



Pumpsense

Thailand

FIRE *Pulseai*

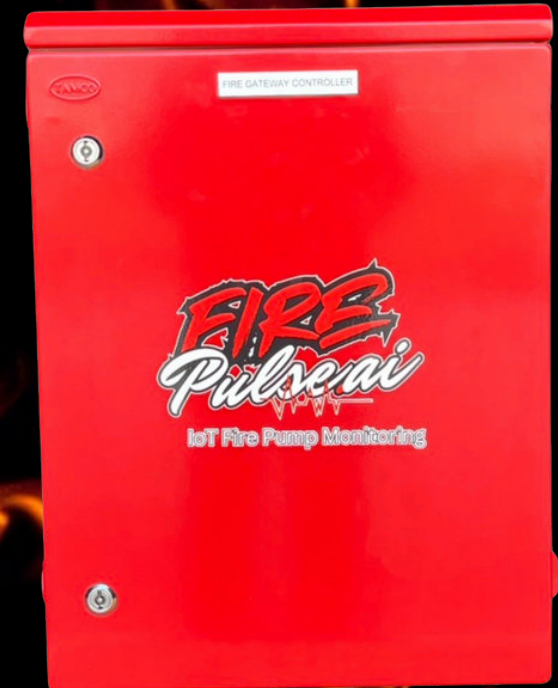
FIRE PUMP STATUS MONITORING SYSTEM

FIREPULSE.AI IS THE WORLD'S MOST ADVANCED FIRE PUMP IOT SOLUTION.

DEVELOPED TO MEET THE LATEST FM 1330 STANDARDS. DR. PUMP & ENGINEERING OFFERS UNPRECEDENTED LEVELS OF SAFETY AND RELIABILITY IN FIRE SAFETY SOLUTIONS.



Visit Our Website:
www.pumpsensethai.com





Company Vision

A global leader in sustainable innovation, delivering cutting-edge smart water and solar solutions to empower communities, protect the environment, and drive a clean, efficient, and renewable future for all.



Company Mission

Develop and deliver innovative smart water and solar solutions, including key components such as pumps, valves, sensors, water treatment, flood protection and other related equipment, to increase resource efficiency, reduce environmental impact and enhance the quality of life of communities worldwide through sustainable technologies.



IoT Fire Pump Monitoring



"Smart, Safe, and Reliable – Fire Pulse Ai, an IoT-enabled remote fire pump monitoring system, improves reliability, reduces costs, and enhances compliance in real time!"

Global fire pump standards



NFPA 20 (Standard for the Installation of Centrifugal Fire Pumps) is an NFPA standard that establishes requirements for fire pumps, including pump assemblies, engine controls, and required accessories.



UL (Underwriters Laboratories) UL is an independent certification organization that sets product reliability standards and tests products against those standards. UL 19000 covers a wide range of products, including fire pumps and related systems. More than 20 million UL-marked products from 7,200 manufacturers are in use, including fire pumps. UL has been testing and evaluating product reliability for more than 100 years, and a list of UL-certified pumps is published in UL's online Product Guide.



FM (Factory Mutual) FM is an independent organization that certifies the performance of materials and systems, and is overseen by Factory Mutual Insurance (FMI), a high-risk insurance company. FM certification for fire pumps is based on the requirements of NFPA 20, however FM has some additional requirements to ensure maximum pump reliability.



IoT Fire Pump Monitoring

New Standard: FM 1330 Automatic Inspection and Testing of Fire Pumps



Examination Standard for Fire Pump Monitoring and Automated Testing

Class Number 1330

FM 1330 Fire Pump Monitoring and Automated Testing, FM 1330 standard specifies requirements for testing and certification of two types of new products:

1. Fire Pump Monitoring Systems

This system is used to monitor the status of water pumps.

Can be alerted when a problem occurs or when a trend of decreasing performance is detected.

The system will send the information to the assigned personnel for inspection and repair.

2. Automated Fire Pump Testing Systems

This system can automatically initiate and monitor pump performance tests weekly.

This testing is typically performed by trained personnel, but automation reduces the need for manual labor.

If a problem is encountered during the test, the system will automatically terminate the test and report a system failure.

