

# Spark detection and spark extinguishment

## in mills - compound feed plants - silos and in the pellet production

### Application in mills, feed mill plants

transfer from silo to silo  
pneumatic systems (fans/filters)  
after the hammermills  
presses / chillers (product stream/filter)  
bucket conveyors (elevators)  
prior to the expander

### Application in the wood pellet industry

after the shredder (product stream - filter)  
after the hammermills  
(product stream - filter)  
presses / chillers (product stream - filter)  
bucket conveyors (elevators)

During the operation of hammermills the appearance of sparks is quite frequent.

The same is valid for pressing of organical products such as food stuff, wooden pellets or similar material. Depending on the energy density of a spark or smouldering part this can either be dangerous or uncritical. Nowadays it is important to monitor the plant by a spark detecting and extinguishment system. In cooperation with GreCon **Agromatic** offers a wide range of safety units, starting with spark detectors for dim light applications, special sensors for dark surrounding, in pipes etc. up to high temperature sensors for very high product temperatures of 600°C. Spark detectors, control consoles and extinguishers on watermist basis are supplied in fulfillment.

Depending on application and situation at site the terminated product can either be extinguished or separated. The control consoles are suited to evaluate and memorize (logbook) inconsistencies. As standard they are equipped with internal emergency power supply.

## The principle of spark detection and extinguishment



Spark sensors in various explosion classifications and temperature ranges supplied as dark or daylight sensors

Application range up to 600°C product temperature.

Control consoles with components for spark extinguishment and internal logbook depending on system size. Registers all events. Constructed in modular design, extensions are possible at any time. With internal emergency power supply (standard construction) and multi level password protection.

Extinguishment device, pressure increasing systems or deviation devices, depending on situation at site. The extinguishment devices are constructed for smallest possible water amount. They are equipped with pressure and flow sensors. All functions are monitored by the control console in time intervals on operating safety.



**Agromatic AG**

\* Basis unit is supplied with 10 standard products, 10 more can be programmed by customer  
Right of technical and dimensional changes in the sense of process reserved at all times.



email: [info@agromatic.com](mailto:info@agromatic.com)  
[www.agromatic.com](http://www.agromatic.com)

Switzerland (Head office)  
**Agromatic AG**  
CH-8637 Laupen  
Tel. (+41) 55 256 21 00  
Fax (+41) 55 256 21 11

Germany  
**Agromatic GmbH**  
D - 01454 Radeberg  
Tel. (+49) 3528 4521 45  
Fax (+49) 3528 4875 32

Austria  
**Agromatic Ges.m.b.H**  
A-2201 Gerasdorf  
Tel. (+43) 2246 2925  
Fax (+43) 2246 27655

## The most important components in brief:

### The spark sensors:



Daylight or- extraneous light sensor. Applied where measurement in complete darkness is not possible. For ATEX zone 20 - 22.

The sensors are permanently monitored by the control console.



Standardsensor for applications in complete darkness e.g. in conveyor pipes, aspiratinosystems etc. For ATEX zone 20 - 22

The sensors are permanently monitored by the control console.



Optical fibre glas sensor for high temperatures. Application where products or surrounding temperatures do not allow the usage of standard sensors. For ATEX zone 20 - 22.

The sensors are permanently monitored by the control console.

### The control console



The size of the control consoles varies according to the size of the complete system. The technical basic standards are always the same: all control consoles have internal emergency power supply for at least 8 hours of operation of the complete system, not taking into account water pressure increasing systems if connected. All control consoles have an internal logbook for registration of all actions, adjustments, messages etc. It cannot be deleted. The control consoles are equipped with password protection with defined rights for operation and adjustment of the systems. The control consoles have a basic programming for your system. An extension is possible at any time.

### Extinguishment systems / discharging units / water pressure increasing systems

**Extinguishment devices** (water) are supplied as compact unit. Kind of nozzle, pipe diameter, throughput capacity depending on requirements. The extinguishment devices are monitored by the control console in regular intervals. The operating condition is online reported to the control panel.



