BLACKSTARTECH®

ROBOTIC FIRE WATCH SERIES
Advanced Automated Fire Watch Detection

Automatous
Fire Monitoring Solution

Video Analytics

Alarm Module

LiFePO$_4$ Battery

Opto-Mechanical Design

NFPA Compliant

Early Warning and
Real Time Alerts

Increased Productivity
Enhanced Safety
Cost Savings

The BlackStarTech Robotic Fire Watch Series is a rapidly deployable, independent fire detection system that augments degraded fire zones and protects your facility from emergent fire damage that can result from hot work and fires. The device provides essential job-site monitoring, supplementing or replacing personnel as allowed by the appropriate National Fire Protection Association (NFPA) code and authorities having jurisdiction (AHJ's) by meeting all requirements of FM Global datasheets 3270 (Hot Work Robot) and 10-3 (Hot Work Management—Interim Rev July 2021).

The Robotic Fire Watch Series monitors flammable and explosive hazards in fire susceptible and hot work areas as well as augments existing fire protection systems that are impaired or out of service. When the Robotic Fire Watch Series detects an event, it activates the onboard horn and strobe for local area warning. It immediately notifies remote personnel or first responders via an internal NFPA-compliant alarm panel and associated dry contact relays. The relay contacts can be connected to existing building fire alarm panels or other comparable facility alarm systems to actuate and enhance remote detection capabilities.

The term "hot work" includes any work that involves drilling, cutting, grinding, welding, soldering, burning, or melting of flammable substances and other spark producing activities. Hot work activities are typically blamed for a series of complex and costly fires around the country. A 2021 study by the NFPA of fire statistics reported from 2014 to 2018 shows that hot work was the cause of 4,580 fires, split between homes (43%) and non-home (57%) properties, resulting in approximately $484 million in losses.

A twenty-year study by FM Global found that clients experienced 736 hot work ignited fires or explosions with a total indexed gross of $1.9 billion in property loss and business interruption, amounting to an average gross loss of $2.6 million per incident.

The Robotic Fire Watch Series automates continuous hot work monitoring and amplifies zone observation to rapidly identify and annunciate unexpected fire events. The integrated system can stream live video to a central location. It supplements, and in some cases, eliminates the need for temporary human fire watches, and instead uses FM Global approved smoke video analytics, multi-spectrum IR3 flame detectors, and an integrated alarm system to surveil hot work and fire susceptible areas.

The Robotic Fire Watch Series uses Fike IR3-HD explosion-proof electro-optical flame detectors that provide highly reliable accurate and fast fire detection. Additionally, Fike's video analytics software package includes server-based artificial intelligence for early smoke detection.

Robotic Fire Watch Series
Your Automatous Fire Monitoring Solution

| Features	Benefits
Augmented fire zone examination and extended hazard monitoring capabilities	Floor to ceiling monitoring in most cases, providing early detection of smoke, flame, mist, vapor, or visible steam
Integrated Fike IR3-HD explosion-proof optical flame detectors	Accurate flame detection for up to 200 feet
Embedded Smoke Video Analytics	Early smoke, oil mist and gas vapor detection
Enhanced analytic software and integrated alarm notifications	Warns people in the area of the fire watch, notifying personnel and first responders
Optimized BlackStarTech Lithium Iron Phosphate (LiFePO$_4$) batteries	Up to 18 hours of battery backup for loss of AC

Video Analytics

Fire Watch video analytics employ artificial intelligence vision algorithms that enable autonomous perception to analyze the flame detector onboard camera video for smoke and other hazards. Video analytics is compliant with the National Fire Protection Association as a primary smoke detection system. The Fire Watch live video, with pre and post fire event recording, monitors the desired area. This technology can be used to direct first responders in case of an event, providing real time video and event localization, enabling faster decision making. The recorded video also allows simple fire investigation, with video of events that led up to the fire.

The Robotic Fire Watch Series detector addresses slow-growing and fast-erupting fires using triple IR (IR3) technology. It provides reliable detection of all types of hydrocarbon fires that are visible and non-visible. Smoke, visible vapor, steam, oil mist, reflected flame, and motion are just some of the situations the Robotic Fire Watch Series high-definition camera video detects and captures.