Fire pump testing frequency according to NFPA 25 standards

NFPA®

25

Standard for the
Inspection, Testing,
and Maintenance
of Water-Based Fire
Protection Systems

2023



Fire pump testing requirements
NFPA 25 standard specifies
different test periods for different
types of pumps, as follows:

**Electric fire pumps must be tested
for 10 minutes per week.**

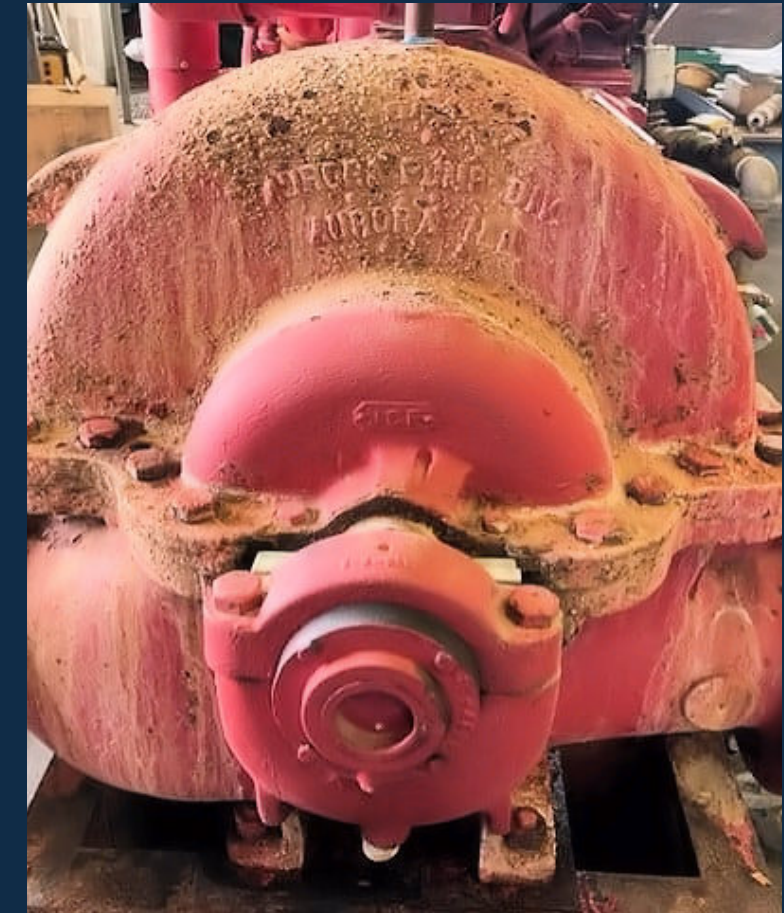
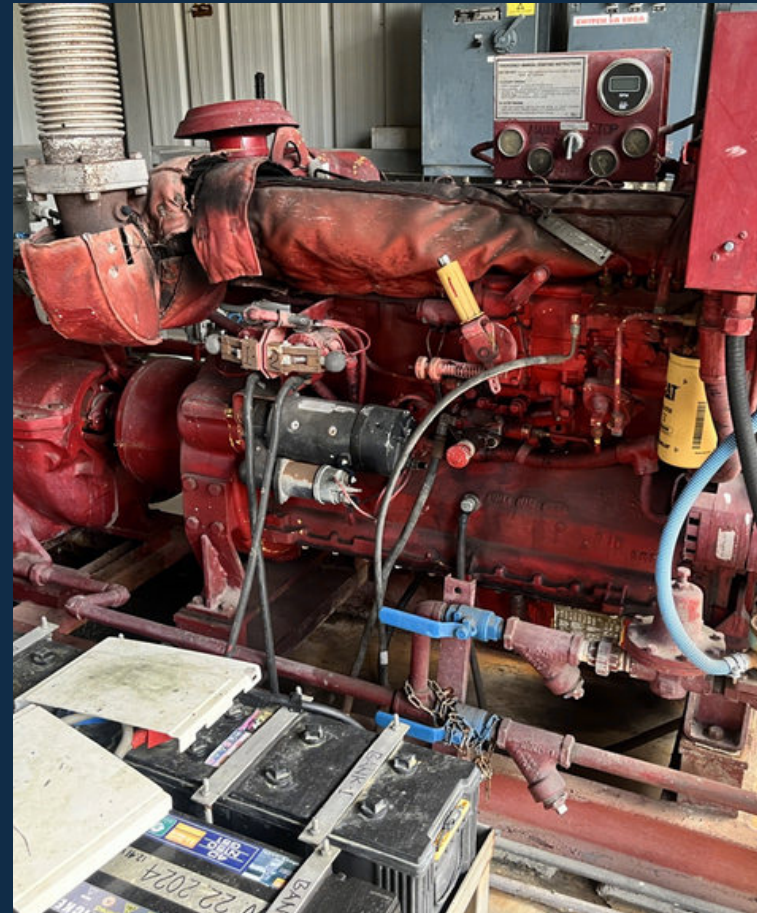
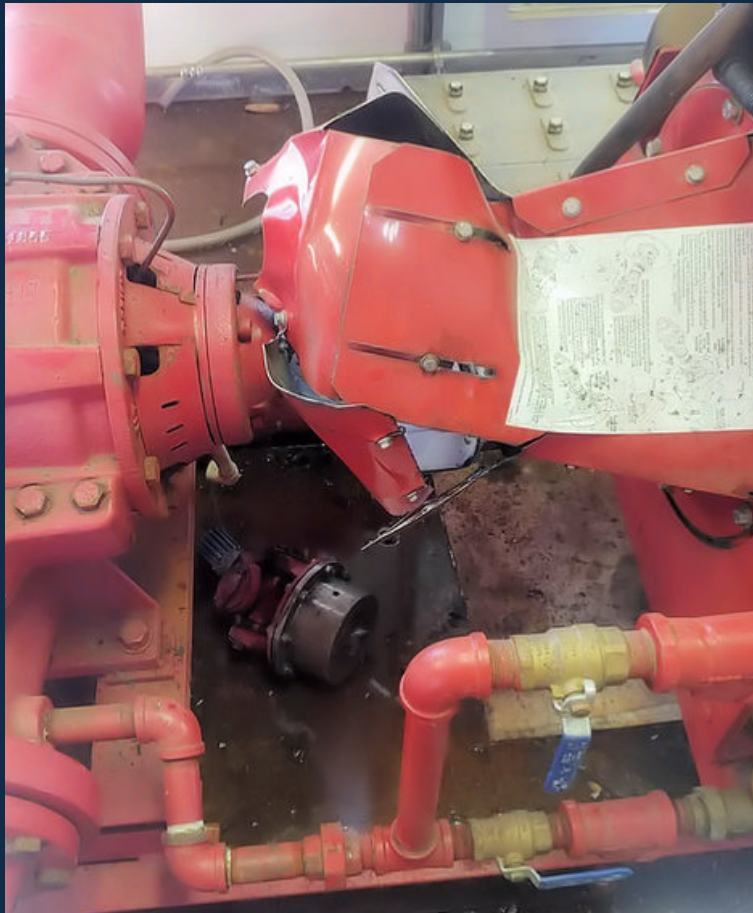
**Diesel fire pumps must be tested
30 minutes per week.**