**Pressure increasing systems:** Depending on the nozzle extinguishment devices need a minimum pressure. If this is not available pressure increasing systems have to be connected. At the same time they serve as water deposit for firefighting.



**Separation devices:** are used where critical product has to be discharged instead of being extinguished. They are supplied for pressure-/suction pneumatics as well as for free flowing products.

### Planing / calculation / mounting / commissioning / maintenance:

Based on the system diagramme or a visit to the plant our specialist will make the planing of the spark extinguishment system. In general we recommend to take the safe way of extinguishing the recognized sparks, if ever possible. The material discharging however should only be made if justified by special circumstances.

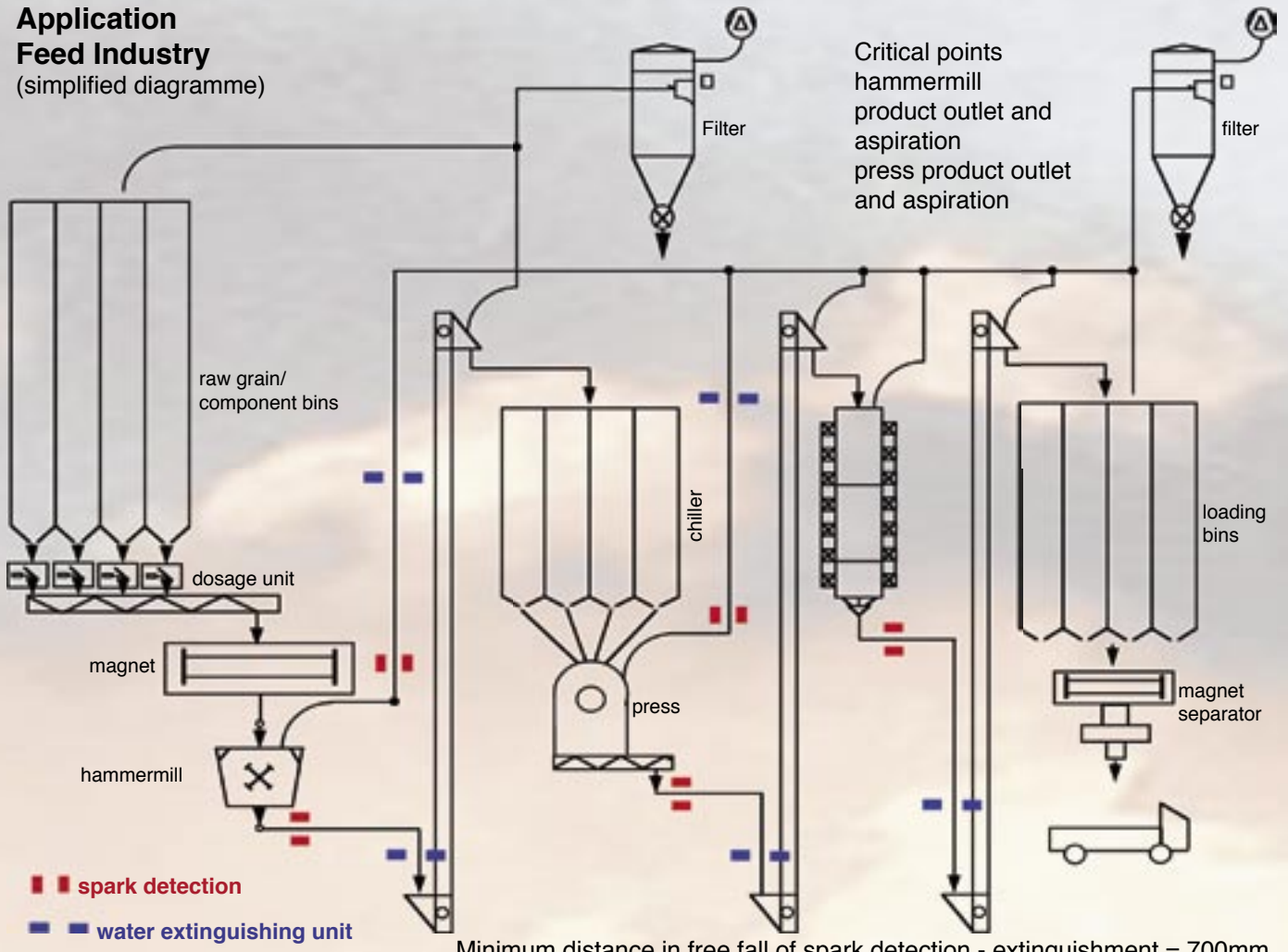
For extinguishment will take care of the calculation of the necessary water amount, the operating pressure and the useful pipe diameters.

