



The best way to protect your machinery

FIRE FIGHTING SYSTEM FOR MACHINE TOOLS

The perfect solution for application in automatic lathes,
electro-erosion machines, CNC machining centres,
and sharpening, grinding and transfer machines.



A product by CASTAGNA ANTINCENDI SRL


MADE IN ITALY

THE RISK

Have you ever asked yourself why the most up-to-date machine tools arrive with the fire-fighting system already installed?

The European standard, UNI EN ISO 19353, requires that machine tools that are deemed to be at medium/high risk must be fitted with an integrated extinction system; the greatest risks are found with machines that work in contact with whole oil, unmanned or with explosion hazards.

The fire risk is real in cutting, turning, milling, chip removal and electro erosion machines; the main causes of fire in these machines are the generation of sparks and incandescent particles due to an error in the normal machining process.

Failure to detect and block a fire in a machine may mean losing the machinery, the adjacent machines or even the entire building, especially in modern factories with low roofs or with communicating extraction ducts in which a chimney effect can be generated.

People often think that they can control the situation with a portable extinguisher, but unfortunately this is often not enough for putting out the fire. Reacting in the very first seconds is crucial for not losing the machine. A programming error or mechanical malfunctions can rapidly provoke danger situations.

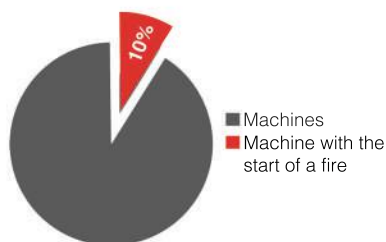
The damage provoked by a fire can therefore be very serious, but it is estimated that the interruption of production or the failure to meet deadlines can be 4 times more damaging for the company.

Sentinella® dispels all your worries ... protect the safety and health of your workers, safeguard yourself from legal responsibility, and protect your investments and your business.

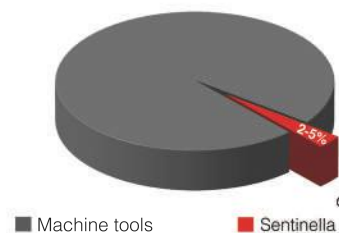
Considering what is at risk, can you really not protect your machines with Sentinella?

CONSIDERATIONS

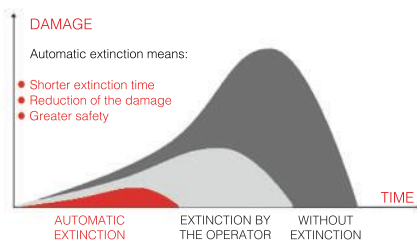
MACHINE TOOLS



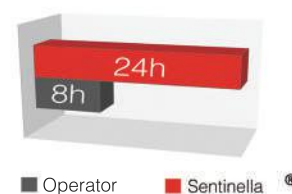
SAFETY COSTS



PERFORMANCE RANGE



DAILY SURVEILLANCE LEVEL



THE PRODUCT

Sentinella® is an automatic CO₂ fire-fighting system conceived for, developed and tested on machine tools. Unquestionably the maximum possible technology for protecting your machines and with an optimum quality/price ratio.

Our smart protection system fully satisfies the strictest safety rules envisaged by the Machine Directive 2006/42/EC, complies with UNI EN 54, NFPA 12, UNI EN ISO 13849-2 and UNI EN ISO 19353 standards, and uses CO₂ gas as the extinguisher, thus guaranteeing the complete recovery after a fire of the machinery and of the oil.

The system works completely autonomously; when the pre-established temperature threshold has been reached, the detection system sends an impulse to the microprocessor which immediately transmits a discharge order.

The system allows you to keep the machine under control from fire risks and monitors it automatically around the clock.

It also equipped with manual activation in order to achieve greater safety levels and has an emergency battery supply that covers a loss of mains power for up to three days.

ADVANTAGES

- ROUND THE CLOCK PROTECTION IN THE ABSENCE OF THE OPERATOR
- INTERVENTION IN THE VERY FIRST SECONDS WITH MINIMIZATION OF THE DAMAGES
- NO PRODUCTION STOPPAGES
- GUARANTEED PROTECTION OF YOUR PERSONNEL FROM THE RISK OF BURNS
- SPECIALIZED SUPPORT
- COMPLETE RECOVERY OF THE LUBRICANT OIL
- SIMPLE RESETTING AFTER USE
- THE HIGHEST SAFETY LEVELS AS THE SYSTEM WORKS EVEN WITHOUT MAINS POWER (MAX. T. 3 DAYS)
- INTEGRATION WITH EMERGENCY SYSTEM
- MODULAR EXPANSION

Our company has matured a wealth of know-how over thirty years in the fire-fighting sector and from hundreds of installations of Sentinella® systems on machine tools throughout Europe.