The Robotic Fire Watch Series does not require smoke or vapor to physically reach the detector or camera. Instead, the camera senses the smoke and vapor early as they ascend from the floor to the ceiling.
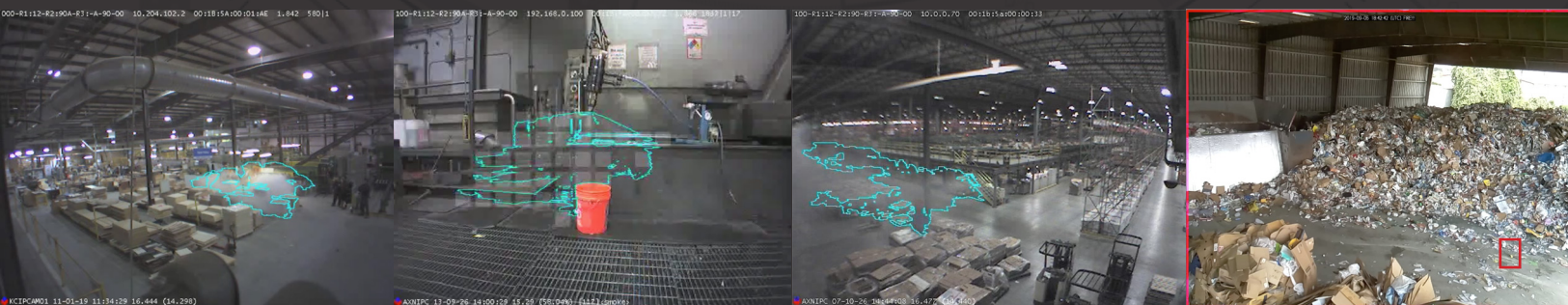
Smoke and flame detection   Oil mist detection   Smoke detection   Flame source detection

FM Global Approved

The Robotic Fire Watch Series dual flame detectors are FM Global approved, and successfully met the requirements of FM Datasheet 3270 for Hot Work Robots. The flame detectors also hold ATEX/IECEx/cFMus/and CE approvals. The integrated Hot Work Robot is in the process of being approved by FM Global, a leading insurance company that specializes in loss prevention.

Alarm Module

A system sensor model P2RK alarm module provides visual strobe light and audible horn alarm signals upon detection of oil mist, vapors, smoke, or flame. The strobe flashes at a frequency of 1Hz at 1 flash per second. The horn sounds at a maximum 88 decibels (dBA) to alert job site personnel of hazard.
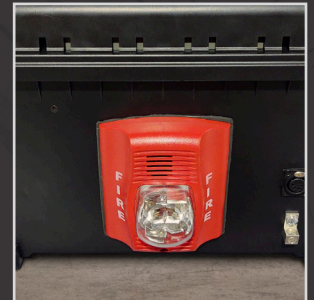
Battery

The Robotic Fire Watch Series has an optional battery pack utilizing Lithium Iron Phosphate (LiFePO$_4$) batteries to operate the unit in either an UPS (uninterruptible power supply) mode or in stand-alone battery mode. In UPS mode, when the AC is connected, it supplies all Robotic Fire Watch Series electrical loads and simultaneously charges the battery. When the AC is removed, the battery pack will supply the load with no interruption for 18.7 hours with one camera or 17.2 hours with two cameras.

Opto-Mechanical Design

Robotic Fire Watch Series has an enhanced opto-mechanical design. It is designed to prevent water from running into the optics, and there is no need for additional sunshield. The IR sensors sit behind a heated sapphire window and each sensor has a 90-degree horizontal field of view.

Fike®

Designed In collaboration with Fike Engineers and Fike proven products.
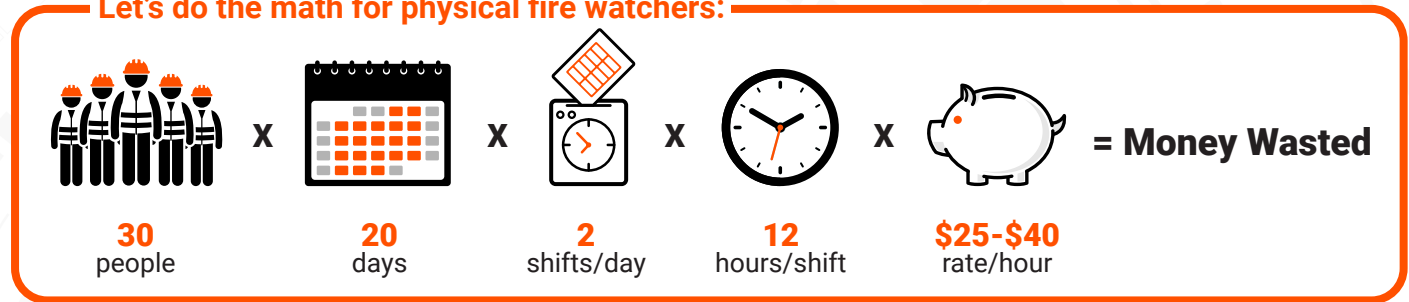
Early Warning

The Robotic Fire Watch Series provides early warning through real time alerts, reacting significantly faster than traditional smoke or flame detectors. With its advanced capabilities, it can monitor an entire room from the floor to the ceiling up to 200 feet away, detecting pixel changes, and identifying direct flame, smoke, visible steam or oil mists. While conventional detectors are typically located on the ceiling, the Robotic Fire Watch Series monitors from the floor to the ceiling providing nearly immediate detection where fires begin providing much faster detection and response times compared to traditional detection capabilities.

