status of the pipe wall can be rapidly and accurately determined through measuring the pipe wall thickness. A specialized temperature compensation algorithm ensures precise measurements, even in environments with substantial temperature variations.

## Normal Temperature



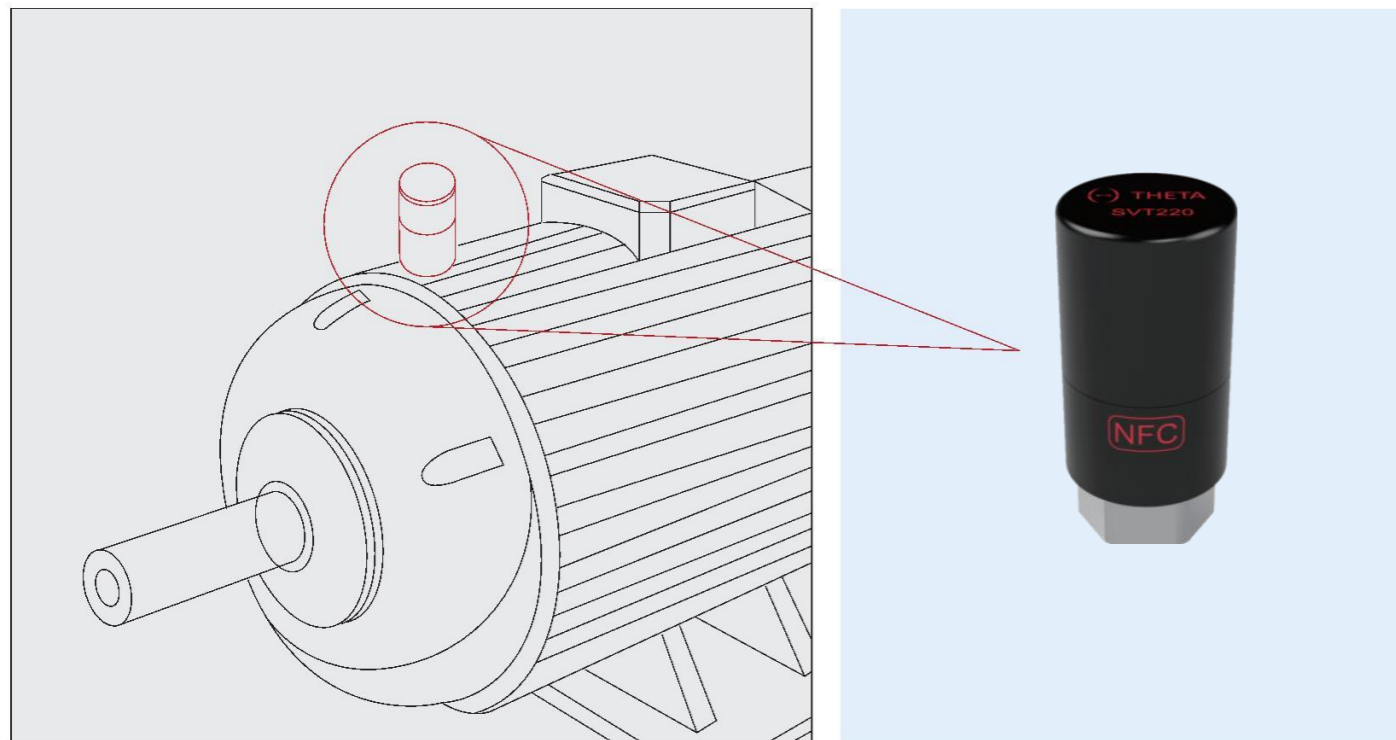
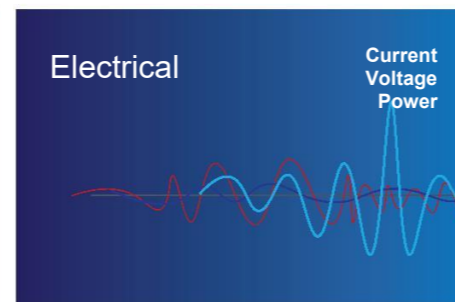
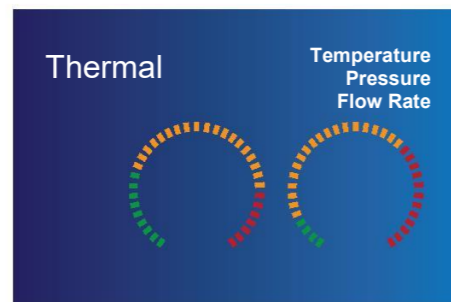
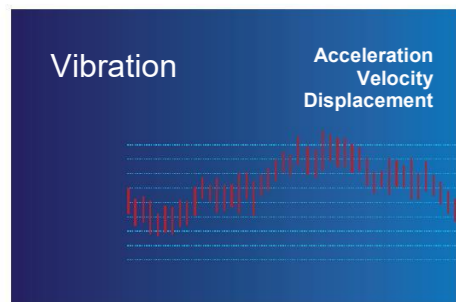
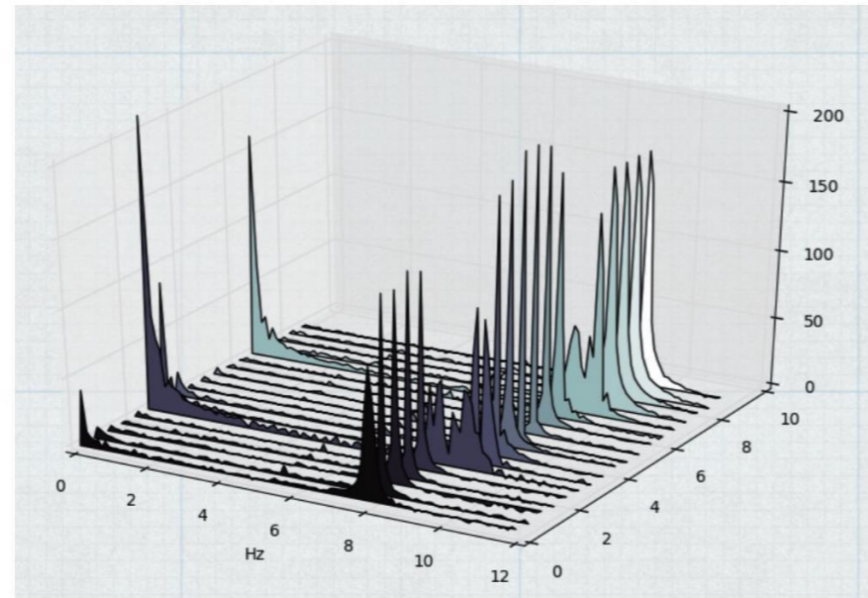
## High Temperature