Our systems are constructed for easy setting up at site.

Our specialists will take care of the commissioning. They are trained for this job for your maximum safety.

Also after commissioning we are your partner. Due to safety reasons a spark detection and extinguishment system needs periodical checks. In some countries this is a compulsory directive.

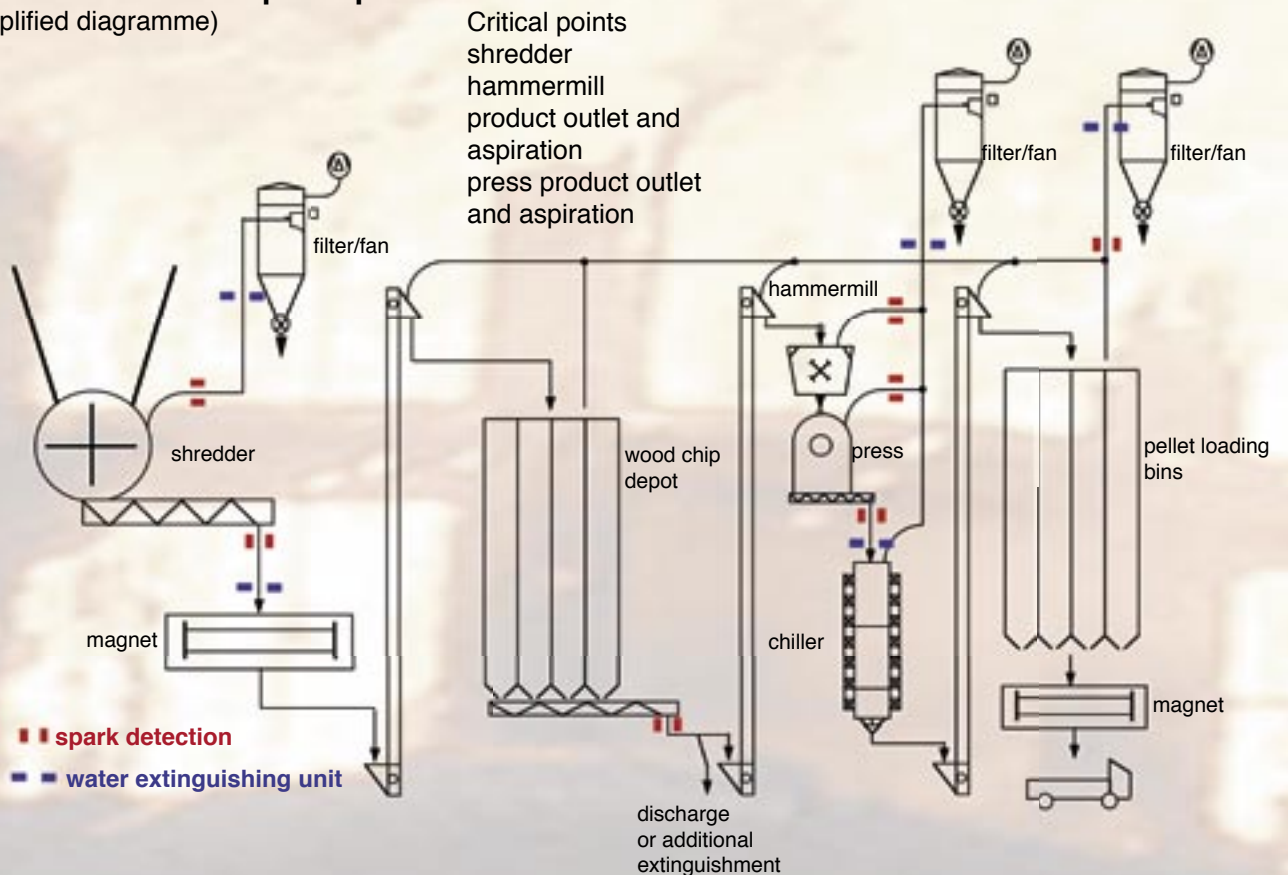
**Application Feed Industry**  
(simplified diagramme)