Increased Productivity, Enhanced Safety and Cost Savings

It's common for most industrial facilities to hire people to perform post-hot work fire watch and fire monitoring as well as during extensive maintenance evolutions, major retrofit activities, shutdowns, and outages. Fire watch activities often require personnel to physically monitor for fires due to degraded or out of service facility fire systems, or after hot work. Instead of hiring up to 30 different fire watch individuals to look for fire events, a Robotic Fire Watch Series can be utilized throughout the facility and monitored from one central control station potentially by one person.

So how much can your company save?

Let's do the math for physical fire watchers:

👷	X	📅	X	⏲	X	🕐	X	🐷	= **Money Wasted**

30 people X **20** days X **2** shifts/day X **12** hours/shift X **$25-$40** rate/hour = **Money Wasted**

BlackStarTech's Robotic Fire Watch Series can differentiate between heat sources due to welding and mechanical cutting versus flames.

Regulations

The National Fire Protection Association (NFPA) requires fire watch presence for hours during and after hot work as well as fire-susceptible areas. Robotic Fire Watch Series is compliant as a mitigating measure per NFPA 72, additional temporary fire protection per NFPA 25, and the Robotic Fire Watch is acceptable for Post Hot Work fire watch and the following required Fire Monitoring according to FM Global guidelines.

Robotic Fire Watch Series

Model Number: Robotic-Fire-Watch-001 (1 camera) or Robotic-Fire-Watch-002 (2 cameras)

Robotic Fire Watch Series' IR-3 HD flame detector provides ultra-fast response and reliable detection of all types of hydrocarbon fires. It addresses slow-growing fires and fast-eruption fire, operating in all weather and light conditions with the highest immunity to false alarms. Sunlight, hot objects, welding, and hot work do not affect Fire Watch alarms. The detectors are capable of detecting fireballs or explosions within 40 milliseconds. Using high-definition video output and clear imaging, it can detect a fire event up to 200 feet. This product allows rescuers to know the exact situation before entering the hazardous area as it automatically records video footage of the fire events.

For more information on standard or customized products, contact us at 1-844-585-6439 and info@blackstartech.com.


Smoke detection at 200 feet.

FlameSpec IR3-H2-HD

Flames detected that are normally invisible to standard cameras or naked eye.

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Specifications

Robotic Fire Watch Series	Model Number: Robotic-Fire-Watch-001 (1 camera) or Robotic-Fire-Watch-002 (2 cameras)	
	Dimensions (W x H X D)	16.5" x 9" x 12"
	Weight	15 lbs
	Operational Temperature	0 - 140°F
Enclosure Case		
	Nema Rating	4
	Ingress Protection Rating	IP 65 guards against overhead water deluge
	Unit Fire Protection	UL 94-V0 self-extinguishing resin
	Pressure Equalize	2L/min equalization vent
Battery		
	Voltage	12.8 VDC
	Wattage	38ah
	Battery Type	12.8 VDC LiFePO$_4$
	Battery Run Time	18.7 hrs (1 camera); 17.2 hrs (2 cameras)
	Cell Certifications	CE / RoHS / UN38.3 / UL 1642 / IEC 62133 / CB
Charger		
	Size NOCO GENIUS2 Quick Charge 3.0 Car Charger B07Q6JGX1L	12V 2 amp lithium battery trickle charger
	Output Power	30 W
	Charge Time	20 hours
Computer		
	1xNeousys POC-515 AMD Ryzen V1605B	1x16GD SO-DIMM DDR4 3200 1x256 GM M.2 NVMe SSD-Wide Temp Windows 10Pro-64Bit
IR Flame Detector		
Camera / Video Functionality		
	Number of Cameras	1 or 2
	Camera / Video Quality	HD - clear imaging of fire and humans at 200 ft. (30m) distance
	Video Recording Alarm Event	1-minute pre-event and 3 minutes post-event
	System Integration Protocol	ONVIF (Open Network Video Interface Forum) Profile S
Detection		
	Time and Distance	1.5s for 1ft2 (0.1m2) n-heptane pan fire at 0-100 ft. (0-30m) 4.1s for 1ft2 (0.1m2) n-Heptane pan fire at 100-230 ft. (30-70m)
	Detection Field of View (IR Detection)	90° Horizontal, 75° Vertical
	Detection Time Delay	0-30 seconds (adjustable)
	Detection Built in Test	Automatic and Manual