In order to guarantee a qualitatively superior product Castagna Antincendi manages all the stages: from the consultancy to the design along with the customer and to the construction and subsequent maintenance of the system.



Many manufacturers have already chosen us and we have integrated the Sentinella® system with their machines, customizing it and producing a tailor-made product. Customization allows us to meet all the customer's needs; together we select both the detection system (thermal, or UV / IR for a more rapid response), and the most appropriate extinguishing agent (CO₂, Argon or chemical agents in the case of particular operations as with Magnesium).

The system can be completed with a gate valve located inside the filtering system which, when connected to the control unit, isolates the machine and ensure faster extinction.

The system is available in 3 versions depending on the risk of the machine (medium or high) and level of protection you wish to obtain.

SENTINELLA®
FIRE FIGHTING SYSTEM
LIGHT

SPECIFICATIONS
Manual system
- Manual activation control
- Storage cylinder from 2 to 140 kg

RECOMMENDED FOR
CN machine tools that are supervised when in operation, with emulsified lubricating and coolant oils or with a low fire risk.

SENTINELLA®
FIRE FIGHTING SYSTEM
STANDARD

SPECIFICATIONS
Standard system configuration
- Microprocessor for automatic detection
- Heat detectors
- Storage cylinder from 2 to 140 kg
- Manual activation
See the attached brochure

RECOMMENDED FOR
Machine with high fire risk
E.g.: CNC and EDM machines that work with whole oil and/or unmanned.

SENTINELLA®
FIRE FIGHTING SYSTEM
PRO

SPECIFICATIONS
High performance system
- IR / UV flame detectors
- Storage cylinder from 2 to 140 kg
- Electronic CO₂ weight control
- Protective housing
- IP 65 and ATEX- Protection
- Filtering system fire barrier valve

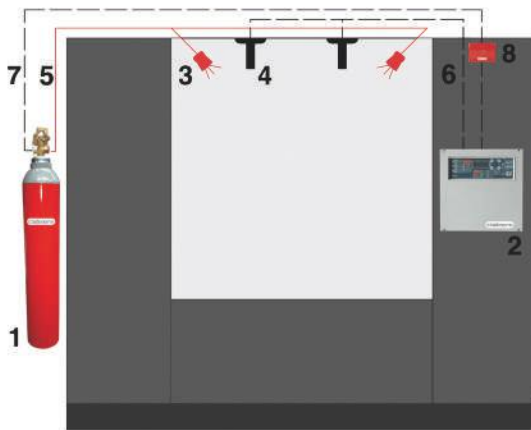
RECOMMENDED FOR
Machine tools at high risk where it is fundamental to react to the development of the flames in the first few seconds.

SPECIFICATION - STANDARD SYSTEM

The components are assembled at our Verona works from which we manage the entire production chain and control every detail.

The Standard version of the plant is composed as follows:

Fig.01
Example of positioning of distributors and heat detectors



KEY TO THE COMPONENTS:

1. CO2 extinguishing agent storage cylinder
2. Control unit
3. Extinguishing system distributor cones
4. Temperature sensors
5. Extinguishing line for CO2
6. Detection line
7. Discharge activation line
8. Visual - acoustic alarm

Control Unit



EN-54-2, EN 54-4 and CPD approved and compliant with UNI EN ISO 19353, this is the heart of the system and has super-fast reaction time thanks to its internal microprocessor. Compact and easy to use, it is equipped with an intuitive graphic display and a set of indicator LEDs that show all the information required for checking that the system is operating correctly: maintenance history, malfunction history, voltage failure, current failures.

Distribution System



The Sentinella® distribution system meets the NFPA 12 standard regarding gases at high pressure.

Two or more aluminium distributor cones are installed inside the machine to guarantee correct distribution of the discharge of the CO2 gas.

Detection System



Detection is entrusted to two temperature sensors located inside the machine to continually monitor any temperature increases and send a signal immediately to the control unit if there is an anomaly. The system is enhanced in the PRO version with UV/IR detectors that improve the response times.

