How fire suppression could better protect combines

"The combination of high temperatures, fine dust and enclosed compartments creates the perfect storm."

FRED DULWICH

With farm fire losses topping £110M in recent years, attention is turning to technologies that can protect the machinery at the heart of harvest. *CPM* explores how fire suppression is moving from heavy industry to agriculture – and why some think it should be standard on combines.

By Charlotte Cunningham

Harvest 2025 will be remembered as one of the most challenging in recent memory. Long spells of hot, dry weather pushed crops rapidly through to maturity, leaving fields brittle and combines working in conditions more reminiscent of southern Europe than the English countryside.

For many growers, the season has been characterised by record-breaking work rates and nerve-wracking conditions in equal measure.

Unfortunately, the dry summer has also fuelled one of the industry's most stubborn hazards – fire.

According to NFU Mutual, farm fire losses across the UK reached £110.3M in 2023, up 37% from £80.4M in 2022. Vehicle fires accounted for £37.7M, with tractors alone making up £20.4M of that.

While combine harvester fire claims fell from £11.1M in 2022 to £7.4M in 2023, insurers stress that the figures remain eye-watering. And the true cost often extends beyond the insurance cheque: harvest downtime, lost crops, replacement costs and stress can turn a single blaze into a season-defining disaster.

So, why – in 2025 – are so many combines still unprotected? And could fire suppression systems, commonplace in industries such as quarrying and recycling, soon become part of the standard combine package?

TRANSFERABLE TECH

To understand how suppression systems are finding their way into agriculture, you have to go back to 2010. Fireward, a well-known name in the fire suppression market, began not in farming but in waste and recycling.

"The owners of Fireward were running heavy plant and machinery in hazardous conditions where fires were frequent," explains Fred Dulwich, head of sales at Fireward. "The systems available at the time weren't as reliable as they could be and were quite cost prohibitive.

"So they set out on a mission to supply the best fire systems possible into any given market, but at price points that didn't make it prohibitive for people to protect their assets. Once finance becomes the blocker to safety, you have a bit of a problem."

For more than a decade, Fireward systems became standard in waste

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sites, quarries and ports. “Those industries didn’t need convincing,” he continues. “The machinery operates in high-risk environments, the risks are well understood, and downtime is simply unaffordable. Fire suppression is part of the package.”

Agriculture, by contrast, has lagged behind. While there has been uptake sporadically, the market has been slower to embrace fire suppression systems, notes Fred. “Money has been a question, but more and more now, when new combines are costing well in excess of £500,000 new and the harvest window is so narrow, the effects of a fire can be make or break.”

So how exactly does it work? At its heart, the Fireward system is designed to be simple, robust and self-sufficient. “Within the engine compartments and hazardous areas, you have a pressurised pneumatic tube,” explains Fred. “It’s a heat-sensitive plastic tubing routed around the machine, and it’s pressurised with nitrogen.

“There’s no electrical power required, no batteries, no complex modules. It just has to be pressurised. If a fire touches the tube and melts it, the gas releases, which lifts a valve in the cylinder and discharges the agent automatically.”

This fail-safe design is key. “The beauty of the pneumatic system is that it fails safe. If there’s an incident, it has to go off,” he stresses.

“On combines, in order to counteract the superheated components and the potential risks of reignition post-discharge, use a dual-agent system. Dry powder is the primary agent and there’s nothing better in the market for putting out fires. It gets everywhere, discharges in seconds, and knocks the fire out.

“But with combines, because of the value and the risk of hot components, we add a supplementary wet agent that’s distributed to the turbochargers, the exhaust manifolds and the DPF. It knocks down engine temperature and minimises the chance of a re-flash. In other words, the fire is not only extinguished but the heat source that could reignite it is cooled down.”

Perhaps one of the most advantageous aspects of suppression is its autonomy. “The ethos is to make sure there’s no human intervention required,” explains Fred. “It doesn’t matter if the fire starts when the machine is going flat out in harvest or when it’s parked up in the yard overnight. Twenty-four hours a day, seven days a week, 365 days a year, that asset is protected.”