DC210 adopts a distinctive dual-waveguide-rod design, enabling the isolation of high or low-temperature zones in the tested pipeline. It is suitable for monitoring pipelines with ultra-high temperatures (as high as 600°C) or ultra-low temperatures (as low as -200°C).

# CONDITION MONITORING

By utilizing diverse industrial sensors, the equipment's vibration, temperature, pressure, current, and voltage parameters are gathered in real-time or at regular intervals. The continuous monitoring and evaluation of the equipment's condition enable a precise assessment of its current operational status and health.



# PRODUCTS



## Wireless Bolt Loosening Sensors

SA210/SA220

- Monitoring bolt loosening angle
- Precision:  $\pm 0.5^\circ$
- 2.4GHz wireless transmission
- Ultra-low power
- Battery lasting 10+ years
- Waterproof and dustproof, IP67



## Wireless Bolt Preload Sensors

SAS100/SAS120

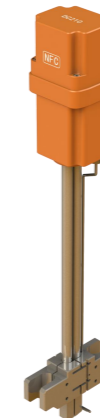
- Monitoring bolt preload
- Integrated temperature sensor
- Preload precision:  $\pm 1.5\%$
- 2.4GHz wireless transmission
- Ultra-low power
- Battery lasting 10+ years
- Waterproof and dustproof, IP67



