



# WOOD PANEL SOLUTIONS

HOW TO PROTECT YOUR PROCESS  
FROM FIRE AND DUST EXPLOSIONS

WOOD PANEL INDUSTRY

FIREFLY SYSTEMS

FIREFLY PLYWOOD SOLUTIONS

PLYWOOD

OSB

FIREFLY OSB SOLUTIONS

PARTICLE BOARD

MDF

FIREFLY MDF SOLUTIONS

CONTACT US

## Increased automation

Many of today's investments in the wood panel industry aim at raising process automation and increasing production capacity. This leads to a decrease of personnel at the plants.

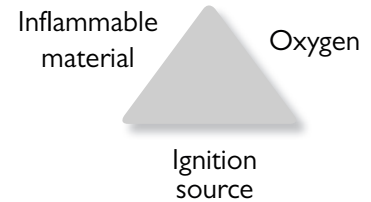
The risk for fire and dust explosions in the wood panel industry has always been very high. Unfortunately as production increases, so does the risk for fire and dust explosions.

## Is your plant at risk?

Only three elements are needed to cause a fire or an explosion:

Wood is a particularly inflammable material. Did you know that wood dust can ignite at a temperature from as low as ca 260°C (500°F)?\* Compare this to the temperature of a newly extinguished match, which is ca. 500°C (932°F)....

\*according to the U.S. National Fire Protection Association (NFPA)



Machinery that typically generates ignition sources:

- Mills
- Sanders
- Saws
- Dryers
- Fans
- Mechanical conveyors



## We never generalise

Every factory in the process industries is different. Even within the same type of business, such as the wood panel industry, no two factories operate alike.

The risk for fire or a dust explosion will therefore vary from factory to factory.

Since 1973, Firefly has specialised in creating tailor-made solutions that will fit your operation. Our engineers have vast experience in the wood panel industry and the highest technical skills necessary to design a safe fire prevention solution for your company.

In order to protect your company from fire and dust explosions:

- You need a fast and reliable system of the highest technical standard
- You need a tailor-made system
- You need detection of potential hazards, i.e. sparks and hot particles occurring in your process
- You need a system which is insensitive to daylight, thus minimising numerous false alarms and costly downtime
- You need an extinguishing method adapted to your process to minimise



## How we protect your plant

Firefly always delivers tailor-made system solutions. Our engineers are able to adapt system design that will provide optimal safety against fire and dust explosions.

Firefly has a range of unique products which are combined in a system depending on the design of your process. Our systems are designed to protect industrial processes and prevent damage to plants.

### Detection

Detectors that indicate flames, sparks and hot particles in pneumatic or mechanical conveying systems  
Detectors that indicate flames in open areas

### Extinguishing

Using full cone water spray  
Using water mist  
Using mechanical diversion, isolation, steam or gas

### Control

Control unit for system monitoring and process control



### Services

On Site System Adaptation  
Installation & Commissioning  
Service after installation

