



FIREPUMP.AI

There is zero compromise
when it comes to protection of life



SYMBIONT | 8 Notifications | FIREPUMP.AI - Pump Monitoring

Notifications:

- [SAFETY] Engine Over Speed raised with an escalation of None. Time to Respond @NOW! SMS N/A. Email N/A
- Charger 2 Failure raised with an escalation of None. Time to Respond @ SMS - Email
- ECM Alternate raised with an escalation of None. Time to Respond @ SMS - Email
- Battery 1 Failure raised with an escalation of None. Time to Respond @ SMS - Email
- Charger 1 Failure raised with an escalation of Critical. Time to Respond @ SMS - Email**
- Engine Out Alarm raised with an escalation of None. Time to Respond @ SMS - Email
- Jockey Pump Fail raised with an escalation of Information. Time to Respond 15m

Main Dashboard:

- Engine Running:** 1 (Today 8:05 am)
- Water Tank High Level:** HIGH (Today 8:05 am)
- Water Tank Low Level:** OK (Today 8:05 am)
- Max. Engine Capacity:** 99% (Today 8:05 am)
- Fuel Tank High Level:** OK (Today 8:05 am)
- Fuel Tank Low Level:** LOW (Today 8:05 am)
- Switch in Auto mode:** YES (Today 8:05 am)
- Battery 1 Voltage:** 21 V (Today 8:05 am)
- Battery 1 Current:** 1.5 A (Today 8:05 am)
- Controller Power Available:** YES (Today 8:05 am)
- Battery 2 Voltage:** 13.3 V (Today 8:05 am)
- Battery 2 Current:** 1.4 A (Today 8:05 am)

Pump Room Temperature Trend: Line graph showing temperature over time, with a peak of 30 and a low of 20.

Visit us: <http://Firepump.AI>

Email: ask@firepump.ai

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Firepump.AI

Firepump.AI introduces game-changing technology and innovation to enhance safety and transform the way in which existing fire pump systems operate. Kirloskar Brothers Thailand, its fully owned subsidiary SPP Pumps Asia and ZI-ARGUS have formed an exclusive collaboration. Combining SPP Pump's over 100 years of fire pump experience, with ZI-ARGUS's expertise as an independent provider of advanced Process Control, Automation, and Industry 4.0 Solutions.

Together we've created an industry-leading Fire pump monitoring service and alarm system based on state-of-the-art Industrial Internet of Things (IIoT) technology powered by Symbiont - the most advanced and secure cloud based digitization platform in the market - to dramatically make fire pump systems safer, more reliable, and more cost efficient than ever.

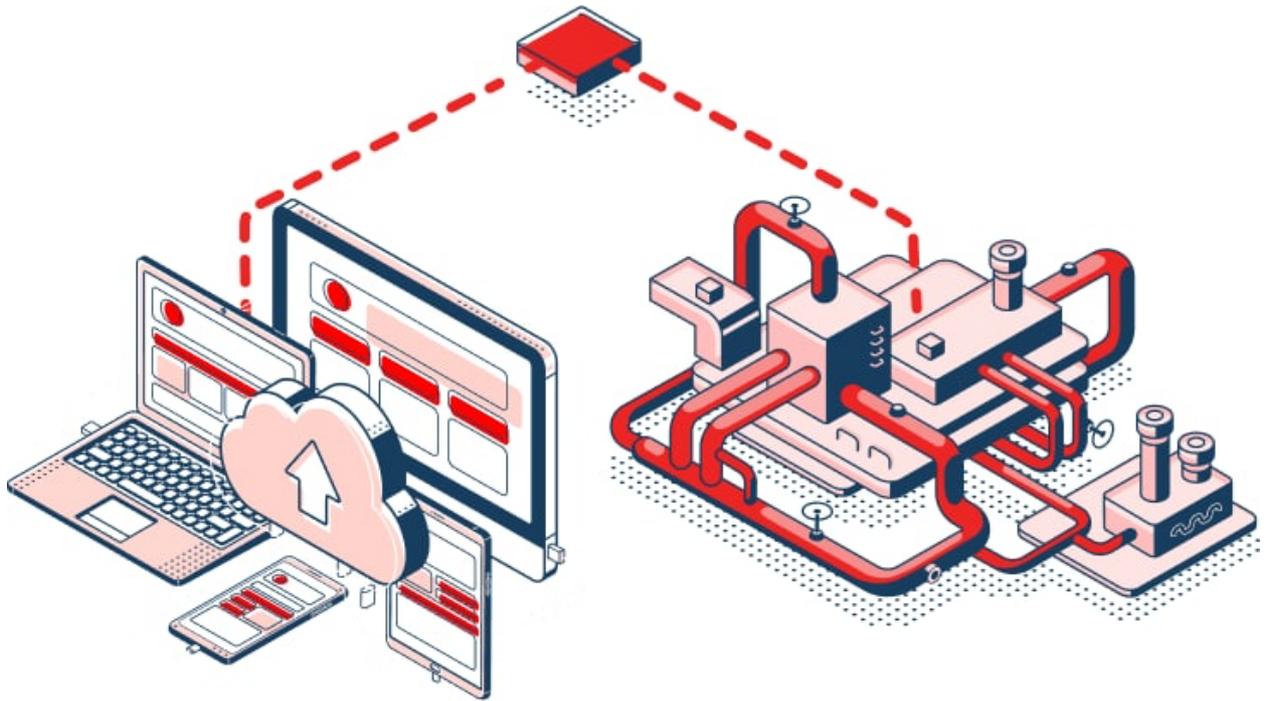
With FIREPUMP.AI we're leveraging IIoT to protect lives and properties, like never before.

