PROTECTION SYSTEMS FROM firefly

FIREFLY TISSUE CONVERTING

Unique fire prevention and protection solutions for tissue converting



FIRE HAZARDS

The converting process generates a lot of dust and other cellulose debris, which can rapidly ignite due to friction, for example in and around bearings and shafts. Tissue stripes are especially critical in case they are winded up around the shafts. If the converting line or part of the line is enclosed, even more dust accumulates inside the enclosure and the risk of fire increases.

The response time of a fire protection system is therefore essential to minimize damages in case of a fire. Traditional extinguishing systems, such as sprinklers or total flooding systems are normally designed for overall protection but is not designed to protect the machine itself. Firefly, with Tissue Solutions®, offers a range of complete fire prevention and protection solutions, specially designed to protect the machines, and minimize damages in a tissue manufacturing or tissue converting process.









FIREFLY FLAME DETECTOR
Fast-acting Flame Detectors, highly immune to external disturbances and designed to withstand tough industrial environments. Firefly Flame Detectors are FM approved.



PATENTED TRUE IR DETECTORS
Millisecond detection of hot particles, sparks, and flames. Firefly's Spark Detectors are FM approved and insensitive to ambient light.



FULL-CONE WATER SPRAY EXTINGUISHING
Powerful extinguishing with a unique nozzle design and placement aimed to penetrate and cover the entire material flow in a duct or drop chute. Activated within milliseconds after detection.



WATER MIST SUPPRESSION
Firefly Water Mist Suppression is efficient for suppression of flames in machines or in open areas with minimal water usage and quick reaction time.



A UNIFIED CONTROL SYSTEM
Enabling a good overview of all protected zones. Operators will control the system via IntuVision™, an intuitive user interface with a color touch screen, which comes as a standard in every Firefly System.

SPARK DETECTION SYSTEM
FIRE PREVENTION

The Firefly True IR Spark Detection and Extinguishing System is certified according to Factory Mutual (FM)* and Schadenverhütung GmbH (VdS)*. Firefly's unique Spark Detection System is based on True IR spark detectors that are insensitive to ambient light. They are designed to detect all dangerous ignition sources, such as hot dark particles, sparks, and flames.

The Spark Detection System is typically combined with a water extinguishing zone that will, within milliseconds, extinguish the detected ignition source. Firefly has developed special solutions for the Tissue Industry, such as Spark Alert and the WebScan™ system. These special solutions utilize Firefly's unique True IR spark detectors. This certified state of the art technology will detect potentially dangerous particulates long before a fire has started.

* FM certificate no. 3060012, Vds approval no. S6990002.



QUICK SUPPRESSION SYSTEM
FIRE PROTECTION

Firefly launched and obtained the world's first a third party certified Quick Suppression System. The Firefly Quick Suppression System is a complete system designed for extremely quick detection and suppression of flames or fires in and around critical machinery and high-risk areas. The system has been fire tested with the test protocol DFL TM170307-1261 and verified by the DNV.

Firefly's Quick Suppression System operates with high performance open area flame detectors and efficient water mist suppression nozzles. The Firefly Water Mist System has remarkable fire suppression capabilities, utilizing a very small amount of water. The purpose of the Firefly Quick Suppression System is to act quick enough to avoid or significantly reduce damages and production downtime as well as avoiding a fire from escalating and spreading into other areas. Conventional extinguishing methods, for example sprinklers, need large flames generating a high amount of heat to react and an extensive amount of water is needed to extinguish a fire.





FIREFLY EXIMIO™
INTELLIGENT SYSTEM ARCHITECTURE

The Firefly EXIMIO™ system is an intelligent and decentralized system with a modular system architecture. Detectors and extinguishing equipment are connected to local EXIMIO™ hub, thus making cable routing and overall installation more efficient and less expensive. It is also easy to add on to the existing system and extend to cover new risk zones as desired.

Operators will control the system via a 12” color touch screen via the IntuVision™ panel - operators interface, that comes as standard in every Firefly EXIMIO™ System. IntuVision™ is easy to use and includes numerous of features and functions, for example ApplicationView™ is where a drawing of the zone will be shown on the screen.