Autonomous advantage

Perhaps one of the most advantageous aspects of the Fireward suppression system is its autonomy, with the ethos behind the design to make sure no human intervention was required, explains the firm’s Fred Dulwich.

This is crucial in agriculture, where many machinery fires begin not during the day, but when machines are cooling down. Smouldering straw or a leaking hydraulic hose can ignite minutes or hours after a combine is shut off. With no one around, the outcome is often a total loss, he adds.

"With handheld extinguishers you're relying on someone being there, willing and able to tackle the fire. That might mean a farmer leaning over a hot engine bay and being directly next to a dangerous incident. We want to remove that risk completely."

Of course, this system comes with an additional cost on what is already a pricey asset. But while a common perception is that suppression must be prohibitively expensive, in reality, the numbers tell a different story.

"As a rough ballpark, a fire system will cost you about one percent of the value of a brand new combine," explains Fred. "That's not really a lot when you're spending that much money on the kit itself. They can be fitted retrospectively too, so it's about weighing up the value of that combine compared with the cost of protecting it."

PRE-HARVEST SERVICING

Annual servicing, typically carried out pre-harvest, is a fixed fee nationwide. "Whether you're in the top end of Scotland or the deepest part of Kent, it's the same," notes Fred. "We don't add mileage; it's a flat fee.

"The service itself is basically a recommission," he adds. "We check pressure, check for damage and make sure the system is live. Once it's done you know you're protected for another season."

One grower who's been impressed with the system is Mick Baker, farm manager at Chatterton & Cooke in Lincolnshire, who says fitting the fire suppression system to his new John Deere X9 was a 'no-brainer'.

"I'd seen the system at shows like LAMMA, and our neighbours had a big fire the other year on a combine," he says. "It's getting a lot more common so I decided that the next combine – it didn't matter what colour it was going to be – was going to have one fitted."

The system was installed by Ben Burgess before the combine was delivered ahead of this season. "It was part of a package deal for us, but when you look at the numbers on a £1M combine, it's cheap. If you

Pneumatic power

The Fireward system is in essence based on a heat-sensitive pneumatic tube. ▶

had a fire, you'd lose that much in crop damage pretty quickly. I think particularly if you build it into the package, it's a no-brainer."

That said, he believes adoption is still far too low. "Not many people are using them and I don't know why. I think dealers or manufacturers should be offering it as an option in this day and age, especially with how many combine fires there are now, balers too. It's a real problem. Engines are all enclosed now because of emissions, they run hotter, and it just adds to the risk."

Mick recalls a conversation with a New Holland mechanic on a previous combine. "We had a CR10.90, and the mechanic – a proper old-school guy, 60-years-old – said, if you ride on the back of the combine the engine is firing straw all the time, every second. You don't see it, but it's happening.

"That's just part of the beast – engines are running hotter and everything is boxed in. Fires are only going to become more common."

This chimes with Fred's view that modern machinery design is exacerbating the risk. "The combination of high temperatures, fine dust and enclosed compartments creates the perfect storm," he says.

> *"It's good to know that if the worst happened, we have some protection in place."*

An additional benefit of installing the Fireward system is that NFU Mutual recognises accredited suppression technologies with premium discounts. "All the systems we supply go through international testing laboratories, such as the Research Institute of Sweden (RISE SPCR199) and the Australian AS 5062," explains Fred.

"If you have a system that's passed those tests and is installed to those standards, NFU offers a discount on the combine premium – and the Fireward system meets those requirements."

Mick concurs: "Not many people know about this discount. With premiums going up the way they are, anything that helps bring that down is worth it."

In terms of service and support, Fireward backs its systems with a nationwide network of engineers. If a system discharges during harvest, they prioritise immediate response. "If someone calls up and says they've had an incident, we reroute an engineer straight away," says Fred. "In harvest, you can't wait days, you should be talking hours."

With the benefits seemingly ample, it begs the question – why aren't fire suppression systems standard? Both Fred and Mick point to awareness. "At shows this year, farmers were saying: 'I didn't even know you existed,'" says Fred. "The technology is tried, tested and keeps people safe, but agriculture simply hasn't known it was an option."

Mick agrees. "When you sit down to buy a combine, there are endless options. But suppression isn't one of them; something has to change."