Why Choose Firepump.AI?

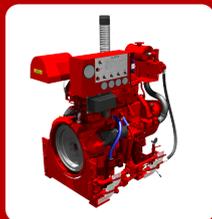
- Ensures your Firepump system is always connected, monitored and ready to operate 24/7.
- Monitor critical Firepump system information from any location in the world on your smart device for peace of mind and efficient maintenance support.
- Pin-point issues before they become critical, such as battery readiness, water and diesel fuel levels compliant to NFPA 20.
- Receive automatic warning and alarm messages in circumstances affecting the readiness of your Firepump system.
- Online cloud storage and availability of checklists to create a traceable and auditable track record for insurance, building management and fire incident command.
- NFPA 25 compliant checklist available to assure appropriate weekly, monthly, quarterly and yearly checks of your system.
- Access critical (historical) data for fire incident command.
- Allows faster emergency response with critical data immediately available.
- Checks code compliance such as engine de-rate factor, auto mode etc.
- Works with all brands and types of pump.
- Data is stored securely in the cloud or on your local server.

Firepump.AI Complete Solution

Safety and monitoring of the fire pump room and equipment



Pump



Driver



Gear Box



Controller



Firepump.AI

Eliminating Error for Superior Safety



With Firepump.AI, rest assured knowing that all critical diagnostics and data collection required in compliance with fire safety standards are completed around the clock and securely logged on the cloud. Firepump.AI's highly accurate readings mean fewer inspections by engineers are required, saving time and expenditure, while crucially reducing human error.

At the heart of Firepump.AI is its unique Industry 4.0 IIoT control unit, which is mounted in the pump room. The Firepump.AI control unit is capable of independently collecting all available data from up to ten fire pump systems in a pump room, as well as any type of optional sensors mounted.

This information, collected by the Firepump.AI control unit, is transferred over a secure gateway either wired, WIFI or via mobile network to your private cloud space where it becomes available for use in the Firepump.AI software application.

The gateway is UL listed to assure safety and compliance with the overall installation.

A partnership paving the way for fire safety

Firepump.AI is a development of Kirloskar Pumps Thailand, a world-renowned manufacturer of fire pumps and related equipment.

Our mission, to provide world-leading fire pump solutions, has paved the way for the creation of some of the safest and most reliable fire pump systems available today. Using knowledge acquired by our sister companies SPP Pumps and KBLs, during their +100 year of experience in the industry, we launched Firepump.AI as an independent brand, to allow us to work and collaborate freely with all brands and makes available in the market, for the benefit of our customers and the market at large.