Purpose of the test
Weekly testing is an important
preventative measure to ensure
the pump will function properly in
an emergency.



The actual status of the fire pump

There are many fire pump systems that are not properly maintained, which affects the safety and availability of the fire suppression system.



1. Why is fire pump maintenance important?

Fire pumps are equipment that must be ready to use immediately when needed. If there is no inspection or maintenance, malfunctions may occur, resulting in ineffective fire extinguishing. Neglecting maintenance can lead to damage to both life and property.

2. Common problems in maintaining fire pumps

No weekly inspection or testing is performed as per NFPA 25 standards.

There is a leak in the piping or valve system, causing a drop in pressure.

Battery is dead or malfunctioning in the case of diesel water pumps.

- Sensors and control systems are not functioning, preventing notification when a problem occurs.

3. Solutions to ensure that the fire pump system is always ready for use

Weekly maintenance and testing according to NFPA 25 standards.

- Check the water pressure and flow rate of the water pump.

Repair or replace damaged equipment such as valves, sensors, and batteries.

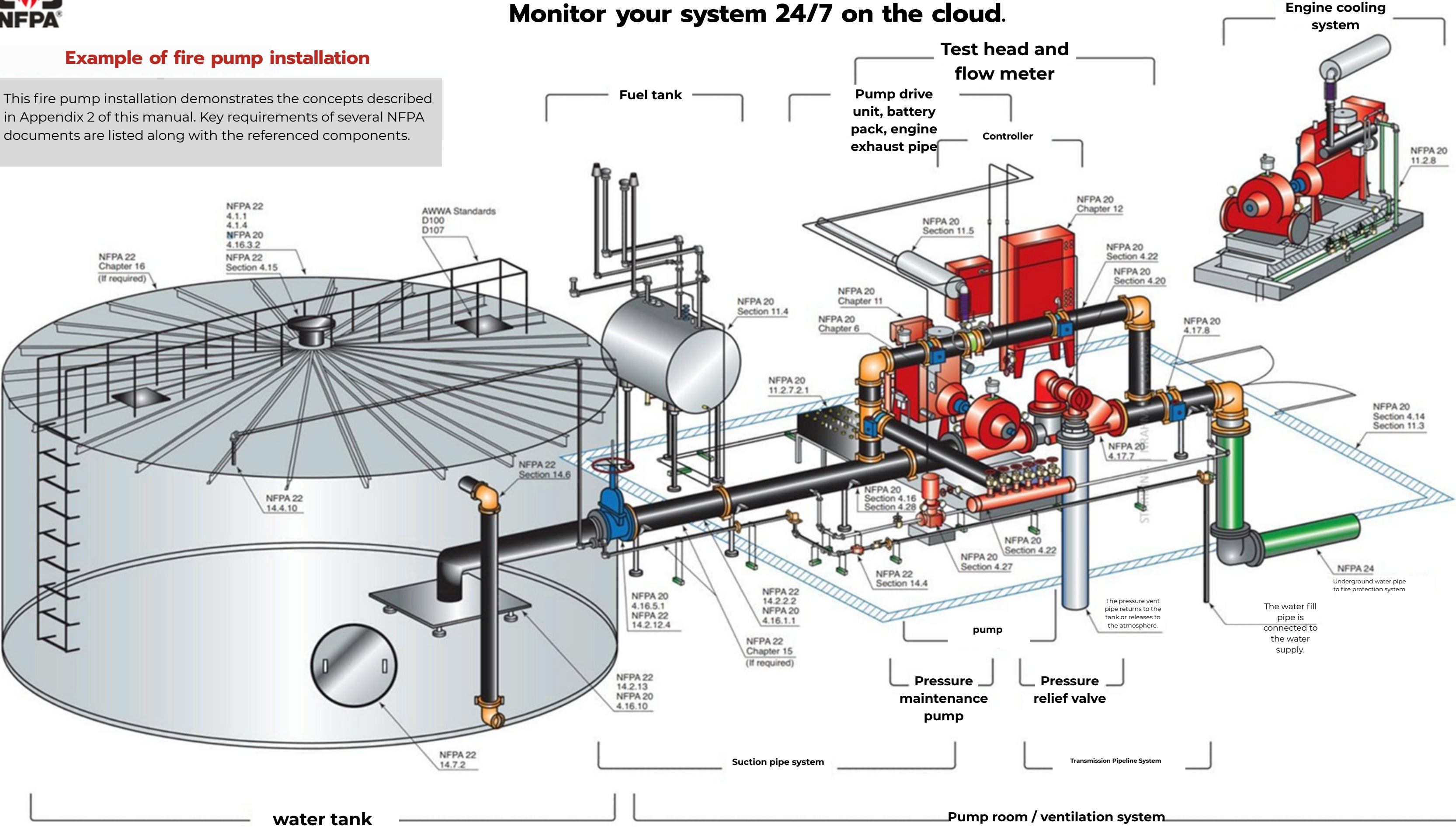
Use an intelligent monitoring system to alert you when the water pump has a problem.



Monitor your system 24/7 on the cloud.

Example of fire pump installation

This fire pump installation demonstrates the concepts described in Appendix 2 of this manual. Key requirements of several NFPA documents are listed along with the referenced components.





IoT Fire Pump Monitoring



24/7 monitoring to ensure the safety of your critical equipment.

Evaluate before use

Improved emergency response and management

Instant alerts and warnings

Audit reports are stored in the cloud for traceability.

Maintenance and compliance with FM 1330 standards

No data loss and records

Unlimited number of digital devices and sensors for additional device monitoring.



IoT Fire Pump Monitoring System

Monitoring - Controlling - Alerting - AI Learning -
Asset Management - Compliance



Flow

Pressure

Battery

Voltage

Vibration



flow rate



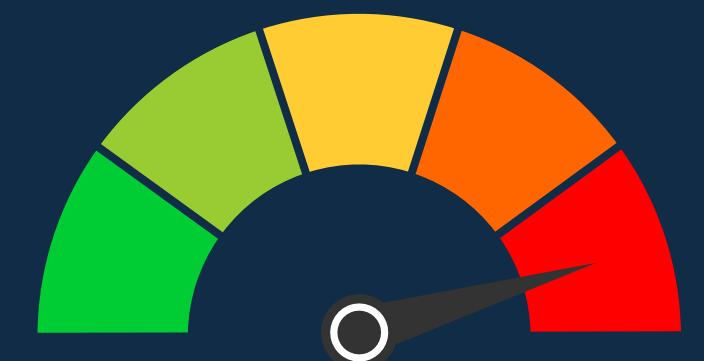
Pressure



battery



Voltage



Vibration

Fire Pulse Gateway

It is a device used for monitoring and controlling fire pumps via IoT (Internet of Things) system, including temperature sensor / 12 hours backup battery / supports 3 channels 4/20 mA and Modbus.