## Wireless Corrosion Sensors

DC110

- Ultrasonic thickness sensor
- Integrated temperature sensor
- Thickness range: 3-50mm
- Thickness precision:  $\pm 0.02\text{mm}$
- Temperature range:  $-40\sim 85^\circ\text{C}$
- Temperature precision:  $\pm 1^\circ\text{C}$
- 2.4GHz wireless transmission
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Wireless Corrosion Sensors

DC210

- Ultrasonic thickness sensor
- Integrated temperature sensor
- Thickness range: 5-50mm
- Thickness precision:  $\pm 0.1\text{mm}$
- Temperature range:  $-200\sim 600^\circ\text{C}$
- Temperature precision: 0.8%
- 2.4GHz wireless transmission
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Wireless Vibration Sensors

SVT210/SVT510

- Triaxial MEMS accelerometer
- Integrated temperature sensor
- Measurement range:  $\pm 16\text{g}$
- Frequency response: 0Hz-6kHz
- Low noise:  $75 \mu\text{g}/\sqrt{\text{Hz}}$
- 24-dimension feature data
- 2.4GHz wireless; capable of transmitting waveform data
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Wireless Vibration Sensors

SVT220/SVT520

- Triaxial accelerometer; Z: piezoelectric, X/Y: MEMS
- Integrated temperature sensor
- Measurement range:  $\pm 50\text{g}/\pm 100\text{g}$  (Z)
- Frequency response: 2Hz-10kHz (Z)
- Low noise:  $4 \mu\text{g}/\sqrt{\text{Hz}}$  (Z)
- 24-dimension feature data
- 2.4GHz wireless; capable of transmitting waveform data
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga

# PRODUCTS

## Wireless Temperature Sensors

ST100P/ST100K

- External temperature probe
- ST100P: PT RTD, 15-bit ADC, resolution 0.03°C, accuracy ±0.5°C/0.5%F.S.
- ST100K: type K thermocouple, 14-bit ADC, resolution 0.25°C, accuracy 0.8%
- 2.4GHz wireless transmission
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Wireless Temperature Sensors

ST101/ST103

- ST101: PT RTD, -40~125°C, accuracy ±1°C
- ST103: type K thermocouple, 14-bit ADC, resolution 0.25°C, accuracy 0.8%, -200~600°C
- 2.4GHz wireless transmission
- Ultra-low power
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga

## Wireless Pressure Sensors

SPT200

- Glass micro-fusion technology
- 24-bit ADC with low noise
- Precision: ±0.25%
- Integrated temperature sensor
- 2.4GHz wireless transmission
- Ultra-low power
- Battery lasting 10+ years
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Wireless Inclinometers

SQ100

- Triaxial inclinometer
- Accuracy ±0.005°, resolution 0.001°
- Static and dynamic mode
- Feature data: inclination angle, pitch angle, roll angle, and waggle
- 2.4GHz wireless transmission
- Ultra-low power
- Battery lasting 5+ years
- Waterproof and dustproof, IP67



## Wireless Relays

RU200/RU200X

- Relay node for wireless sensor network
- Transmit power: 20dBm
- Ultra-low power
- Battery lasting 5+ years
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga (RU200X)



## Wireless Gateways

GU100P/GU100X

- Coordinating and managing wireless sensor network, up to 63 sub-nodes
- Connecting and managing wireless sensors
- Facilitating protocol conversion
- Ethernet, 5G/4G/WiFi6/Fiber, RS485, and CAN interfaces
- MQTT, HTTP, and Modbus protocols
- Open API
- Intrinsically safe, EX ia IIC T6 Ga (GU100X)



# PRODUCTS

## Bolt Loosening Sensors

SA210S

- Monitoring bolt loosening angle
- Precision: ±0.5°
- RS485 interface
- Modbus protocol
- Waterproof and dustproof, IP67



## Bolt Preload Acquisition Devices

DS140/DS180

- 4-channel or 8-channel data acquisition device of bolt preload
- Preload precision: ±1.5%
- Ethernet and RS485 interfaces
- MQTT, HTTP, and Modbus protocol
- Waterproof and dustproof, IP67