Firepump.AI was born out of the need to ensure that buildings and the people within are always protected with the very best in fire pump systems. Regular fire pumps require frequent, in-person inspections to ensure they comply with rigorous safety standards. Such methods only leave room for error, something that is unacceptable with any fire safety system. Firstly, in-person maintenance and inspections require a high level of knowledge, competence and awareness of the procedures and checks needed to ensure that everything is in working order at that given time. Any human error could prove extremely costly, whether through negligence or the inability to detect a certain issue. Secondly, these inspections are only carried out when scheduled. Even with inspections done weekly, there is still a significant period whereby no inspections are carried out - we simply have to put trust in the equipment. At Firepump.AI, our mission is to ensure that every risk is minimised, every issue is detectable, and safety is always paramount.

We've left no stone unturned in the design and implementation of our fire pump systems, offering complete solutions from fire pumps through to service subscriptions for inspections, maintenance and repairs. We also provide equipment that can be retrofitted to existing fire pump systems, drastically improving safety and reliability.

All of our products and services have been designed and are sourced from world-leading providers, working seamlessly in conjunction with each other.



Securing safety with world leading brands



Enriching Lives

Kirloskar Brothers Limited

Kirloskar Brothers Limited is India's largest manufacturer, producer and exporter of centrifugal pumps. With a business value of US\$ 2.1 billion, the Kirloskar Group provides unparalleled experience, expertise and quality across their entire range of water pumps in which we use. The company's rich history spans over a century of leading best-in-class technology across India, with 75 types of pumps ranging from the smallest and largest pumps in the world. All pumps sourced from Kirloskar Brothers Limited are UL listed and FM approved.



SPP Pumps

SPP Pumps provide world leading fire pumps. All SPP Pumps Fire Pumps have been designed with the sole focus of fire protection and safety, becoming the first company to receive fire pump approval and listing by the Loss Prevention Certification Board (LPCB). The company's 130 year history has seen them provide fire pumps and fire safety solutions to some of the world's most iconic developments.



SyncroFlo

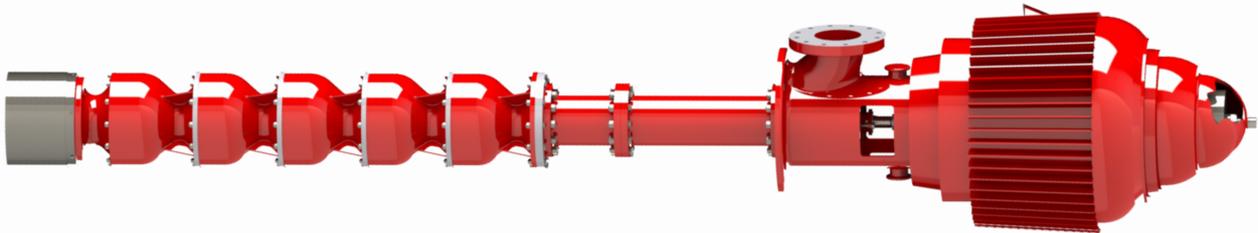
SyncroFlo disrupted the water pump industry in the 1960s by introducing pre-assembled systems to ensure quality performance time and time again. Their rapid growth saw the company introduce fire protection systems in the 1980s, in which they have gone on to build and manufacture some of the safest, most reliable pumps in the industry.

Pump - Proven, Reliable and Trusted

Firepump.AI provides a range of FM listed and UL approved fire pump equipment. Each pump serves a particular purpose and is used depending on the building type and size.

Vertical Turbine

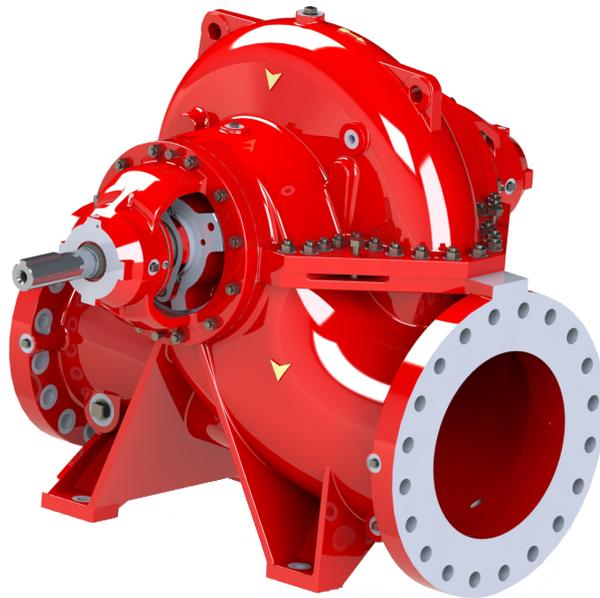
For water sources that are below ground or at deck level, vertical turbines offer the ideal solution for rapid and reliable response to emergencies and are available in a variety of materials. Vertical turbine fire pumps have standard listed duties ranging from 250 USGpm to 5,000 USGpm and are suitable for electric or diesel drives with higher duties, on request.