Specifications

IR Flame Detector (continued)		
Electrical		
	Operating Voltage	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 180mA Maximum: 250mA all systems in operation
	Operational Temperature	0 - 140ºF
	Wiring	12-20AWG (2.5-0.35mm2)
Mechanical		
	Size	7.87 x 5.12 x 5.12" (200 x 130 x 130 mm)
	Weight	Detector (stainless steel): 9.8 lbs. (4.4 kg) Tilt mount (stainless steel): 5.4 lbs. (2.4 kg)
Environmental		
	Temperature Range	Operating: -67°F to +167°F (-55°C to +75°C) Option: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	Humidity	Up to 99% (RH), non-condensing
	Ingress Protection	IP66 & 68; NEMA 4X & 6P
Connectivity		
		WiFi and Optional LTE Connectivity
Warranty		
	1 Year Warranty	Manufacturer warrants all equipment to be free from defects in material and workmanship under normal use and service for a period of twelve (12) months from date of shipment.
Code and Regulatory Requirements		
	Met Requirements	National Fire Protection Association (NFPA) 72, 51B, and 25
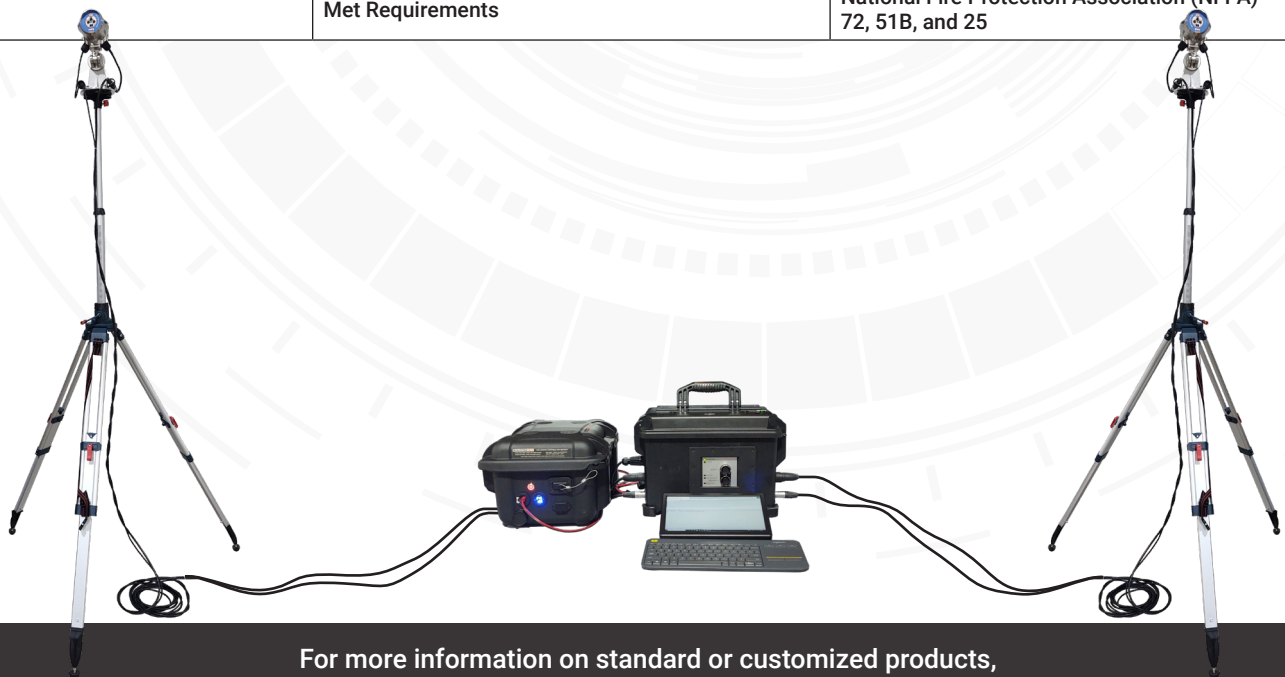
For more information on standard or customized products, contact us at 1-844-585-6439 and info@blackstartech.com.

BLACKSTAR**TECH**®

Resilient Solutions for Targeted Power, Lighting and Communications.

Anytime.   Anywhere.