Storage Cylinder



The cylinder, in compliance with EC/TPED standards, contains CO₂ gas (alternatively Argon, FM 200 chemical extinguishing agents, for example in the case of alkaline metals such as titanium) and is fitted with a valve that is activated automatically by means of a pyrotechnical actuator or manually by means of a manual control.

Manual Activation



Fire-fighting system manual activation button in conformity with the EN54-11 standard. Pressure at the centre of the element triggers discharge.

Visual - Acoustic Alarm



A visual/acoustic LED device that makes it possible to reports faults and discharges with ideal light and sound levels.



Fig. 02 Example of system installation with an external cylinder or integrated in the machine.

CHARACTERISTICS - PRO VERSION UPGRADE

If you want to increase the safety level you can implement several upgrades rather than having to request customized solutions of all kinds.

Above all it is possible to set up a control board protection system with the inclusion of a visual smoke detector and a supplementary distributor cone.

The system is normally adapted to ATEX standards for machines with explosion risks.

The system for controlling the weight of the extinguishing agent is also very useful and makes it possible to monitor the level of the CO₂ charge inside the storage cylinder.

In machines at a high fire risk, where intervention during the first seconds of flame is crucial, UV/IR flame detectors are added in order to advance the response times.

In order to improve its integration, the system can be enclosed in special cabinets or boxes (RAL colour as desired).

If there are several machines connected in series with centralized extraction, the addition of protection of the discharge channel and oil filter is recommended.

This provides two significant advantages; it improves the ability to put the fire out and prevents spreading to the connected machines.



Fig. 03
Example of application of the electronic weight control

UV - Flame Detector



- A PARTICULAR APPLICATION FOR MACHINES IN WHICH FIRES COULD DEVELOP RAPIDLY
- THE POSSIBILITY OF SAFE OPERATION IN AREAS IN WHICH THERE ARE GREAT PERTURBATIONS IN THE VISUAL FIELD CAUSED BY INFRARED COMPONENTS
- HIGH IMMUNITY TO FALSE ALARMS
- IP 65 PROTECTION
- ALSO AVAILABLE IN AN ATEX EXPLOSION-PROOF VERSION

The UV flame detector is suitable for machines when reaction in the first few seconds of development of the flames is fundamental. It is used prevalently in lathes.

The operating principle of these detectors is based on the detection of the ultraviolet component of the flame.

This is because the flame emits a very broad spectrum of radiation that ranges from the ultraviolet to the infrared.

The detection of the ultraviolet component is certain proof of the flame.

Particular care has been taken in the design of these sensors in order to render the detectors immune to false alarms and make them particularly reliable.



Fig. 04 Example of application of a flame detector

IR - Flame Detector



- A PARTICULAR APPLICATION FOR MACHINES IN WHICH FIRES COULD DEVELOP RAPIDLY
- NOT INFLUENCED BY OIL
- INTERVENTION SPEED
- HIGH IMMUNITY TO FALSE ALARMS
- HIGH IMMUNITY TO ELECTRICAL DISTURBANCES
- IP 65 PROTECTION
- ALSO AVAILABLE IN AN ATEX EXPLOSION-PROOF VERSION

The IR flame detector is able to detect the flame within a few seconds.

It is particularly used in Sharpening and Grinding machines as it is not influenced by oil.

The operating principle is based on the detection of infrared radiation emitted by a flame.

Several optical filters have been envisaged for allowing infrared radiation to pass and to block other luminous radiations. The apparatus is therefore insensitive to sunlight, artificial lighting, ultraviolet rays, X and gamma rays.

The detector's internal sensitivity can also be adjusted to prevent external influences of any kind.

Barrier Valve



- RELEASE MANAGED BY THE CONTROL UNIT
- ISOLATES THE MACHINE FROM THE EXTRACTION SYSTEM AND STOPS THE FLAMES FROM SPREADING
- ENSURES THAT THE FIRE-FIGHTING SYSTEM RENDERS THE MACHINE SAFE MORE QUICKLY
- INTERVENTION SPEED

Our valve permits a low pressure loss and can be installed rapidly as it is pre-assembled in the factory.

With the first signal of fire or explosion the valve closes automatically and as a consequence isolates the machine from the filtering system, thus preventing the flames from spreading into the oil mist extraction duct.

Complete with manual release control.
Available in diameters from 80 to 500 mm.



Fig. 05 Manual system for CN machine – Paper industry

CASTAGNA

ANTINCENDIO E SICUREZZA

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