Compatibility	Use	For
Diesel motors	Sprinkler system	Manufacturing facilities
Electric motors	Hydrant system	Building Services
	Deluge system	Warehouses
	Monitor system	Power stations & refineries
	Water curtains	Oil and Gas

Split Case

FM/UL approved split case pumps are available for duties ranging from 200 USgpm to 5,000 USgpm. They're suitable for electric or diesel drives and are available with either inch or metric fittings. Operating anywhere between 760 litres/min to 19,000 liters/min, split case centrifugal pumps offer high performance with more simplified maintenance thanks to opposing suction and discharge flanges with the axially split casing. Split case pumps all feature single double suction or two single suction impellers in order to create consistent water pressures when needed.



Compatibility	Use	For
Diesel motors	Sprinkler system	Office Buildings
Electric motors	Hydrant system	Hospitals
	Deluge system	Airports
	Monitor system	Manufacturing facilities
	Water curtains	Power stations

End Suction

With motor slide rails and a back pull out design, our end suction pumps offer easy access and maintenance. Operation ranges are available for duties ranging from 200 USgpm to 1500 USgpm. End suction pumps are designed to meet most normal requirements making this space-saving pump one of the most commonly used arrangements.



Compatibility	Use	For
Electric motors	Sprinkler system	Supermarkets
	Hydrant system	Hospitals
	Deluge system	Airports
	Monitor system	Manufacturing facilities
	Water curtains	Power Stations
		Schools and Colleges
		Hotels & resorts
		Office Buildings

Vertical Multistage Jockey Pump

Vertical Multistage Jockey Pumps are available for duties up to 225 USgpm and are applicable to any standard motors. The requirement of stability and reliability for fire pumps is very high. The flow can be guaranteed when the head changes. Vertical Multistage Jockey pumps can be used as fire pumps.



Compatibility	Use	For
Electric motors	Building water supply	Building Industry
	Firefighting system	Water Treatment
	Boiler feed water	Irrigation
	Water works	Dairy, Food Processing
	Irrigation system	Beverage Industries
	Water treatment - RO system	Small Capacity Power Plants

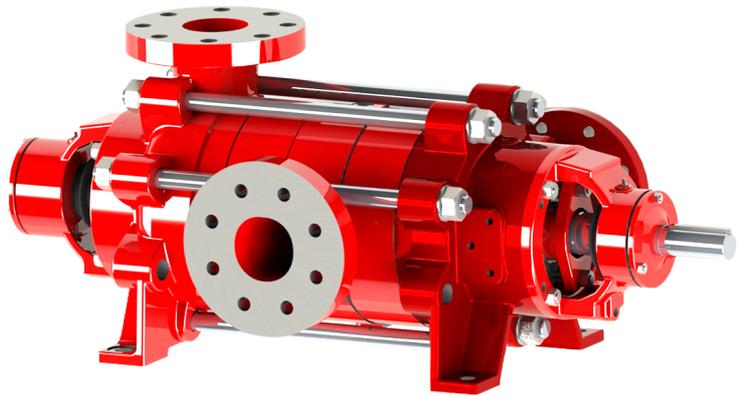
Multi-Stage Multi-Outlet (MSMO)

SPP Pumps is the first company to offer FM and LPC Approved multi-stage multi-outlet (MSMO) pumps available in both horizontal and vertical configurations, for a better fit in tight spaces.

Using multiple impellers to generate more head than a single impeller, MSMO pumps are used in fire protection systems in most tall buildings including offices, hospitals and hotels.

The cost and space saving implications are significant:

- Power requirements are lower.
- Pump rooms can be smaller.
- There is no need to use pressure reducing valves to prevent over-pressurization of sprinkler heads - As mandated by the new EU legislation,



Driven by electric motors or diesel engines, SPP MSMO pumps are available to satisfy any LPCB specification for automatic sprinkler protection in high rise and multiple story buildings.