### Solutions

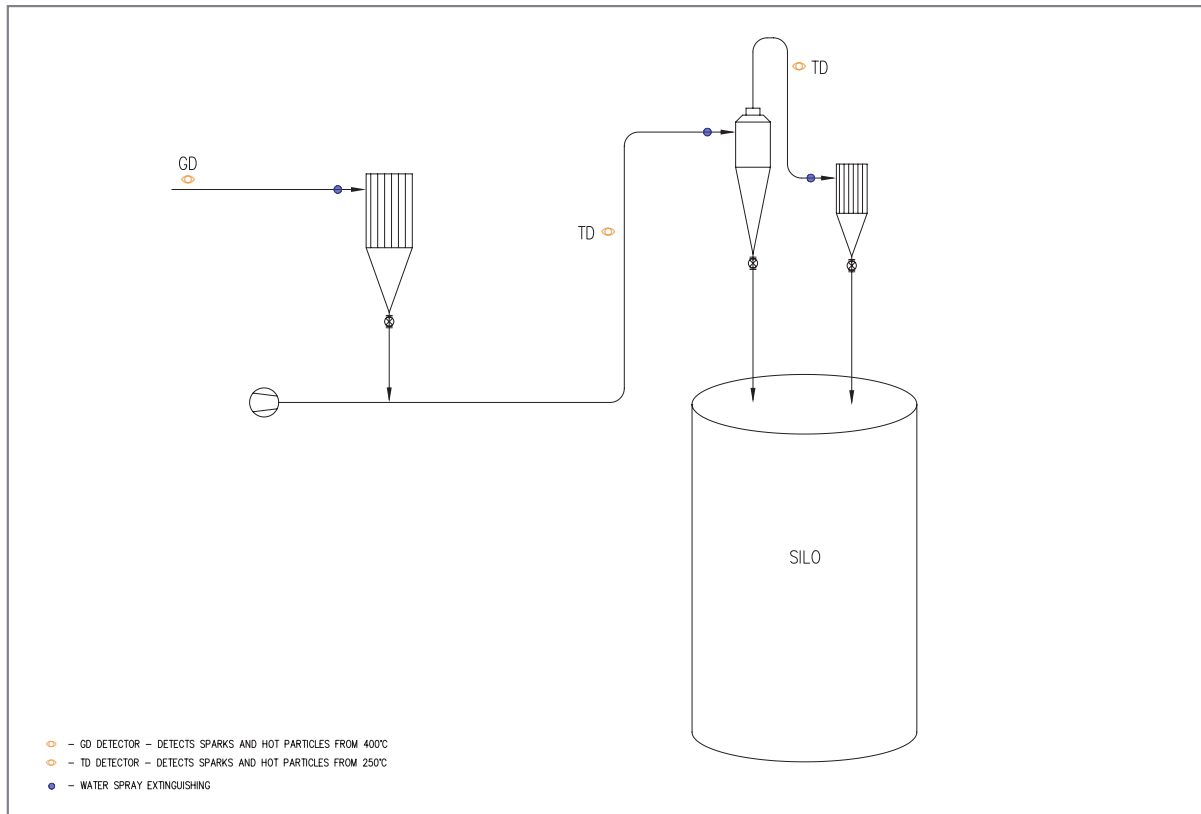
Firefly has developed unique solutions for the wood panel industry. With these solutions we can effectively protect your plant against costly fires and dust explosions:

- Particle Board Solutions
- MDF Solutions
- OSB Solutions
- Plywood Solutions

At Firefly we believe that you can never take safety too seriously



## PLYWOOD



### Why use different detectors?

The wood in your process can ignite at different temperatures. A wood dust cloud such as in a dust collector, can ignite from 470°C (752°F). However wood dust in a 'layer', such as in a silo, can ignite from 260°C (482°F). Firefly recognises the differences in ignition temperature in order to effectively protect your company against costly fires and dust explosions.

### Do you believe that sparks are the cause of fires and explosions in Plywood factories?

Consider this:

Incidents still occur in Plywood factories, even though a conventional spark detection system has been installed.

WHY?

Firefly detectors  
are NOT  
daylight sensitive

Research clearly shows\* that detecting only sparks has much less effect than first thought. The key to minimising loss of revenue and production downtime due to fire and dust explosions is the detection of hot particles. Firefly provides you with a unique patented technology based on Infrared (IR) radiation detection to eliminate both sparks and hot particles in your process.

\*Prof. Rolf K. Eckhoff, "Dust explosions in the process industries" (2<sup>nd</sup> edition)

### Water mist & Water spray

To avoid fires and dust explosions, effective extinguishing needs to follow quick detection. Firefly often uses water as an extinguishing agent. Different applications and problems may require different water extinguishing methods. Powerful full cone water spray with large water droplets is needed to penetrate material flows in chutes or pneumatic conveying systems. For extinguishing of flames in enclosed volumes or open areas, smaller droplet sizes have an advantage due to their high evaporation rate, efficient heat absorption and their ability to displace oxygen. Firefly tailors the extinguishing method to the area that needs to be protected, thus ensuring optimal safety without causing damage and unnecessary process interruption.