## Vibration Sensors

SVT210S

- Triaxial MEMS accelerometer
- Integrated temperature sensor
- Measurement range: ±16g
- Frequency Response: 0Hz-6kHz
- Low noise: 75 μg/√Hz
- Multiple feature data
- RS485 interface and Modbus protocol, capable of transmitting waveform data
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



## Vibration Sensors

SVT220S1/SVT220S3

- SVT220S1: single axial piezoelectric accelerometer
- SVT220S3: triaxial accelerometer; Z: Piezoelectric, X/Y: MEMS
- Integrated temperature sensor
- Measurement range: ±50g/±100g (Z)
- Frequency Response: 2Hz-10kHz (Z)
- Low noise: 4 μg/√Hz (Z)
- Multiple feature data
- RS485 interface and Modbus protocol, capable of transmitting waveform data
- Waterproof and dustproof, IP67
- Intrinsically safe, EX ia IIC T4 Ga



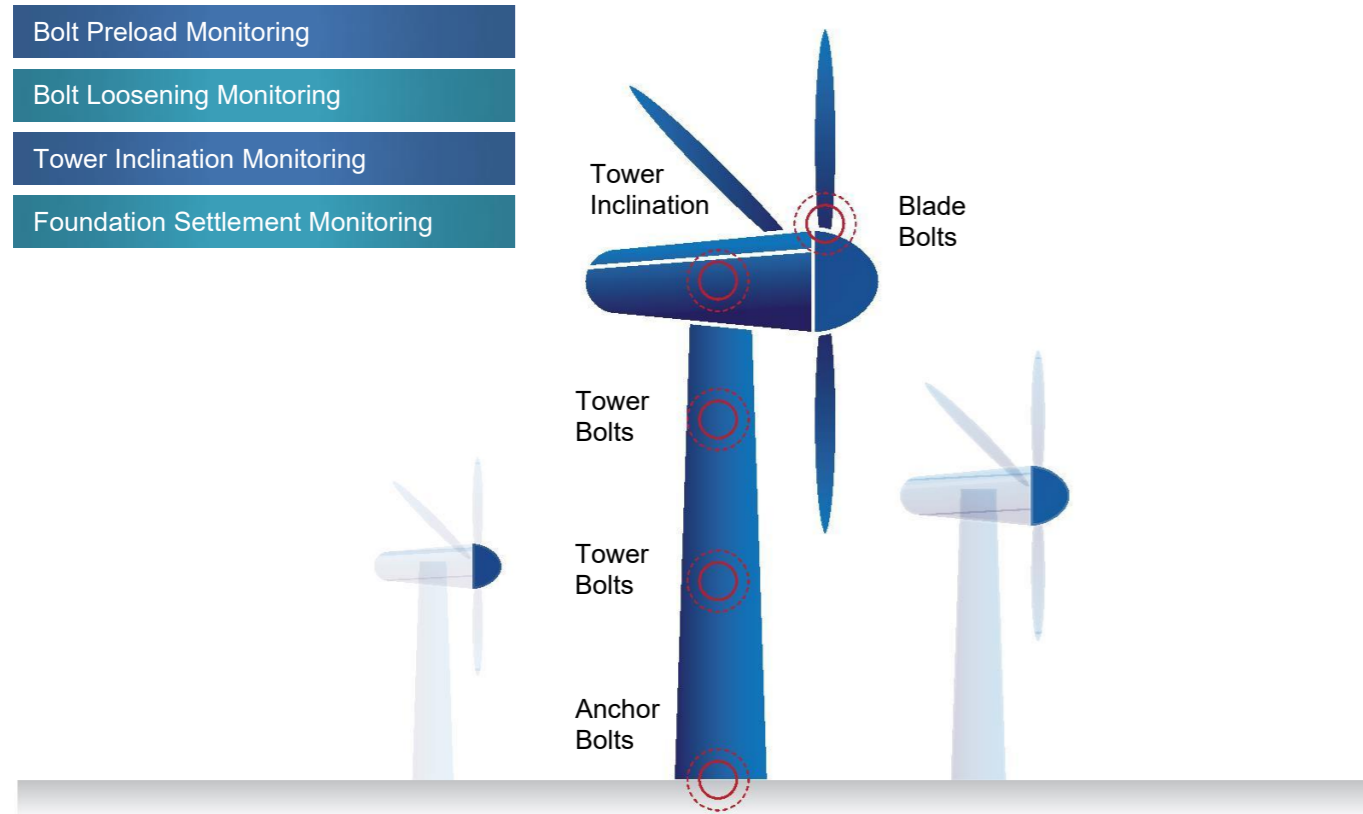
## ThetaCloud IoT Platform



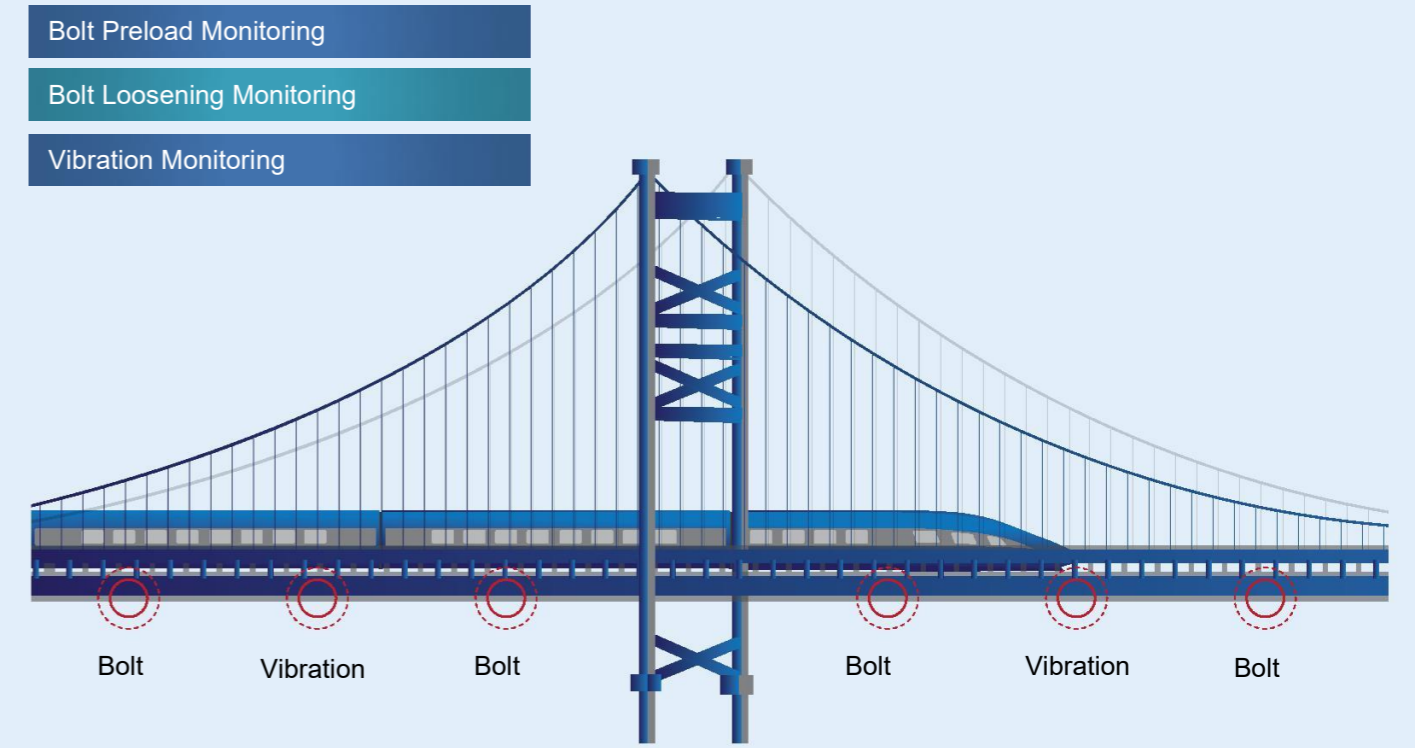
ThetaCloud IoT platform is built upon IoT and cloud computing technologies, with a focus on creating an asset health management system tailored for industrial enterprises. The platform comprehensively realizes essential functionalities such as data collection, storage, processing, and analysis, enabling real-time monitoring, in-depth analysis, and precise control of devices through data generated by a diverse range of industrial sensors.