The pumps have a flow range of up to 3,000 USgpm and a maximum of 7 outlets.

SPP MSMO pumps are used to protect life and property in some of the world’s most iconic buildings, such as: the Burj Khalifa Tower, the New World Trade Centre, the Shard in London, and the Marina Bay Sands in Singapore.

Compatibility	Use	For
Diesel motors	Sprinkler system	Office buildings
Electric motors	Hydrant system	Hotels
	Deluge system	Hospitals
	Monitor system	Residential buildings
	Water curtains	Tunnels

Audit & Installations

Installing Firepump.AI products and the Symbiont cloud monitoring system is designed to be as simple as possible. Every installation, whether entirely new or upgrading, follows these four steps:

- 1 **Checklist** - We'll send you a checklist of requirements to give our engineers as much insight as possible regarding your needs. This will cover things such as your existing fire pumps (if any), the size of the fire pump room, the position of your pumps and more.
- 2 **On Site Survey** - Our engineers will then visit your location to conduct a thorough audit of your fire pump system or fire pump space. This will also allow us to determine the kind of instalments that are necessary in order to provide optimum safety, such as sensors, gateway connectors or entirely new fire pump configurations.
- 3 **Quotation & Schedule** - Once we've configured and agreed upon the optimised solution for your fire pump safety system, we'll provide a quotation and schedule that we'll honour throughout the installation.
- 4 **Instalment & Training** - Our expert engineers will instal each part of the Firepump.AI hardware and software, ensuring everything is connected and working seamlessly with Symbiont. We will also provide training to any necessary personnel.

Always Compliant. Always Approved.

Firepump.AI is the only company in Thailand offering FM approved and UL listed products and upgrades across all of our installations:

- Zero loss of FM & UL approval, no matter the installation and service
- We can install FM & UL approved solutions
- Previously non-compliant hardware can be brought up to standard

Pre-Audit

In order for Firepump.AI to work flawlessly, we conduct a thorough audit of any existing fire pump systems. Primarily, we will check to see if existing equipment is FM listed, UL approved and/or NFPA 20 compliant. This allows us to assess precisely what is needed to ensure a fully compliant fire pump system that takes full advantage of the hardware and equipment Firepump.AI installs, as well as creating a seamless connection to its cloud-based monitoring system.

In the case of an existing system which we can upgrade, our expert engineers will retrofit any equipment needed in order to optimise your fire pumps to work seamlessly with Firepump.AI whether that's new pumps, drivers, gear boxes or simply a Firepump.AI gateway and sensors for temperature, battery, fuel and water level monitoring.

For new buildings or complete overhauls of fire safety systems, Firepump.AI offers a complete service for surveying, installation and subscriptions-based servicing.



Installations

Firepump.AI Installations

Whether a completely new fire pump system or an upgrade from an existing system, we can help create a safer, more efficient, and easier to monitor system than ever before. Through all of the brands and products we offer, we'll advise on the optimal equipment based on your needs to ensure that whatever the situation, you're as well prepared as possible.

New Fire Pump Systems

New fire pump systems installed by Firepump.AI include everything to allow remote monitoring from day one. Every system is optimised to suit your building needs based on size and use.

Existing Fire Pump Upgrades

Whether a new pump driver is needed, or simply the installation of new sensors and transmitters to ensure all critical data can be monitored, Firepump.AI will ensure your upgraded fire pump system is safer than ever before.