By using IntuVision™ - Desktop, the customer can connect the system to an external computer, for example in the control room.

The Firefly System can be connected via an Ethernet cable or a modem to enable remote help and service.

CONTROL UNIT BENEFITS

The unique EXIMIO™ 12” touch screen ensures quick and easy access to IntuVision™ user interface.

IP65 rated, dust and waterproof, that allows the flexibility for the control unit location with tough environments.

Touch Screen & IntuVision™ (operator’s interface) Included as standard in a Firefly EXIMIO™ system.

Clear, informative and user friendly interface.

Modular and decentralized system architecture – easy to expand the system.

System can be connected for remote support.

FIREFLY SOLUTIONS
UNWINDING

The Unwinder area is considered high-risk because it can generate a lot of dry dust that can accumulate on bearings, shafts, frames and heated unwind brakes.

A jumbo roll could contain a dangerous ignition source or a dangerous particulate that when unwinding could have access to oxygen and start a fire in the converting line.

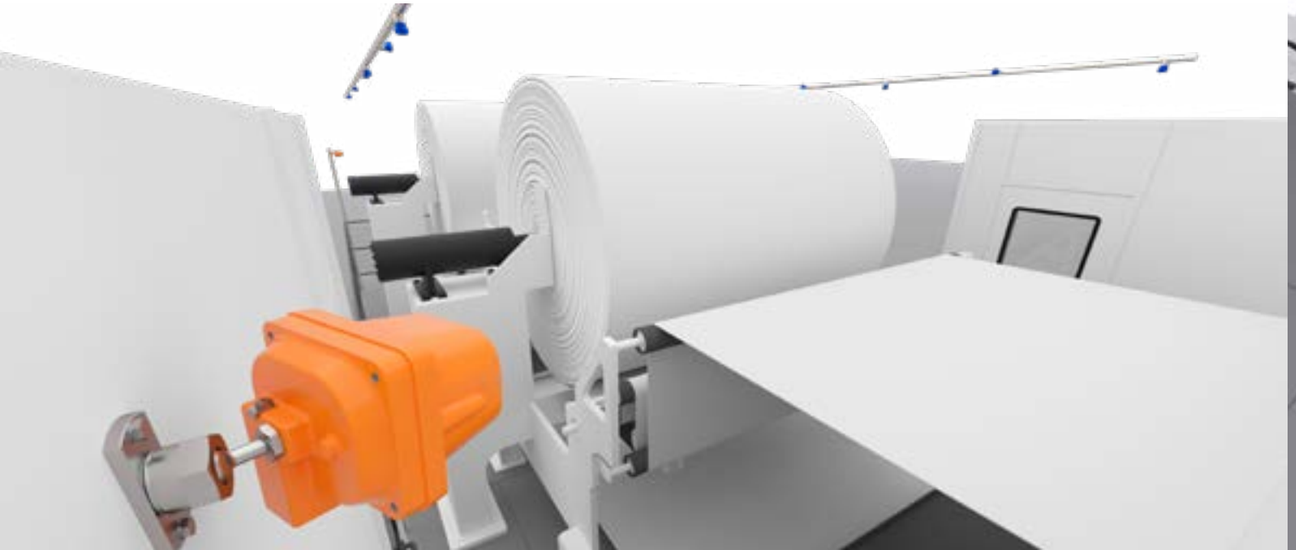
Stripes of tissue paper often end up around the shafts and can cause frictional heat that can ignite and cause a fire.

Firefly's Unwinding fire protection solution is designed for quick and efficient detection and suppression of flames. The system consists of FD-UVIR flame detectors on each side of the machine and water mist nozzles that covers the risk area. The atomized water drops will instantly evaporate by the heat of the fire.

When the small water droplets turn into vapor, it will expand its volume 1,700 times, thus absorbing energy from the fire and displacing the oxygen required for combustion, without causing harm to operators.

