



Advantage  
Engineering –  
share the  
experience

## Fire detection in laundries

Protection of people, business continuity and reputation

Laundries must be considered relatively critical zones in hotels. Firstly, they may have a very high fire load (e.g. amount of textiles) and secondly they provide a high risk because of possible overheated electrical equipment.

Due to the number of deceptive phenomena in such an environment, like steam or dust, fire detectors are recommended which not only guarantee an early warning in case of fire, but also provide a robust response to deceptive phenomena.

In the event of a fire, alerting and evacuating all parties at risk in good time has the highest priority. A fire protection system is needed that guarantees rapid, reliable fire detection and activates both the alarm devices and the relevant fire control installations.

Early warning of a fire is essential; not only for protecting people, but also for ensuring business continuity and the reputation of the hotel. However, unnecessary evacuation activities due to false alarms must be avoided.

# Content

Content .....	2
Introduction .....	3
Basic conditions .....	4
Solution .....	5
Practical experience .....	7
<b>ASA</b> technology – for intelligent, reliable fire detection with genuine alarm guarantee .....	8
Everything you need for comprehensive fire protection .....	8
Advantage Engineering – share the experience .....	9

# Introduction

Almost all machines used in hotel laundries contain some form of heater. Based on the high energy consumption of these appliances and the fire load, the laundry is one of the most dangerous areas in a hotel.

The main causes of fires in laundries are a lack of cleanliness, technical defects and spontaneous combustion of textiles. Even though the fire risk cannot be eliminated completely, the risk can be significantly reduced by simple measures. These include:

- Limiting to a minimum those materials which are easily flammable such as paper or cardboard packaging.
- Cleaning the laundry area daily, especially removing any accumulations of fluff.
- Storing cleaning agents in a dedicated cupboard when they are not being used.
- Periodically cleaning the air ducts and exhausts of the electric control cabinets.
- Regularly cleaning, checking and maintaining appliances such as washing machines, dryers and ironing presses.
- Turning off electrical equipment as soon as it is no longer being used.
- Instructing employees in how the machines should be used.
- Cleaning oil and grease-stained textiles separately.
- Not stacking or packing items of clothing when they are still warm.

## Highlights\*

- The laundry is the second biggest area of fire origin in non-confined hotel and motel fires
- This area is considered a critical zone due to a very high fire load and a high energy consumption
- One out of every 12 hotels reports a structural fire per year

\* NFPA, U.S. Hotel and Motels Structure Fires; U.S. Fire Administration's (USFA's), Hotel and Motel Fires

# Basic conditions

## Objective

- Alerting people in the laundry area.
- Preventing the fire from spreading to other hotel areas.
- Timely alerting and evacuating of all other people at risk.
- Preventing unnecessary alerting of guests and the fire brigade.

## Typical fire hazards

- An overload or short circuit of an electrical appliance (e.g. washing machine, dryer or ironing press).
- Ignition of dust or fluff through contact with a hot surface.
- Spontaneous combustion of textiles: heat can cause an exothermic reaction between oxygen in the air and the unsaturated fatty acids on soiled clothing.

## Typical development of a fire

The majority of fires in laundries start with a smoldering phase and progressively generate increasing quantities of visible smoke. If such an incipient fire is detected at an early stage, it can be dealt with easily (e.g. disconnecting the power supply of the electrical equipment concerned or extinguishing smoldering textiles with water). Smaller fires with open flames can also be extinguished with water or a fire extinguisher.

## Critical points

- Preventing false alarms due to deceptive phenomena. For example:
  - Rapid local increase in temperature when opening a dryer.
  - Steam from an ironing press.
- Preventing delayed fire detection:
  - E.g. by the fire aerosols being diluted by the airflow from the HVAC system.
- Limiting the fire to the burning object or the laundry area.

# Solution

When planning and implementing the fire detection system, the increased fire risk and the deceptive phenomena which occur during the daily operation of the laundry must be borne in mind. The system must not only guarantee early and reliable detection of a fire, it must also respond effectively to deceptive phenomena. The environmental conditions in a laundry are quite different when it is in operation and when it is not in operation. To achieve the best possible protection, the system must be designed to adapt its detection behavior according to these two situations.

## Laundry in operation

- Increased fire risk (electrical appliances, a lot of energy, warmth and medium fire load).
  - Deceptive phenomena (steam and heat).
  - Manual alarming possible (people present).
- ➔ The fire detection differentiates between fire and deceptive phenomena and alerts when there is medium smoke generation.

## Laundry not in operation

- Medium fire risk (electrical appliances and medium fire load).
  - Normal environmental conditions (no deceptive phenomena).
  - Manual alarming not possible (no people present).
- ➔ The fire detection differentiates between fire and normal environmental conditions and alerts as soon as there is a little smoke generation.