It just makes sense

When talking about a system that costs so little compared with the price of the machine but can save lives, protect assets and keep you harvesting on time, it makes sense, reckons farmer Mick Baker.

SCALABILITY

Although combines are the obvious focus when thinking about machinery fires, Fred stresses that the technology is scalable. "We've protected telehandlers, tractors, forklifts – even micro diggers up to 400t mining excavators."

Going forward, Mick believes suppression should become part of the standard spec. "I don't know why it isn't already. When you're talking about a system that costs so little compared with the price of the machine but can save lives, protect assets and keep you harvesting on time, it makes sense.

"It's also worth remembering that dealers don't keep spare combines. If our X9 went up, we'd be stuck. We want to cut 100 acres a day – every day you're stopped, you're losing money."

As Harvest 2025 winds down, although minds may be far from thinking about cutting the 2026 crops, Mick believes now is an opportune time to protect combines well in advance of next season "We've done very well with the X9 this year and the Fireward system has given us peace of mind. It's good to know that if the worst happened, we have some protection in place."

Fire protection as standard?

Farm manager Mick Baker (right) has had the Fireward system installed on his new John Deere X9 combine and believes such systems should be standard on high-risk machinery.

What's new in combines

Following a busy 12 months of launches, here's a look at some of the latest combine innovation to hit the market

Marking 30 years of the Lexion, Claas is introducing a revised line-up for the 2026 harvest, including the new Lexion 8500.

The 8000 series will now include five models, with the 8500/8500 Terra Trac positioned as the entry-level machine, powered by a 12.4-litre MAN D26 engine delivering 549hp.

The 8600 and 8700 models retain the larger 15.2-litre MAN D38 engine, rated at 598hp and 646hp respectively. The 7500 also adopts the MAN D26 with 466hp. All models use the APS Synflow Hybrid threshing system, with rotor speed capacity ranging from 1000rpm on the 8500, to 1200rpm on higher-spec machines.

Grain tank volumes have been increased with options of 13,000 or 15,000 litres on the 8500 and 8600. The 8700 Terra Trac now offers up to 18,000 litres with a 180 litres/s unloading rate, making it the largest in its class.

Cemos driver assistance features have been reorganised into three packages, offering up to 20% higher throughput. Connectivity is expanded via Claas connect, which now integrates job management, yield mapping, and fleet optimisation tools.

Case IH has added the AF9 and AF10 to its new AF Series combine range, following the launch of the Class 10+ AF11 earlier last year. Together, the three models cover Class 9 and 10+, designed to increase capacity and crop flow while simplifying maintenance and connectivity.

The AF9 is powered by a 634hp engine, while the AF10 delivers 775hp. Both use an AFXL rotor, 40% longer than that in the previous 260 Series, to increase throughput. Grain handling has been matched across header, rotor and spreader to maximise efficiency per engine hour.

Technology is included as standard, with Dual Pro 1200 displays, Harvest Command automation and RowGuide Pro for steering assistance. A 'Connectivity Included' feature provides subscription-free data transfer to Case IH FieldOps, enabling yield and machine information to be viewed and managed remotely without additional licence fees.

New Holland has announced a range of updates across its CX, CH and TC straw walker combines, alongside changes to Varifeed headers, aimed at improving crop flow, cutting performance and ease of set-up.

Varifeed headers now feature an inline knife drive that delivers smoother, more precise cutting with less vibration and maintenance than the previous belt drive. Knife speed rises 11% to 735rpm, matched to a reinforced 660mm auger with new pre-set height adjustment for faster switching between crops.

A synchronised dual knife drive is extended to 10.5m and 12.5m models, reducing vibration. Other changes include single-side PTO connection, quicker side-knife installation using lighter aluminium units, and cab-operated gauge wheels for easier trailer loading.

Within the combines, the UltraFlow drum – designed to smooth crop intake and boost capacity by up to 10% – becomes optional on CX5 models.

CX5/6 and CH7 machines gain a revised Smart Sieve option with linked pre-sieve adjustment, plus new sensors on hillside versions to better control rear axle and slope response. A rear camera is now standard across European CX5/6 and CH7 models.