1. Temperature sensor

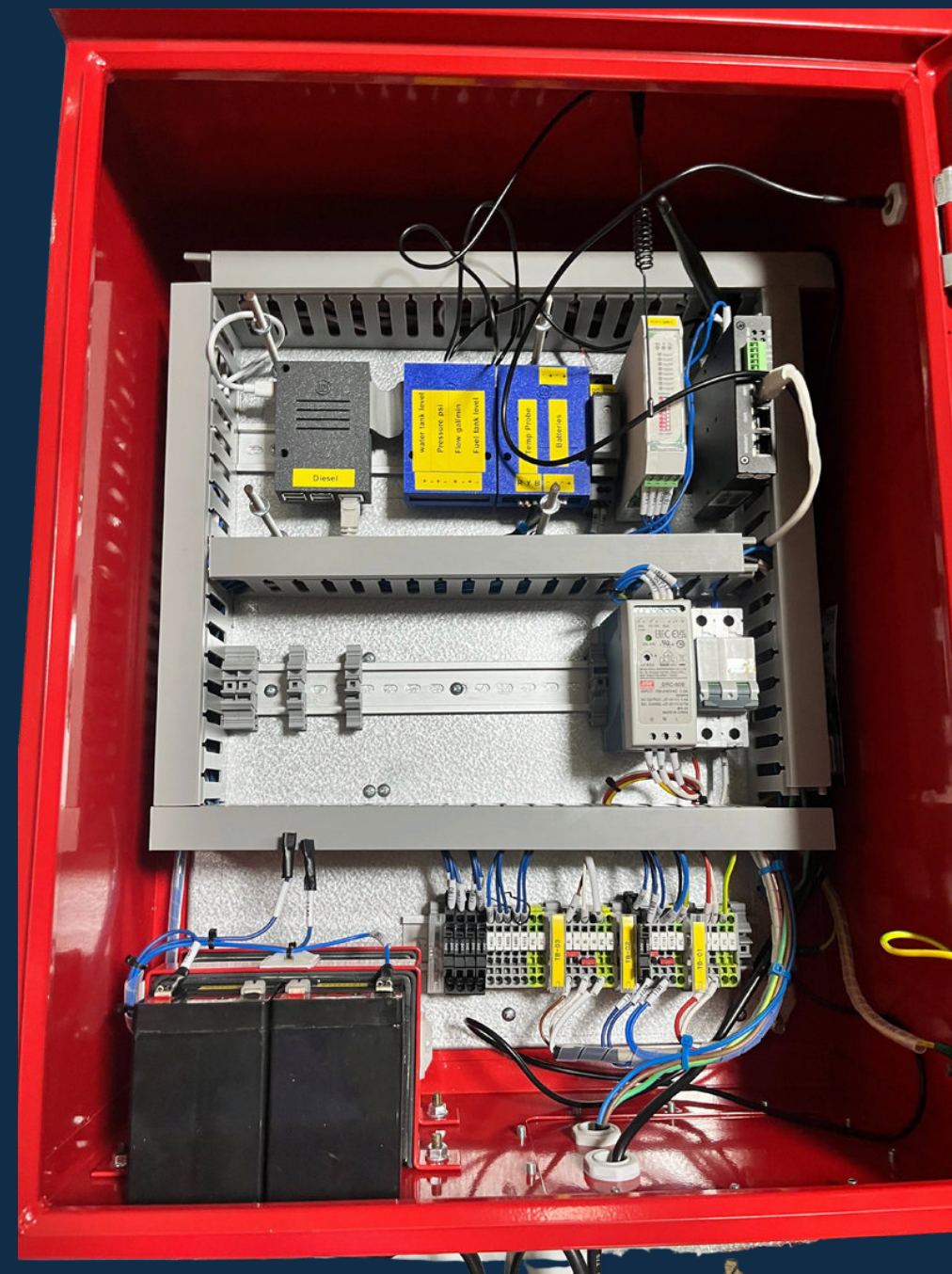
Used to check the heat that may occur from the operation of the water pump.
Helps prevent overheating which can damage the pump.



IoT Fire Pump Monitoring

2. 12 hours of backup battery

Keeps the system operational even in the event of a power outage.
Ensures that pump monitoring is not interrupted.



3. Support 3 channels 4/20 mA.

Can be connected to sensors and other devices to get more information about the condition of the pump.

4. Support Modbus

It is a standard protocol for communication in industrial systems.
It allows easy connection to SCADA systems or other control systems.



Dr. Pump, a fire pump monitoring system with IoT



Wired water level sensor

A pressure water level sensor is a sensor that measures water level by reading the pressure at the tip of the sensor.



Wireless water level sensor

Ultrasonic water level sensors are used to measure water level by using the principle of reading values from ultrasonic waves to measure the distance from the water surface. The sensor is installed at the top of the tank.



Triaxial vibration sensor

Vibration sensors are used to measure vibration and can be used in engines and motors to diagnose and prevent equipment problems in advance.



Fuel level sensor

The diesel level sensor uses the same principle as the pressure level sensor in reading the liquid level from the sensor tip using pressure, but this sensor has a material design specifically for diesel to measure the diesel liquid level.



FM certified digital flow meter

The advantages of the Turbo-Lux@ 3 Digital flow meter are: one device for a small footprint and a complete measurement range from 20 ... 10 000 USgpm (75 ... 38 000 l/min.) Analog output 4 ... 20 mA (24 V DC version).