In addition to the automatic fire detectors, a manual call point is installed so that a fire alarm can also be triggered manually.

The number and position of the automatic fire detectors are chosen based on the size of the laundry, the areas in which deceptive phenomena occur and the fixtures which prevent uniform propagation of smoke and heat.

Details	Comments/Notes
<b>Automatic fire detectors:</b> ASA neural fire detectors	<p>Early detection of all types of fires and robust response to deceptive phenomena (steam, heat): operation in a high humidity environment.</p> <ul style="list-style-type: none"> <li>• Detectors in the area of the machines:               <ul style="list-style-type: none"> <li>- During hours of operation: Parameter set with a high immunity</li> <li>- Outside hours of operation: Parameter set with a sensitive response</li> </ul> </li> <li>• Detectors outside the area of the machines:               <ul style="list-style-type: none"> <li>- During hours of operation: Parameter set with a balanced detection behavior</li> <li>- Outside hours of operation: Parameter set with a sensitive response</li> </ul> </li> <li>• IP protection of at least IP43</li> </ul>
<b>Manual call point:</b>	<p>Manual call point</p> <ul style="list-style-type: none"> <li>• Single or double action (depending on local regulations)</li> <li>• IP protection of at least IP43 (for operation in high humidity environments)</li> </ul>
<b>Positioning of the fire detectors:</b> (see Figure 1)	<p>Automatic fire detectors</p> <ul style="list-style-type: none"> <li>• On the ceiling</li> <li>• At least 0.5 m from the wall</li> <li>• As far as possible from the area in which deceptive phenomena occur</li> <li>• Away from the airflow of the HVAC system</li> </ul> <p>Manual call point</p> <ul style="list-style-type: none"> <li>• In the laundry area next to the fire exit</li> <li>• At a height of 1.4 m ± 0.2 m</li> </ul>
<b>Related measures</b>	<ul style="list-style-type: none"> <li>• Fire extinguisher for Fire Category A (solid substance).</li> <li>• Sounder beacon to warn people in the laundry.</li> <li>• Trash can with a tight lid made of non-flammable material.</li> </ul>

