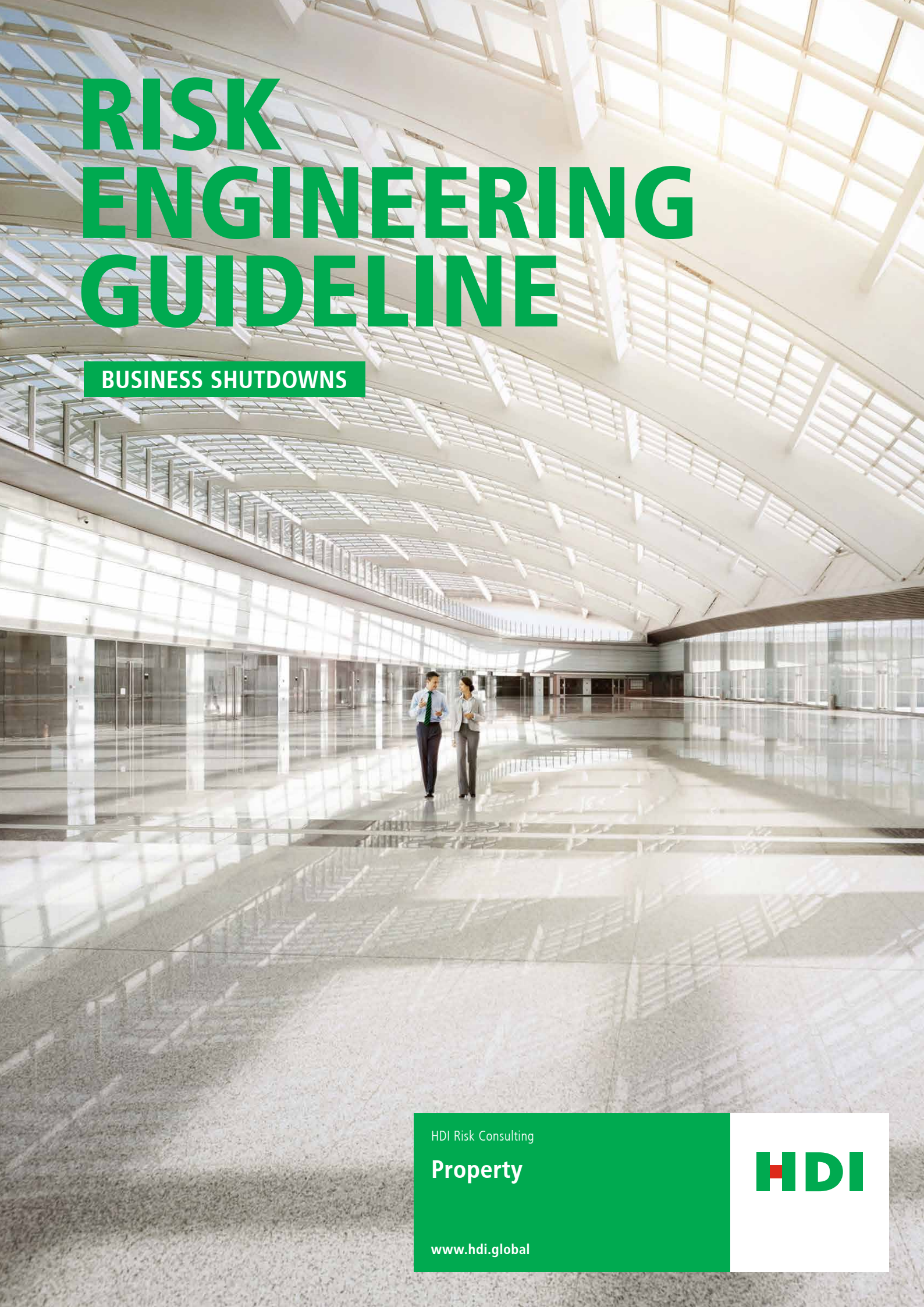
RISK ENGINEERING GUIDELINE

BUSINESS SHUTDOWNS



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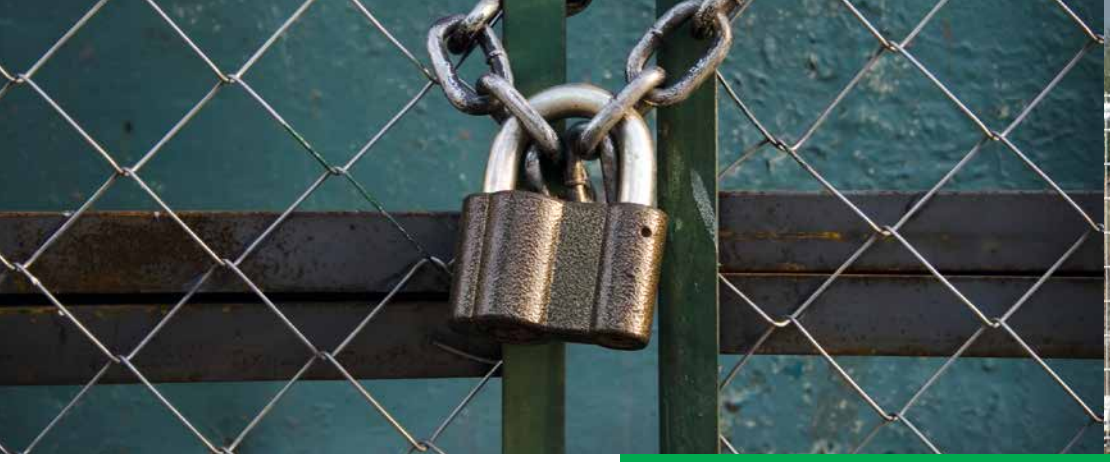