New Flow Meter



Pump



New Pump Bearing



Old Driver



New Driver



Gear Box



Controller



Firepump.AI

Firepump.AI powered by Symbiont

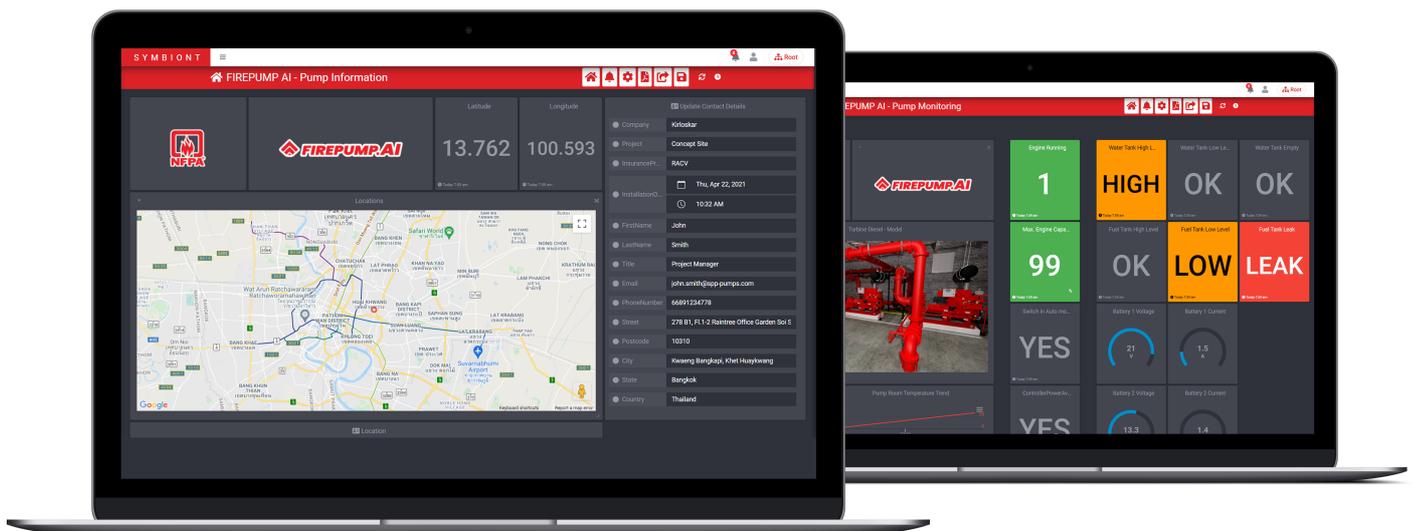
Firepump.AI is powered through Symbiont by ZI-ARGUS, the flagship cloud-based monitoring system, providing all the critical information and data required to maintain a fully optimised fire pump system. Connected to the onsite controllers via a secure gateway either wired, WIFI or via mobile network, you'll be able to keep an eye on everything you need, 24/7.

With Firepump.AI you'll know exactly when any anomalies or issues arise, before they become a more serious issue. Monitor all of the most crucial data and more at anytime, anywhere, including:

- water supply
- fuel supply for diesel engine run drivers
- battery supply for electric motors
- pump room temperature for optimised HP for specific flow and pressure



Symbiont
by **ZI-ARGUS**



All of the above can be monitored at any time via sensors for temperature, battery, fuel and water level monitoring, with alarms that will warn users when any levels start to fall low - meaning critical situations can always be avoided. Firepump.AI directly to KBTL engineers, meaning we can take immediate action should any maintenance or repairs be required.

With all the data saved securely on the cloud, crucial information can be shared with fire emergency services instantaneously, providing them with critical data such as the building's fire system layout, the water storage levels, water pump performance and more. All of which could prove vital in helping to alleviate the damages caused in the case of an emergency.

Benefits Overview

With Firepump.AI, fire pump safety standards have never been higher. With 24/7 monitoring capability you'll be able to detect any issue, no matter how small, before it becomes a critical situation.

Not only will you benefit from peace of mind knowing that your buildings are the safest they've ever been, you'll also save time, cost and stress without the need for tedious inspections and record keeping. Everything you need for safety compliance is recorded in real-time to a secure private cloud, providing you with all the data you need in any situation.

When it comes to safety, there's simply no other choice.



24/7 Monitoring



Reduced need for in person inspections



Remote Access Anywhere



Reduce human error



Secure Data Storage



No lost data & records



Instant Alerts



Never disconnected

Service Contracts

Never Worry with Firepump.AI Service Contracts

When using Firepump.AI fire safety solutions, you're able to take full advantage of our service contracts. When subscribed to one of our service contracts, you'll be able to hand over all your fire pump monitoring and maintenance requirements to us. We'll take care of everything to ensure that the safety of your building and those inside is never compromised. Whether that's round the clock remote monitoring, to on-site visits when we're alerted to parts that need replacing, we're always on hand. In the event of an emergency, the data collected from Symbiont will allow us to inform fire emergency services about the building layout, fire system layout, water flow and storage, and any other critical information to aid them in putting out fires quicker and safer.