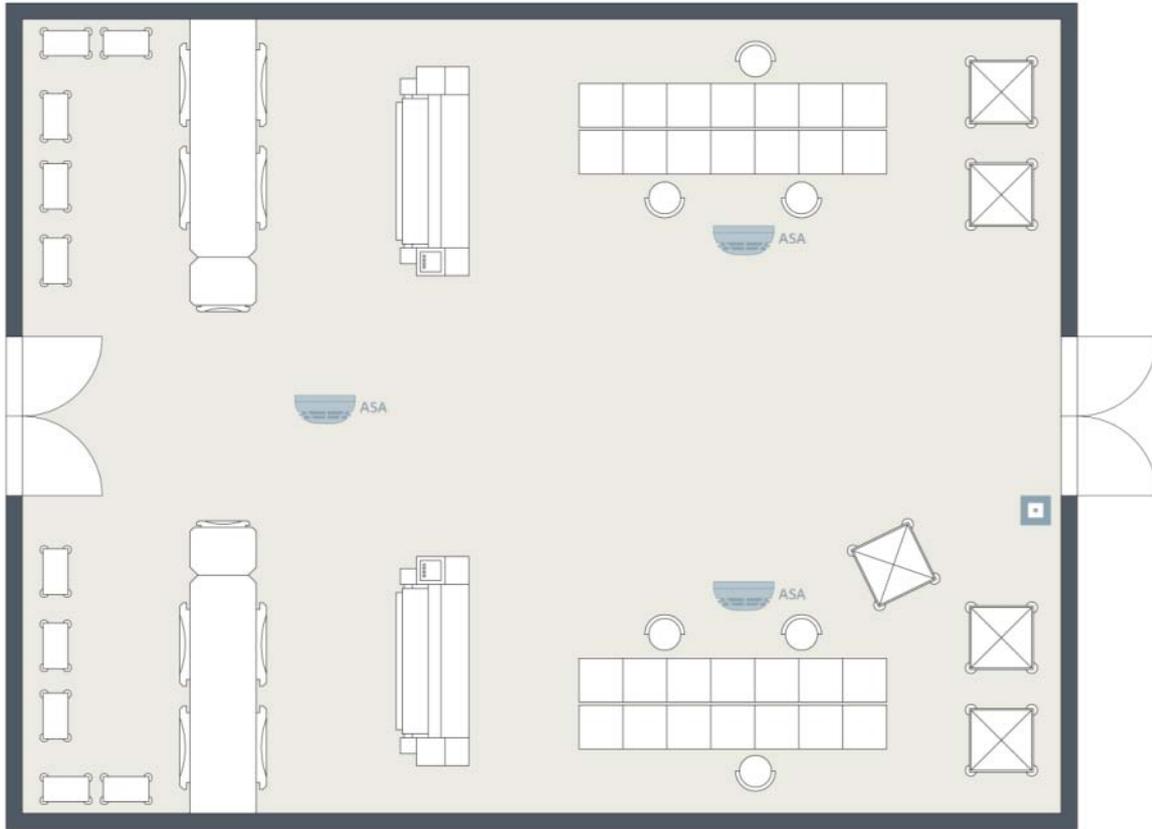


Figure 1 Positioning of fire detectors

- 
ASA neural fire detector
  
- 
Manual call point

# Practical experience

## Fire detection

Fire damage in laundries which are equipped with suitable fire detectors is generally limited. Early alerting makes it possible for staff to extinguish the fire by simple means (e.g. water or fire extinguisher) and therefore to limit the damage to a machine or to a small area.

Modern fire detectors are able to make an intelligent signal analysis and the detection behavior can be adapted to the environmental conditions. These properties provide significantly improved protection over conventional fire detectors.

It is important that fire detectors are installed in all areas of the laundry, including the laundry storage area, and that they are set according to the deceptive phenomena present those areas. This guarantees early fire detection and prevents the triggering of false alarms.

## Unwanted alarms owing to deceptive phenomena

Aerosols and increased temperature are the fire characteristics which are detected by a multi-sensor fire detector (optical and thermal). The deceptive phenomena steam generates exactly these two phenomena – aerosols and increased temperature.

Practical experience has shown that the ASA neural fire detector is perfectly suited for use in laundries, thanks to its signal processing with **ASAtechnology** (ASA = Advanced Signal Analysis) and being able to switch its detection behavior. It changes its detection behavior according to the environmental conditions and therefore guarantees early and reliable fire detection. The risk of false alarms can be practically excluded.

## Interference from the HVAC system

To guarantee reliable fire detection, the fire detectors must be mounted away from the airflow of the HVAC system so that, in the event of a fire, the smoke is not diluted in the vicinity of the detectors.

# *ASAtechnology* – for intelligent, reliable fire detection with genuine alarm guarantee

*ASAtechnology* is a unique technology from Siemens that converts signals into mathematical data which are compared with programmed values in real time using intelligent algorithms. The special signal analysis process is very reliable in preventing false alarms caused by on-site deceptive phenomena, such as steam, tobacco smoke or exhaust emissions. Find out more about [Sinteso](#) or [Cerberus PRO](#) fire detectors with *ASAtechnology*.

## Everything you need for comprehensive fire protection

Incorporated in a concept tailored to your customers' requirements, Siemens and its Solution Partner network provide:

- Early and reliable fire detection solutions, offering an unrivalled financially backed "Genuine Alarm Guarantee"
- Fully forwards and backwards compatible systems, to ensure any system provided is equipped to integrate the latest technology Siemens has to offer
- Clear and fast alerting and evacuation processes

All these aspects are at the core of comprehensive fire protection. Only when these are fulfilled can you be assured that people in your buildings are safe and assets and business operations are protected.

In order to offer your customers peace of mind, Siemens and its Solution Partner network have a variety of service and solution offerings that can be tailored to an individual client's needs. To find out more about this, please visit our Web site at [www.siemens.com/firesafety-markets](http://www.siemens.com/firesafety-markets) or contact your local Siemens organization through [the online contact form](#).

# Advantage Engineering – share the experience

With our dedicated program for consulting engineers, you can benefit from our extensive application know-how and complete portfolio.

With Siemens, you can offer your customers comprehensive fire safety for any application and environmental condition. Your customers will appreciate this as it enables them to reliably protect people, assets and business processes from fire.

Backed by more than 160 years of experience in the field, our offerings for early detection, reliable alarming, orderly evacuation and safe extinguishing are based on innovative and unique technologies. They provide you with convincing arguments like maximized life safety or environmental friendliness, and open the door to strong, long-term customer relationships. And with Siemens, you gain a reliable partner at your side and benefit from our smart tools, in-depth trainings and personal support – wherever you are, wherever you go. For more information please visit [www.siemens.com/advantage-engineering](http://www.siemens.com/advantage-engineering).

Siemens Switzerland Ltd  
Infrastructure & Cities Sector  
Building Technologies Division  
International Headquarters  
Gubelstrasse 22  
6301 Zug  
Switzerland  
Tel +41 41 724 24 24

The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract. The document contains a general product overview. Availability can vary by country. For detailed product information, please contact the company office or authorized partners.

© Siemens Switzerland Ltd, 2014 • BT\_0057\_EN

**Answers for infrastructure and cities.**

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

**“We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure.”**