This non-invasive suppression method generates a soft cooling effect, using very small amounts of water, avoiding, or significantly reducing damage to machinery, and preventing the fire from intensifying and spreading to other areas.

It differs from conventional extinguishing methods because for example sprinklers, need large flames generating a high amount of heat to react and an extensive amount of water is needed to extinguish a fire.





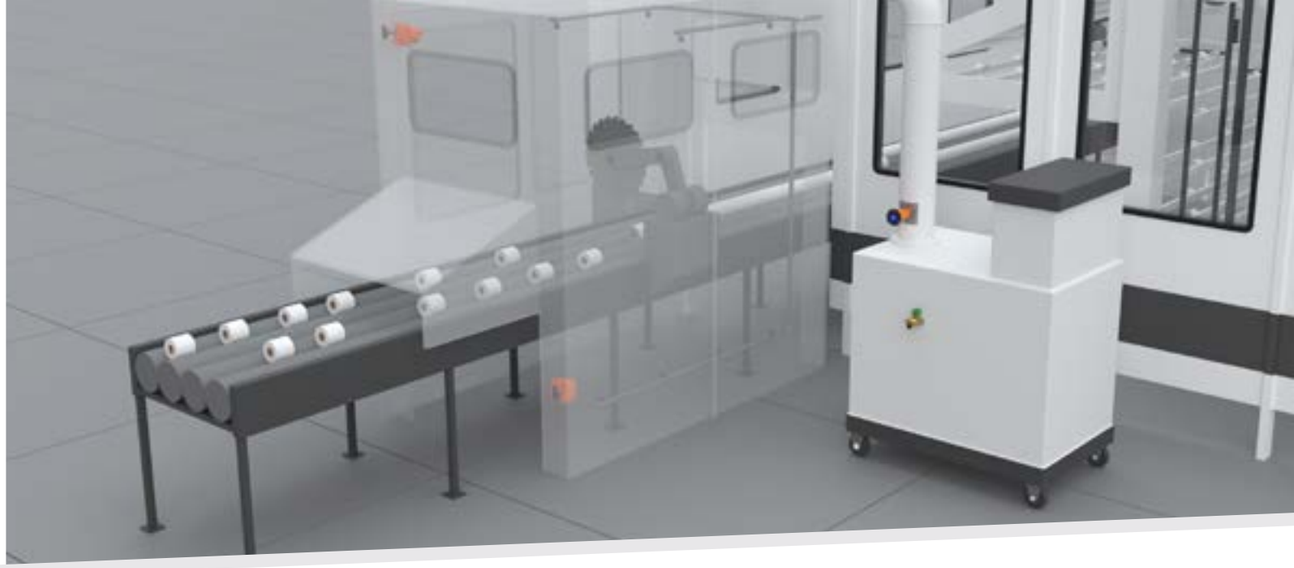
EMBOSSER AND REWINDER

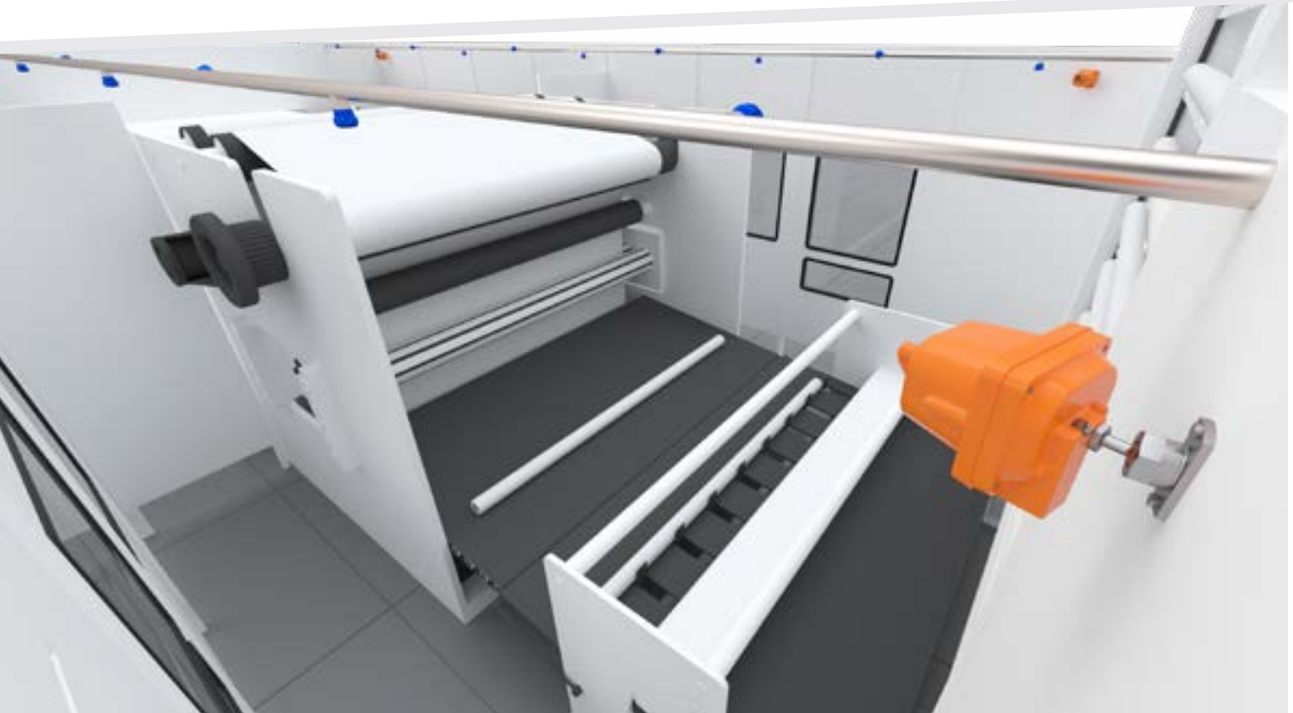
Embossing and winding machines generate considerable amounts of dry dust that accumulates on machine parts and surrounding area. Friction heat can easily be generated by the machine, which can ignite the accumulated dust and cause a fire.

Firefly's protection solution for the Embosser and Rewinder is designed in the same way as the Unwinding system, with quick and efficient detection and suppression of flames.

The system consists of FD-UVIR flame detectors around the machine and water mist nozzles that will cover the high-risk area.

The solutions for the Unwinder, Embosser and Rewinder will be linked together, making it possible to activate more or all zones in case of detection in a critical area of the machine.





LOG SAW, BAND SAW & INTERFOLDER

Fires in these types of enclosures or areas are unfortunately common and costly. Friction in moving parts or sparks generated during the sharpening of the saw blade can ignite the dust inside the Log saw, Band saw, or Interfolding enclosure. As enclosures and areas are generally dusty, fires can easily cause equipment damage and production downtime.

For protection of Log saws, Band saws, or Interfolding machines, Firefly is using the Quick Suppression System concept, based on quick detection and water mist suppression. Thanks to the quick response time of the system, production loss and equipment damages can be minimized.

Water mist, compared to alternative suppression solutions such as CO^2 or powder, is a non-invasive suppression method that will effectively suppress the potential dangers with a minimum effect on your production and is harmless to people.

Firefly's water mist system is tested and approved for suppression in open areas. This means that it is not critical for the system in case of openings or air leakages in the enclosure. Most other water mist systems are designed as total flooding systems, meaning that openings or leakages in the enclosure room will negatively affect the suppression effects. Also, inert gas systems require air tight volumes to work properly.

As these enclosures often have openings in the lower part and extraction in the upper part, this is an important factor to consider.

Total cost of ownership and personal safety are also factors to consider when choosing a detection and suppression system.

DUST FILTERS – BAG HOUSES

Ignition sources such as sparks, glowing embers, and hot dark particles generated in the tissue mill and the converting process can be extracted into the dust extraction systems and cause fires and dust explosions in the dust filters or bag houses. It is therefore vital to also protect this part of your process.