**Firefly offers a complete line protection. This includes protection of:**

- Filters
- Silos
- Panel Sizing

### **Dryer protection**

**Why protect dryers?**

A dryer is a vital part of the plywood process. There always is a risk for ignition when drying large amounts of wood material. Fires in plywood dryers are not uncommon! They often result in costly downtime. A common solution today is the use of conventional sprinkler systems.



### **Our solution**

At Firefly we believe in quick detection and extinguishing with minimal interruption to the process. This will avoid costly downtime due to water damage. To protect a dryer, a flame detection and water mist extinguishing system is installed at the dryer.

### **SanderGuard**

**Why protect sanders?**

The fine dust generated by this machine can, when ignited, give rise to a severe dust explosion and rapid spread of fire. The risk of a costly incident increases considerably when a sander starts to produce ignition sources. Broken or misaligned abrasive belts are a very common cause for such ignition.

### **Our solution**

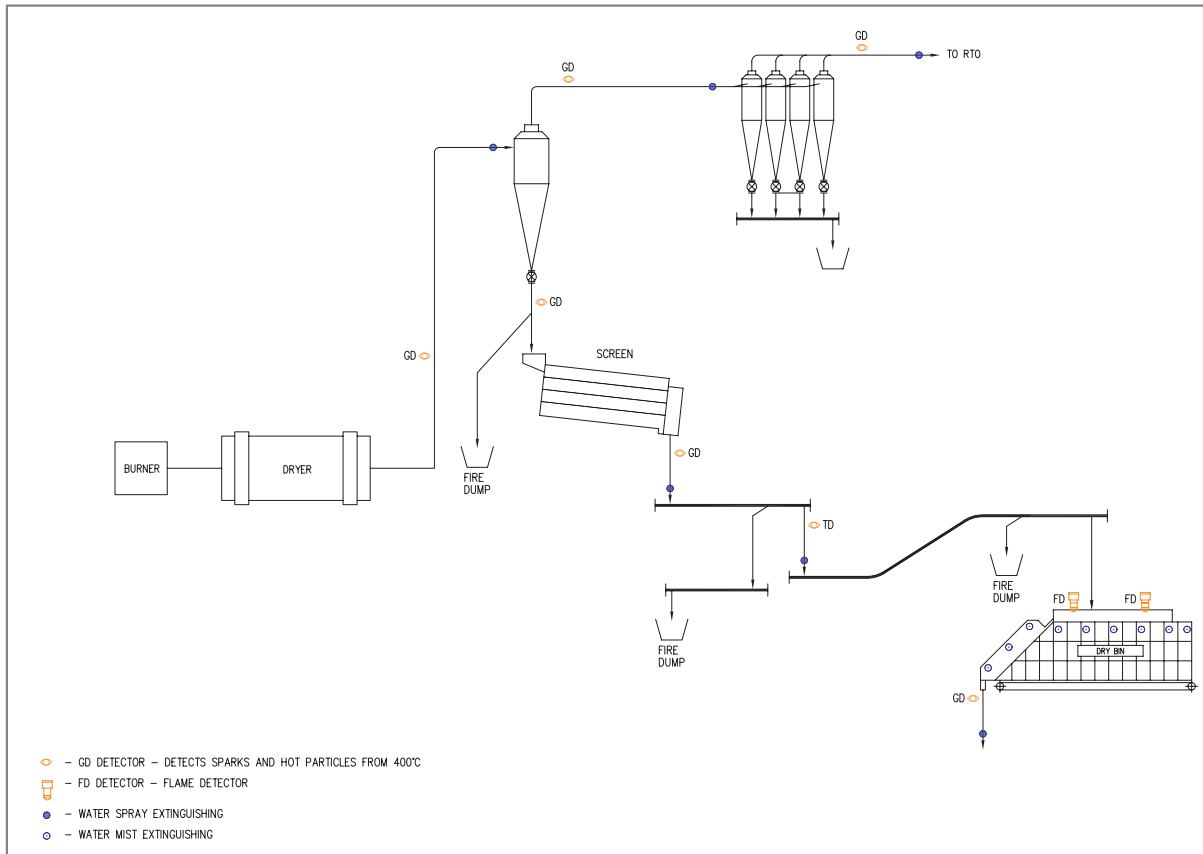
To visually detect sparks inside a sander is difficult for production staff due to the enclosed design. However, this does not present a problem for a Firefly detection and extinguishing system.