We offer three Tiers of subscription plans, all lasting 2-3 years, with the option to tailor plans to your needs:

	Tier 1	Tier 2	Tier 3
Access to Firepump.AI	✓	✓	✓
Cloud monitoring of sensors and alarms (NFPA 20 compliant)	✓	✓	✓
System documentation & checklist (NFPA 25 compliant)	✓	✓	✓
3x quarterly and yearly inspections		✓	✓
24/7 monitoring of all systems by Firepump.AI			✓
Monthly, quarterly and yearly inspections, inc. parts replacements			✓

Additional services are available which include building automation, booster sets and HVAC monitoring, energy audits or upgrades of your existing fire installation.

Whatever option you select you will be ensured that the safety of your building and those inside is never compromised.

Instrument Options

The Firepump.ai gateway and cloud software has the following standard functionality

- NFPA 25 check list
- Upload inspections into the cloud to create traceable record for safety compliance
- All technical system information and GEO location
- Standard NFPA 20 defined alarms via the main controller and jockey pump controllers when modbus is available stored in cloud including warning system to defined mobile devices / users
- Firepump.ai gateway can connect to up to 20 controllers with modbus

We offer the following options connect to firepump.ai gateways



Digital Flow Meter FM Approved

Global Vision is the ONLY fire pump test meter manufacturer to offer digital flow meters. This gauge will make reading your pump test easier than ever before. Its fully FM approved.

4/20 ma output means you can transmit and collect data in your controller, laptop, or wherever you prefer to have the signal sent.



Vibration Sensor on pump

Phantom is a Wireless Vibration Monitoring System which works on encrypted bluetooth. Phantom can send data to a local database or to our cloud-based system, EIAntalytic. At any moment, you can keep track of your machinery using any device such as a smartphone, computer or tablet.

The vibration sensor can easily monitor and send early failure messages concerning bearing life, misalignment, pipe stress and other pump related errors. This to assure your system is always ready.



Battery Monitoring for Diesel Fire Pumps

NFPA20 11.2.7.2.1.1 states that all 12V diesel fire pump engines should be provided with two storage battery units. Each battery shall have twice the capacity sufficient to maintain a 3-minute attempt- to-start cycle (15 seconds of cranking and 15 seconds of rest, for 6 consecutive cycles) 11.2.7.2.1.4.

Monitoring of battery voltage to assure your batteries are ready to use!



PT 100 Room Temperature measurement

Extremely important to measure Derate factor for diesel driven fire pumps

Engine Derate Factor (Temperature PT100)

Standard data Fire Engine curves and selections are based on operation at SAE standard J1394 conditions of 300 ft. (91.4 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No.2 diesel fuel only.

An Engine has a correction factor as follows:

Altitude:

Correction factor per 1000 ft. (305 m) above altitude limit: 3%

Temperature:

Temperature above which output should be limited: 77 °F (25 °C)

Correction factor per 10 °F (5.6 °C) above temperature limit: 1%

Formula for derate factor (not taking into account right angle gear box as this should be done at time of purchase).

$EH_{cor} = [(Ca + Ct) - 1] \times \text{listed engine horsepower}$

Whereby:

EH_{cor} = corrected engine horsepower

Ca = corrected engine horsepower for altitude (elevation)

Ct = corrected engine horsepower for temperature

Firepump.ai check smartly between pump break HP – EH cor and inform if system is still compliant to NFPA 20 or not. There is a warning when eg the difference between Break HP and EH cor is less than 5%

Pump room temperature need to be cooled as a remedy.



Diesel Tank for Diesel Driven Fire Pumps Ultrasonic Level Measurement

The ultrasonic level measurement connected to Firepump.ai measures the exact fuel available in the tank.

The fuel tank capacity need to be as follows. 1 Gallon for each HP to guarantee enough fuel for 8 hours operation as per NFPA 20 standard. On top NFPA 20 ask for 5 % allowance for sump in the fuel tank due to sedimentation and or condensation and 5% for fuel expansion. Hence listed engine HP * 1.1 = fuel tank min level.

Firepump.ai gives alarm as min level is reached as well as the exact fuel amount to be filled.



Water Level in Reservoir

When water in reservoir is at or below min level a warning will be send via firepump.ai

Other instruments on request....

Contact

To learn more about our service contracts, please contact us via the details below:

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