Firefly's dust extraction filter protection systems are based on our unique True-IR spark detector HD400 that will detect sparks, glowing embers, and hot dark particles with temperatures as low as 400°C (752°F), which is below the ignition temperature for cellulose dust according to NFPA (National Fire Protection Association). At this temperature the particles are dark and do not emit light.

Firefly has the only detectors in the world approved by FM Global to detect hot particles from 250°C and 400°C, thanks to its True IR technology.

A water spray extinguishing zone is typically installed downstream of the detectors to eliminate these dangerous particles from entering onto the filter or bag house.



OTHER PROTECTION AREAS

It is common that rejected products or other cellulose waste material from production is shredded and baled.

The fire risk in these operations can be very high and should be protected.

SHREDDERS

Whether you are shredding tissue waste, paper or corrugated material, a fire in a shredder can occur due to several reasons: for example, friction, bearing failure or foreign objects (stones, metal pieces, etc.).

Fires can often start in a second and can be spread very quickly. Therefore, a fast-acting fire protection system is very important. It is also important that the system withstands the tough shredding environments.
Firefly has developed the ShredderGuard™ concept, which is a quick acting system that can withstand the tough conditions in and around a shredder.

The ShredderGuard™ concept combines Firefly's unique Spark detection System and Firefly's Quick Suppression System. By combining preventive and protective measures, the system will efficiently reduce the fire risk in and around the shredder.

PULP BALE LOADING/BROKE & PULPER ROOMS

The de-wiring feed rollers, and conveying can cause friction and or mechanical breakdowns which can easily create ignition sources and in these areas.

Firefly's solution is to use a combination of Firefly's Spark Detection System and Firefly's Quick Suppression System.

The aim is to detect and extinguish in an early stage to minimize fire damages and production down time due to fires.



ABOUT FIREFLY

Firefly is a Swedish company that provides industrial fire prevention and protection systems to the process industry worldwide. Since 1973, Firefly has specialized in creating customized system solutions of the highest technical standards and quality. Based on customer needs and research, Firefly has developed and patented products and solutions, creating a unique portfolio of innovative products and system solutions to increase the level of safety and production output.

The Firefly quality management system is certified according to ISO 9001 and EN ISO/IEC 80079-34. Firefly's products hold national and international third-party certifications through FM, VdS, CSA, DNV, LCIE Bureau Veritas, Delta, and RISE among others.

For more information on our certifications and approvals, please visit: www.firefly.se/en/company/approvals

Please contact us if you have questions about fire and explosion risks within your process, our fire preventive team will be happy to share their knowledge and experience.

AS A FIREFLY CUSTOMER YOU RECEIVE

- A partnership with our fire prevention teams around the world.
- Technical innovation in fire prevention and protection.
- Digital progression based on robust safety systems.
- Fire prevention and protection through certified technology.

WE HAVE FIREFLY CUSTOMERS FROM MULTIPLE INDUSTRIES ALL OVER THE WORLD

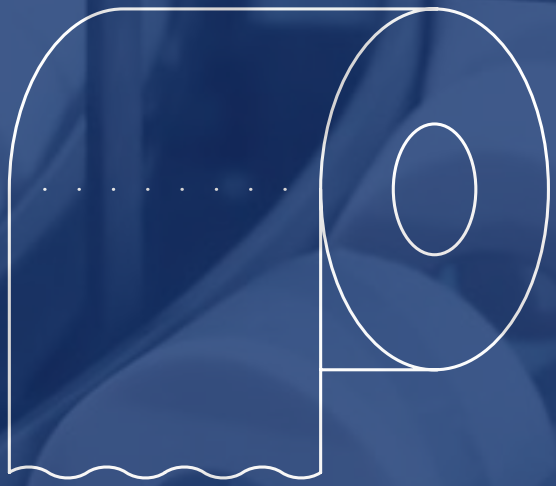
Firefly customers in over 90 countries



■ Firefly customers

Firefly's products are available with the following certifications and approvals:

For information on the certifications and approvals each product holds please visit:
www.firefly.se/en/company/approvals



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Firefly Tissue Converting 2.1 EN
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