Firefly's SanderGuard is designed to quickly indicate a failure inside the machine and, before a fire can take hold, extinguish by using a water mist system. The extinguishing is designed to quickly cover the enclosed volume and create an inert environment.

It is important to use detectors that are insensitive to daylight since sanders are regularly inspected for purposes of maintenance. Firefly's detectors only detect hot particles such as sparks and glowing particles.

Firefly's SanderGuard also comprises equipment for detection and extinguishing in the dust extraction system.

## OSB



### Why use different detectors?

The wood in your process can ignite at different temperatures. A wood dust cloud such as in a dust collector, can ignite from 470°C (752°F). However wood dust in a 'layer', such as in a silo, can ignite from 260°C (482°F). Firefly recognises the differences in ignition temperature in order to effectively protect your company against costly fires and dust explosions.

### Do you believe that sparks are the cause of fires and explosions in OSB factories?

Consider this:

Incidents still occur in OSB factories, even though a conventional spark detection system has been installed.

WHY?

Firefly detectors  
are NOT  
daylight sensitive

Research clearly shows\* that detecting only sparks has much less effect than first thought. The key to minimising loss of revenue and production downtime due to fire and dust explosions is the detection of hot particles. Firefly provides you with a unique patented technology based on Infrared (IR) radiation detection to eliminate both sparks and hot particles in your process.

\*Prof. Rolf K. Eckhoff, "Dust explosions in the process industries" (2<sup>nd</sup> edition)

### Water mist & Water spray

To avoid fires and dust explosions, effective extinguishing needs to follow quick detection. Firefly often uses water as an extinguishing agent. Different applications and problems may require different water extinguishing methods. Powerful full cone water spray with large water droplets is needed to penetrate material flows in chutes or pneumatic conveying systems. For extinguishing of flames in enclosed volumes or open areas, smaller droplet sizes have an advantage due to their high evaporation rate, efficient heat absorption and their ability to displace oxygen. Firefly tailors the extinguishing method to the area that needs to be protected, thus ensuring optimal safety without causing damage and unnecessary process interruption.

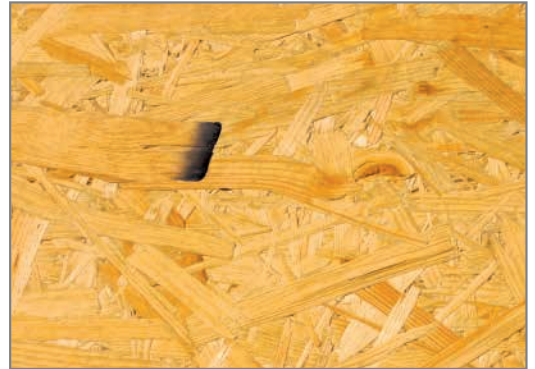
Firefly offers a complete line protection. This includes protection of:

- Dryers
- Screens
- Dust extraction systems

### Dry Bin Guard

Why protect dry bins?

A dry bin is a vital part of the OSB process. A fire in a dry bin can cause severe downtime. The storage of this dry material over time will become more of a risk. Ignition can therefore occur in this very dry environment.



### Our solution

The Firefly solution for protection of dry bins offers you considerable advantage over a conventional spark detection system. A detection and water spray extinguishing system is installed in a chute prior to the inlet of the dry bin. Our unique detection technology enables detection of potential ignition sources down to very low ignition temperatures. No other conventional spark detection system is able to offer you the same level of protection.

### SanderGuard

Why protect sanders?