Dashboard

Display screen



Display screen

- Customizable as needed

Derate Factor Analysis

- Real-time

Export summary reports in CSV, PDF formats
Check the items according to NFPA 25 standards and installation equipment.



Notification

- Immediate notification

Supports unlimited notification recipients

Predictive Maintenance

Gateway Management System

Customize calculations and alert settings

Security



safety

- Secure storage system

Manage Gateways on the Cloud

Analyze historical data trends

Continuously update security vulnerabilities

Secure environment via MQTT Protocol



Flexibility

- Check 24/7

Support remote monitoring

Connect via 4G, WiFi, LAN

Always use the latest version

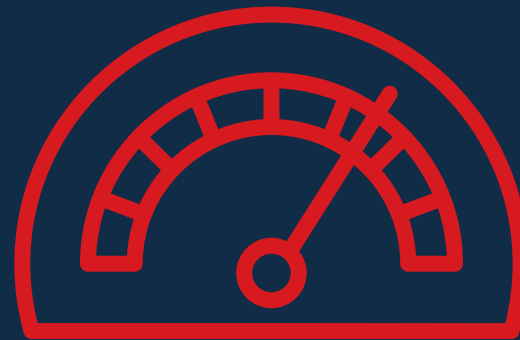
Smooth software updates

There are fees for each work site.

Asset Management System



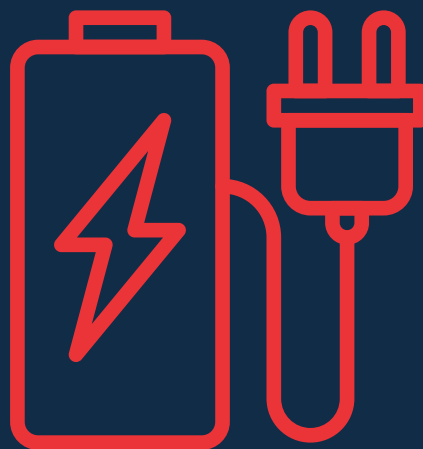
Temperature status of the pump room



Fire Engine Status (Derate Factor)



Battery condition status



Battery charger status



Fire suppression system pressure



System status in the pump room

Additional information from the fire pump controller can be displayed on the display.

Parameter name			
AC power failure	Loss of Continuity (Contactor 2)	Test mode	Low reserve temperature
DC power failure	Weekly testing does not reach the specified value.	Pneumatic system won't start	Low water levels in the reservoir
Battery 1 failed	Check the solenoid valve in weekly tests.	Auto Bypass Mode	The water in the reservoir is depleted.
Battery 2 failed	Pressure transducer error	Hydraulic system won't start	High water levels in reservoirs
Charger 1 failed.	Must be tested weekly.	Notification sound is muted.	Flow meter working
Charger 2 failed	No coolant circulation	APSAD general default values	Fuel tank leak
Engine problems	Engine failure while running	High blood pressure	Low fuel level
Alarm in the pump room	The engine won't start.	The pressure is too low	High fuel level
Controller problems	The engine is running too fast (3)	Low suction pressure	The electronic control module is in the reserve position.
Must be serviced	Low ambient temperature (internal sensor)	Start the flow	Fuel injection system malfunction
	The engine is running	Battery 1 voltage is too high.	High engine temperature
Battery 1 is weak	CANBUS communication system failure	Battery 2 voltage is too high	Low engine temperature
Battery 2 is weak	The pump works as required.	High ambient temperature (internal sensor)	Engine Electronic Control Module Warning
Loss of continuity (Contactor 1)	Incorrect editing	Low raw water flow rate	Engine electronic control module error

Parameter name			
Low pneumatic pressure	High starting warning signal	The control switch is in manual mode, high.	The temperature of the raw water is high.
The main pressure relief valve is open.	High-performance lockout	High pressure transducer error	Low to high raw water flow rate
High raw water temperature	Starting with high #1 battery	High AC start failure	Low engine temperature
Low suction pressure of PLD	Starting with high #2 battery	Battery Failure Warning Signal #1 High	Low and high oil pressure warning signals
Low hydraulic pressure	High work breaks	Battery Failure Warning Signal #2 High	Pump Problem Input #1 High
High minimum latency time	High pressure start requirement	High Pump Problem Warning Signal	Pump Problem Input #2 High
High Zone Delay Time	High demand for remote start	System Problem Warning Sign #1 High	Pump Problem Input #3 High
High-order delay time	High Deluge Start Demand	High AC power failure alarm	Pump Problem Input #4 High
Engine running high	High demand for weekly test start-up	Battery Overvoltage Warning Signal #1 High	Pump Problem Input #5 High
High and low suction pressure alarm	Starter contactor #1 failed, high	Battery #2 High Voltage Warning Signal	Pump Problem Input #6 High
System shutdown due to low suction pressure, high	Starter contactor #2 failed high	The electronic control module is in the reserve, high position.	Pump Problem Input #7 High
High System Pressure Alarm High	High-pitched warning signal	High fuel injection system malfunction	Pump Problem Input #8 High
High Speed Warning Signal	High pump demand	Electronic Control Module Warning High	Battery #1 in balancing high
Weekly testing works high	The control switch is in the automatic high mode.	High Electronic Control Module Error	Battery #2 in high balance