Users can access the platform from computers, tablets, and mobile phones, allowing them to stay informed about the operational status and asset information, receive timely alerts, and efficiently manage and control devices remotely.

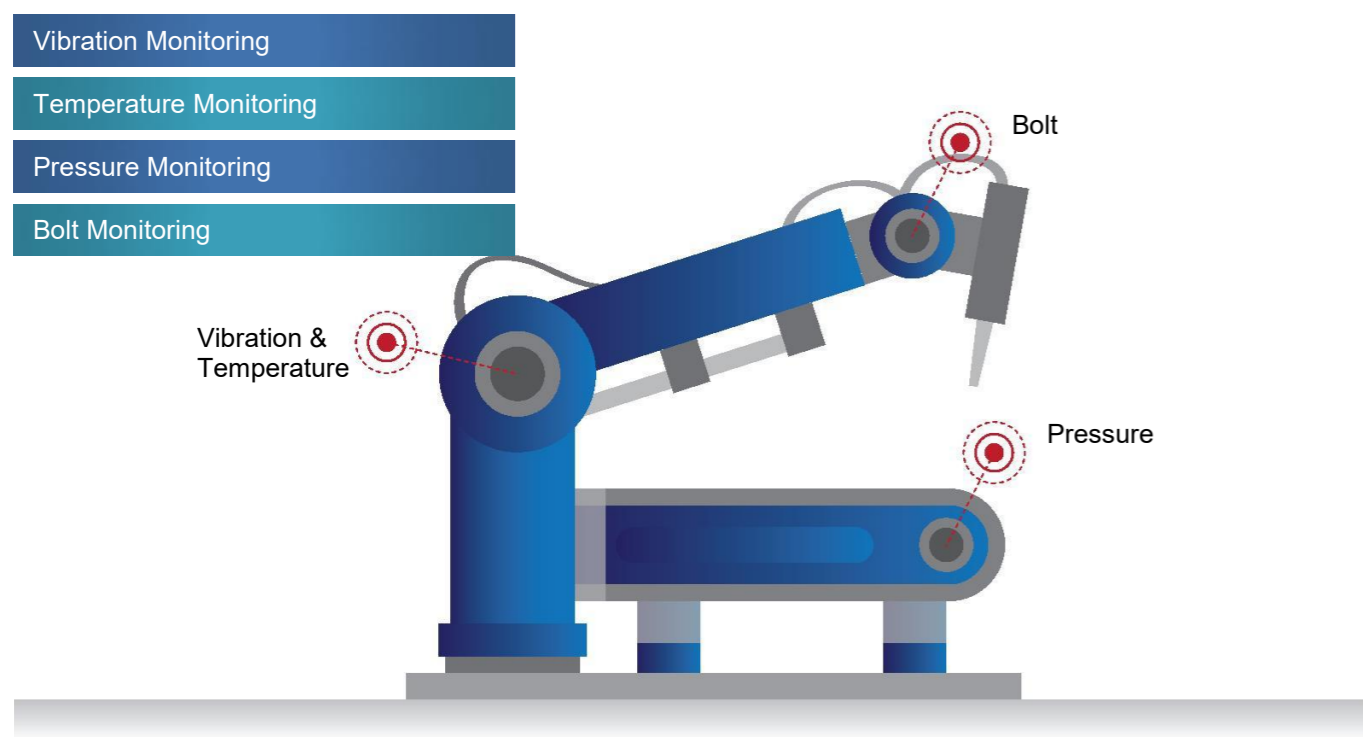
## APPLICATIONS WIND POWER



## APPLICATIONS RAILWAY & BRIDGES



## APPLICATIONS MANUFACTURE



## APPLICATIONS OIL, GAS, & CHEMICAL