The fine dust generated by this machine can, when ignited, give rise to a severe dust explosion and rapid spread of fire. The risk of a costly incident increases considerably when a sander starts to produce ignition sources. Broken or misaligned abrasive belts are a very common cause for such ignition.

### Our solution

To visually detect sparks inside a sander is difficult for production staff due to the enclosed design. However, this does not present a problem for a Firefly detection and extinguishing system.

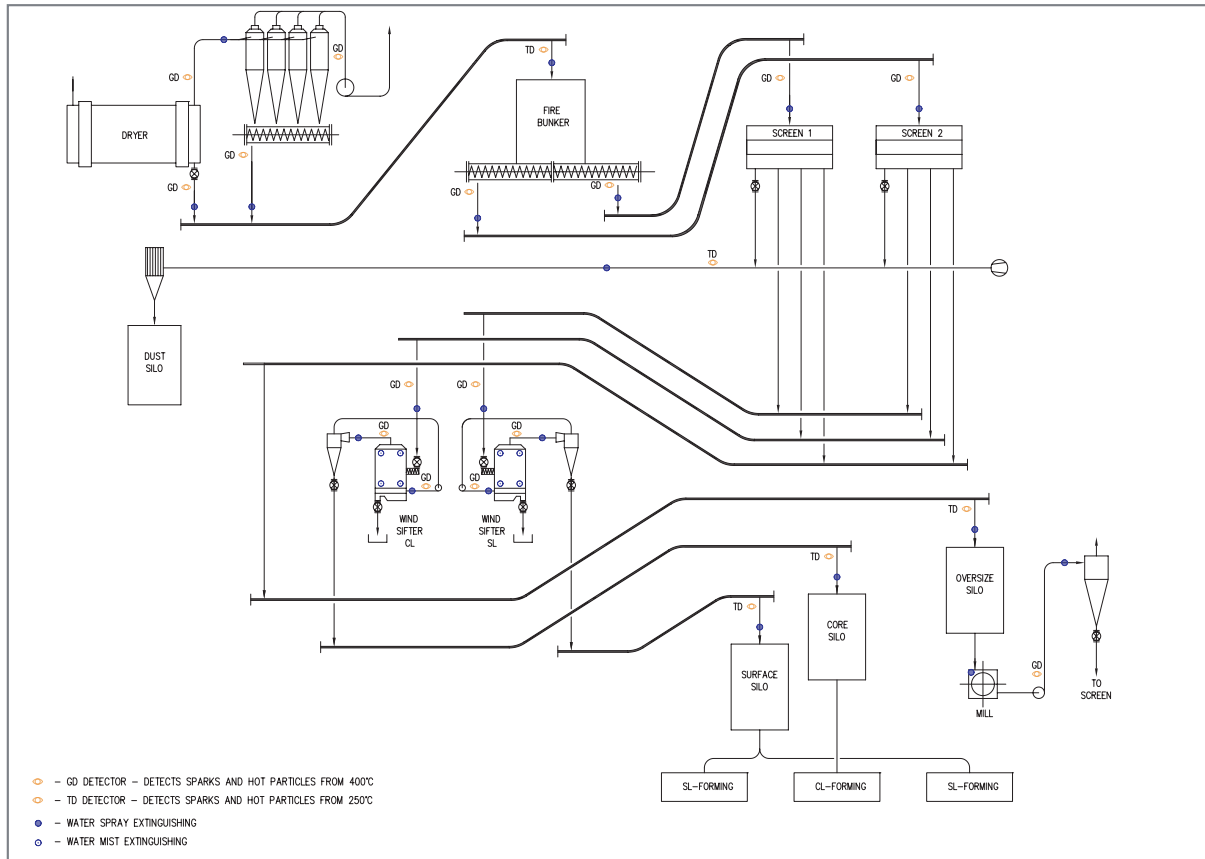
Firefly's SanderGuard is designed to quickly indicate a failure inside the machine and, before a fire can take hold, extinguish by using a water mist system. The extinguishing is designed to quickly cover the enclosed volume and create an inert environment.