Critical points  
hammermill  
product outlet and  
aspiration  
press product outlet  
and aspiration

Minimum distance in free fall of spark detection - extinguishment = 700mm

**Application wodden pallet plant**  
(simplified diagramme)



Critical points  
shredder  
hammermill  
product outlet and  
aspiration  
press product outlet  
and aspiration

discharge  
or additional  
extinguishment

Minimum distance in free fall of spark  
detection- extinguishment = 700mm

**Mounting situation:**  
spark sensors left and right in aspiration pipe (standard sensor)



chiller aspiration:  
spark sensors with following extinguishment device



Example mounting:  
pipe inside  
ATEX zone 20  
outside zone 22  
ATEX certified sensor

Example mounting:  
zonefree mounting  
inside of flap valve as  
well as outside  
zonefree  
standard sensor



**Mounting, accessories:**



mounting devices/accessories are available for all components. They vary according to the safety classes (ex zones) where the units should be used. Spark detectors can be mounted from outside. Only a hole has to be drilled into the pipe or the bucket from the outside; by means of a special bracket the sensor can be mounted from outside. For sticky products or products with high dust formation special purge air adaptaters are available.

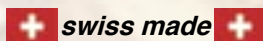


**Easy mounting of the sensors:**

Sensorbracket, holders for nozzles can easily be mounted from outside if they should not be fixed by welding. We can supply a special tool, on request also a steel plate drill. From outside you drill a hole into the conveying- resp. aspiration-pipe (diameter 150mm) and put the sensor- or nozzle devices in the mentioned order onto the tool, insert tool into hole, turn the clamping plate, withdraw the tool until catch, fix sealing and counternut and screw together. Now withdraw the tool, fix O-sealings and insert sensor or nozzle. From the inside the parts do only project for 2 mm.

**Spark detection- and extinguishment devices are a rule in many branches**

They have proved to be effective in various applications. Safety devices need precise planning, careful and exact mounting and commissioning. These are duties for our specially trained technicians. For our systems we also offer extensive aftercare with periodical checks. Insurance companies may grant special rate reductions for tested and certified systems.



**Agromatic AG**

Right of technical and dimensional changes in the sense of process reserved at all times.



email: [info@agromatic.com](mailto:info@agromatic.com)  
[www.agromatic.com](http://www.agromatic.com)

Schweiz (Hauptsitz)  
**Agromatic AG**  
CH-8637 Laupen  
Tel. (+41) 55 256 21 00  
Fax (+41) 55 256 21 11

Deutschland  
**Agromatic GmbH**  
D - 01454 Radeberg  
Tel. (+49) 3528 4521 45  
Fax (+49) 3528 4875 32

Österreich  
**Agromatic Ges.m.b.H**  
A-2201 Gerasdorf  
Tel. (+43) 2246 2925  
Fax (+43) 2246 27655