IoT Fire Pump Monitoring



"Smart, Safe, and Secure – Fire Pulse Ai
We will send you our Check List - Subscribe Today

Fire Pulse Dashboard



firepulse2

Dashboard

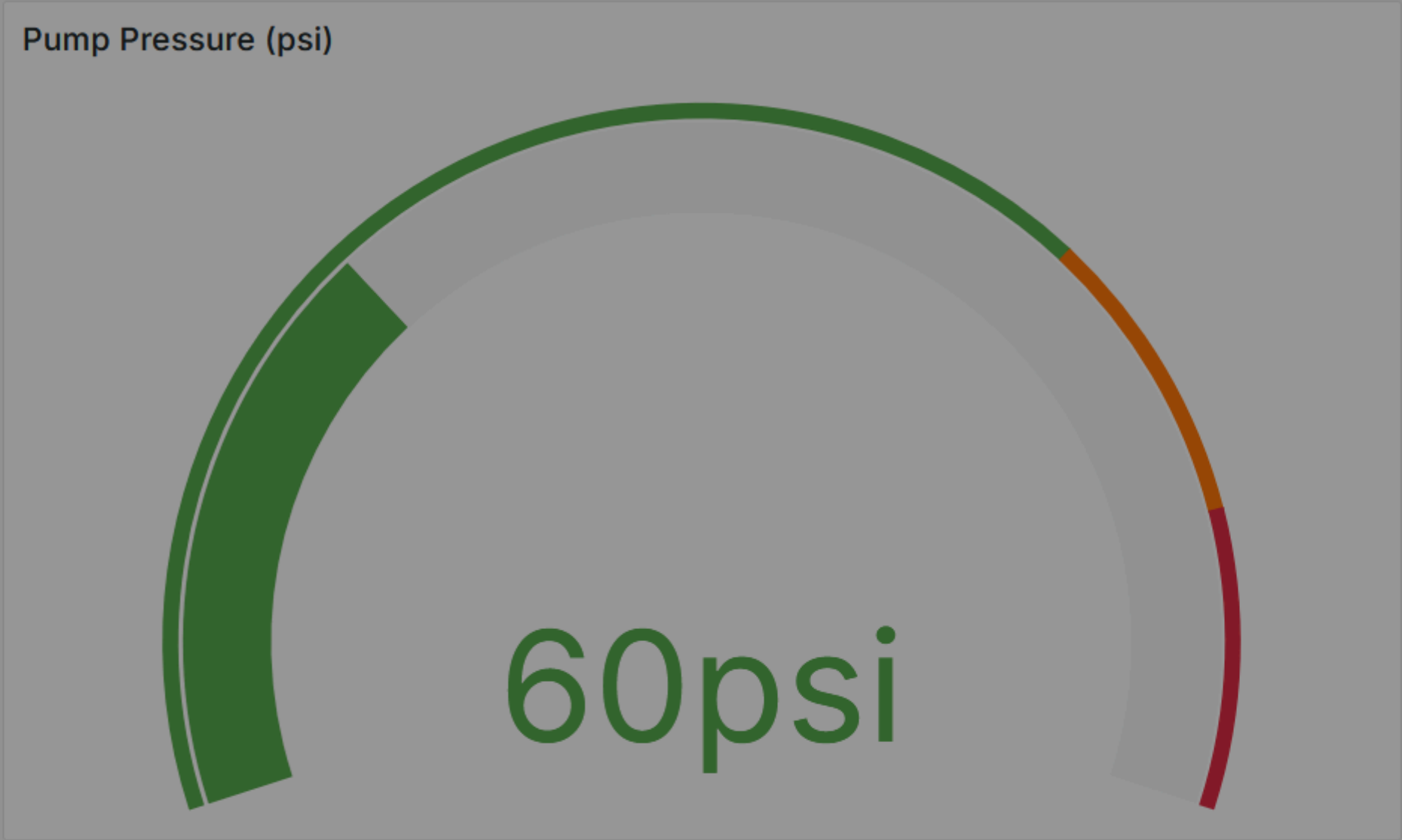
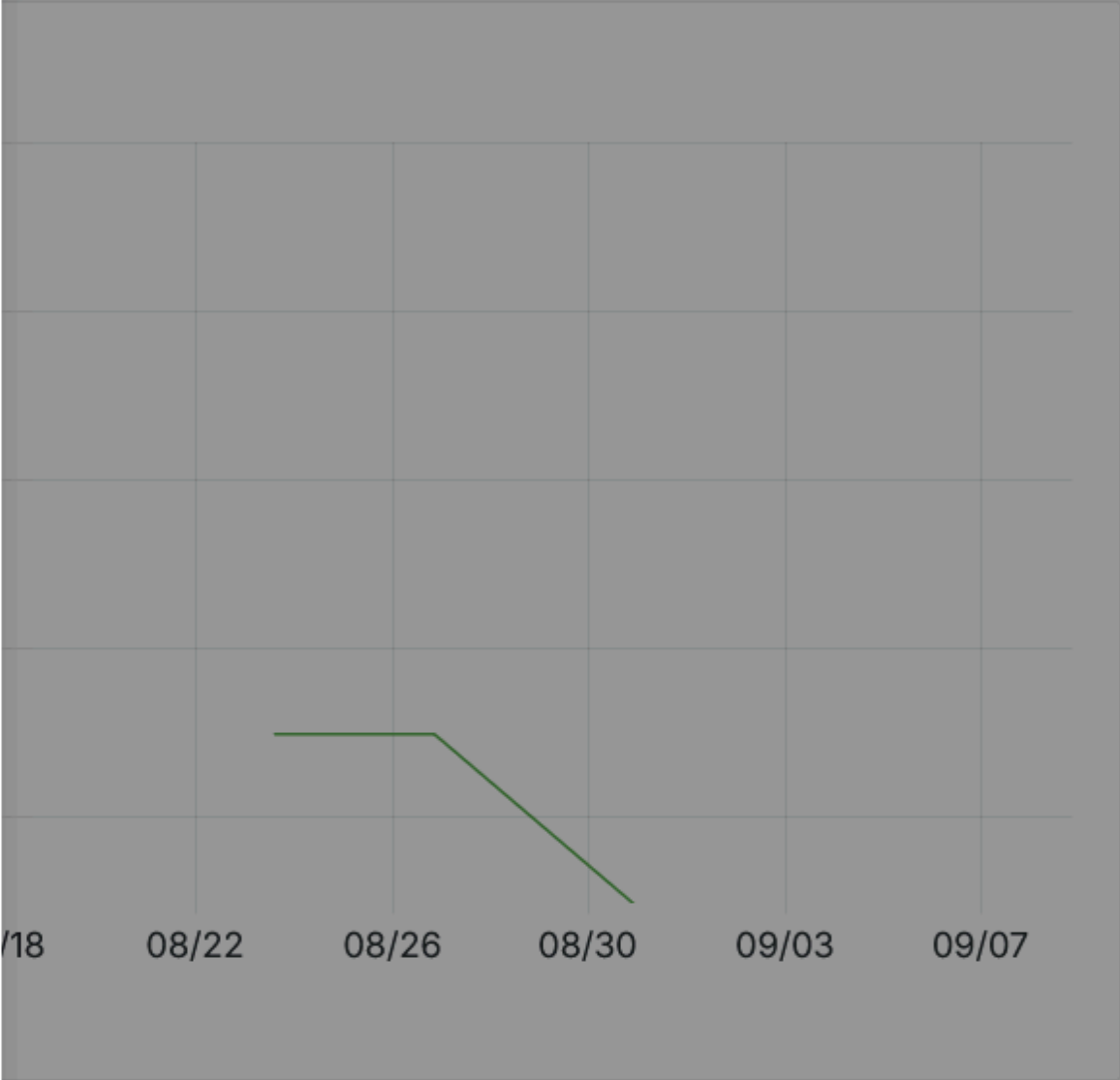
Download Checklist

Logout

Last 30 days

30m

Auto



Controller - Controller Mode (Off / Auto / Manual)

Action

Pumpsense will survey the site, including existing equipment and future needs, and provide project details and scope, sensors, energy-saving pump systems, VFDs, and more, tailored to the client's needs and budget.

Gateway calculates per area and grouping

Below are the main items to check for IoT dashboard setup costs.



Sensor quantity

Number of sensors (flow, water pressure, voltage, temperature, vibration) to be monitored.



Deployment

Data review cycles:
Average per minute,
Users per tool,
Notifications on multiple devices:
Laptop, Tablet, Smartphone.



Visualization

Visualization of results and notifications (Line, SMS, Email) / Alerts on multiple devices: laptop, tablet, smartphone.



Subscription Settings

Subscription period: 3 years
Installation time per tool (pump/valve)



Contact us

Contact Pumpsense to bring your processes and systems to the cloud and start saving energy, maintenance, and reducing downtime. Learn and automate to achieve the most efficient system.



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