It is important to use detectors that are insensitive to daylight since sanders are regularly inspected for purposes of maintenance. Firefly's detectors only detect hot particles such as sparks and glowing particles.

Firefly's SanderGuard also comprises equipment for detection and extinguishing in the dust extraction system.



## PARTICLE BOARD



### Why use different detectors?

The wood in your process can ignite at different temperatures. A wood dust cloud such as in a dust collector, can ignite from 470°C (752°F). However wood dust in a 'layer', such as in a silo, can ignite from 260°C (482°F). Firefly recognises the differences in ignition temperature in order to effectively protect your company against costly fires and dust explosions.

Do you believe that sparks are the cause of fires and explosions in Particle Board factories?

Consider this:

Incidents still occur in Particle Board factories, even though a conventional spark detection system has been installed. WHY?

Research clearly shows\* that detecting only sparks has much less effect than first thought. The key to minimising loss of revenue and production downtime due to fire and dust explosions is the detection of hot particles. Firefly provides you with a unique patented technology based on Infrared (IR) radiation detection to eliminate both sparks and hot particles in your process.

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### Water mist & Water spray

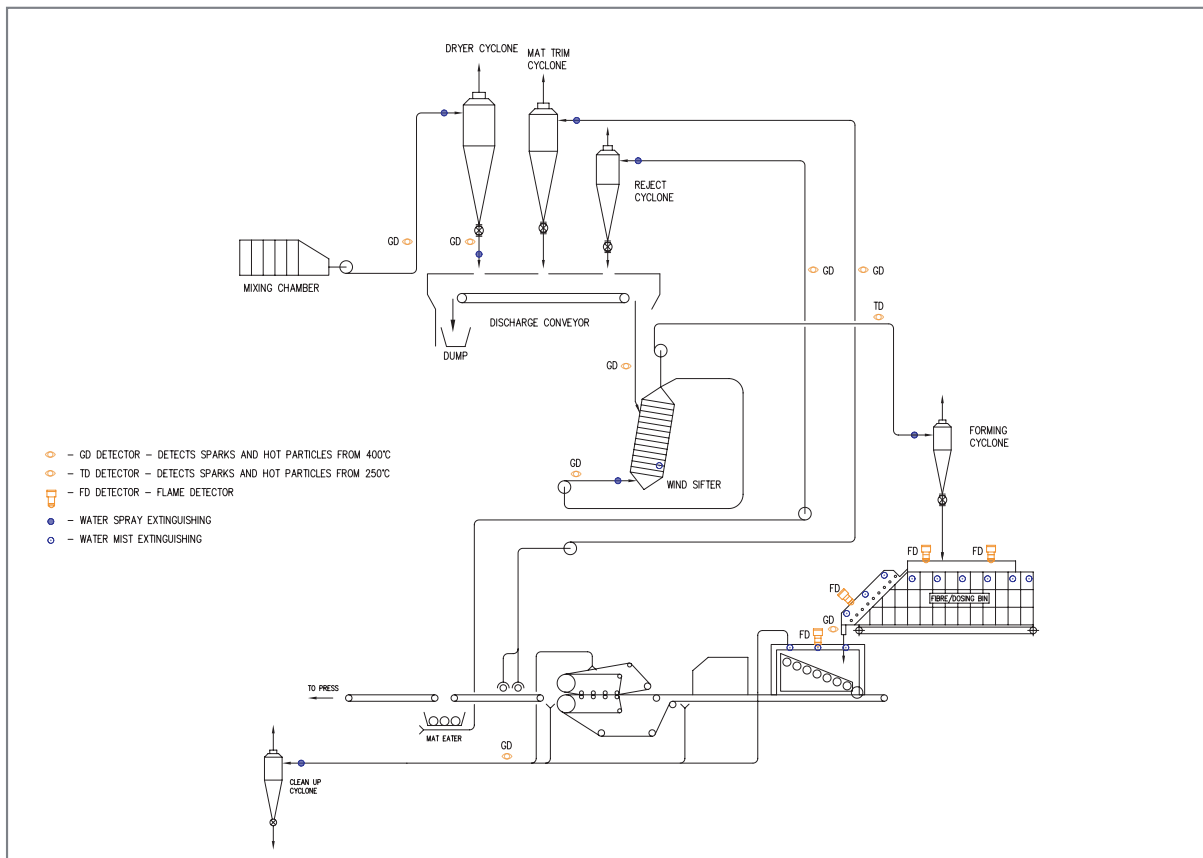
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Firefly tailors the extinguishing method to the area that needs to be protected, thus ensuring optimal safety without causing damage and unnecessary process interruption.

Firefly detectors  
are NOT  
daylight sensitive



## MDF



### Why use different detectors?

The wood in your process can ignite at different temperatures. A wood dust cloud such as in a dust collector, can ignite from 470°C (752°F). However wood dust in a 'layer', such as in a silo, can ignite from 260°C (482°F).

Firefly recognises the differences in ignition temperature in order to effectively protect your company against costly fires and dust explosions.

Firefly detectors  
are NOT  
daylight sensitive

### Do you believe that sparks are the cause of fires and explosions in MDF factories?

Consider this:

Incidents still occur in MDF factories, even though a conventional spark detection system has been installed.

WHY?

Research clearly shows\* that detecting only sparks has much less effect than first thought. The key to minimising loss of revenue and production downtime due to fire and dust explosions is the detection of hot particles.

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### Water mist & Water spray

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Firefly offers a complete line protection. This includes protection of:

- Dryers
- Forming stations
- Dust extraction systems

### Wind sifter protection

#### Why protect wind sifters?

Experience shows that fire and dust explosions inside wind sifters create huge damage. Large amounts of dry wood particles and oxygen make the environment inside wind sifters ideal for a fire or dust explosion.

#### Our solution

A detection and water spray extinguishing system is installed at the inlet to minimise the risk of potential ignition sources entering the wind sifter.

Furthermore, water mist is installed inside the wind sifter to take action before a fire can take hold. Similarly, we recommend installation of both detection and extinguishing in the recirculation duct.

### Fibre/Dosing Bin protection

#### Why protect fibre/dosing bins?

When ignition occurs inside a fibre/dosing bin, it often results in a glowing fire. Explosion is however not uncommon either! The wood fibres are very dry which enables easier ignition. It is furthermore difficult to access the material inside the bin: another reason why correct safety measures should be taken in and around this part of your production line.

#### Our solution

A detection and water spray extinguishing system is installed at the inlet(s) of the fibre/dosing bin. Flame detection in combination with water mist extinguishing is furthermore installed inside, particularly around the doffing rolls which present a main risk for fire.

Similarly, a detection and water spray extinguishing system is installed at the outlet chute from the fibre/dosing bin.

### SanderGuard

#### Why protect sanders?

The fine dust generated by this machine can, when ignited, give rise to a severe dust explosion and rapid spread of fire. The risk of a costly incident increases considerably when a sander starts to produce ignition sources. Broken or misaligned abrasive belts are a very common cause for such ignition.

#### Our solution

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Firefly's SanderGuard also comprises equipment for detection and extinguishing in the dust extraction system.



## Firefly costumers

Masonite    Sonae    **Vanachai**    Louisiana Pacific    Kronotec  
Swedwood    Kronospan    Laminex    **Metro**    Egger  
Tolko    **Dongwha**    Finsa    Masisa  
Lesplitinvest    Novopan  
Daiken    Weyerhaeuser    Georgia-Pacific

# Firefly – Swedish Spark Detection Systems

## 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.

With unique solutions, quick delivery and excellent service, Firefly has become the natural choice for many customers within the wood panel industry worldwide.

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-GL, LCIE Bureau Veritas, Delta and RISE among others.

For more information on our certifications and approvals, please visit: [www.firefly.se/en/company/approvals](http://www.firefly.se/en/company/approvals)

Do you have questions about fire and explosion risks?  
Our fire preventive experts will be happy to share our knowledge and experience.

Firefly – Keeps you in production



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CONTACT US



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