Covering risks when the business is shut down. Timely planning and implementation of appropriate safety measures prevent losses.

General.

There may be various reasons for a company to shut down parts of their business for a certain period or even completely e.g. a dramatic order reduction in times of economic crises, strikes or business restructuring. Extended company holiday or seasonal business shutdowns may also be possible reasons. This may produce an additional local hazard potential. Hence, appropriate safety measures covering the risks should be planned and implemented well in advance.

1 Risk situation and loss example.

It is true that production-specific and business-related risks are reduced or eliminated automatically when shutting down facilities or parts of facilities. However, insurers' experience with losses reveals that quite different hazard potentials may arise at the same time, especially due to arson, vandalism and theft. The hazard to related downstream production areas must also be taken into account here.

Example: Arson in a shut-down plant building
During one night, a fire occurred in an empty building of a bankrupt meat and sausage processing business. The fire brigade was called only after the flames had penetrated the roof of the single-floor former shipping and production hall. As packaging materials were still stored in the area affected by the fire, the fire spread and caused a material loss of around € 6.5 million. The reason of the loss: assumed intentional arson.

Appropriate risk protection measures could have prevented or limited the loss considerably. When after a short temporary business shutdown, the planned restart of production operations is adversely affected by the loss event, the consequences are even more serious than in the above example.

For this reason, the HDI Risk Consulting specialists recommend their customers to implement loss prevention measures that are appropriate for the risk prior to business shutdowns or the shutting down of units. Also, it is useful to use limited „shutdown periods" for thorough maintenance and inspections of production facilities and safety equipment in order to safeguard a company in the long term, or possibly even result in a higher safety level of the company then before the downtimes.

2 Which measures should be taken prior to a business shutdown?

All unscheduled business shutdowns should be reported to the HDI contact person without delay. This is the only way to prepare and implement an individual set of measures in a coordinated and timely manner with HDI Risk Consulting. At the same time, it is important to adapt the property insurance cover to the changed risk situation in order to guarantee continued complete insurance coverage. The legal and contractual provisions (requirements), e.g. when an increased hazard is involved, must be considered.

A target related strategy of measures is essentially sub-divided into the following areas:

2.1 Protection against arson, theft and vandalism

Protecting an industrial building against arson essentially requires the protection of the premises either by technical/structural means (fencing, lighting, mechanical/electric burglary protection) and/or by guarding which is adequate to the risk. The manpower, the number of guard rounds and the definition of the routes depends on the local situation. The experience gathered by the HDI Risk Consulting specialists shows that specific areas where high fire loads occur – e.g. combustible materials stored at this location – must be specially protected/monitored or be cleared during a business standstill/shutdown or be substantially reduced. The same considerations apply to external storage areas which are often a particular target for arsonists.

As far as the theft risk is concerned, this also relates to goods of economic value. In addition, the following applies: The worse the general appearance of an operations building, e.g. due to broken windows, the greater the risk of offenders to engage in arson or vandalism attacks. Also, particular attention is required in case of repeated offences. For this reason, it is advisable to contact the HDI contact person in charge after every known arson attempt in order to jointly examine the existing protection measures and develop these further, as required according to the circumstances.

2.2 Minimisation of ignition sources

Another increased hazard results from the probable substantial reduction of staff on the premises as they often are no longer permanently manned. are no longer permanently manned. This increases the risk of a fire not being detected in the critical early stages and not successfully extinguished. This is why it is important to anticipate and avoid ignition sources in advance as far as practically possible. The risk is of a considerable extent: According to the loss statistics prepared by insurers, around 30 percent of all fires are caused by defects of technical systems like electric lighting and power installations or mobile electric devices (see graphics on page 4). The latter include: coffee machines, water boilers, refrigerators, mobile heaters etc. In general, such appliances should be included in the scope of inspection of electric equipment and be disconnected from the power grid during extended shutdown periods by removing the plug from the socket outlet.

2.3 Minimisation of fire loads

Fire loads should be minimised in storage as well as in production areas. Production facilities should be completely emptied, cleared and thoroughly cleaned prior to shutting them down. This also applies to some plant items e.g. to aspiration and filter systems, silos, conveyor systems etc.

2.4 Safety precautions relating to fire protection equipment

Safety equipment should always be maintained in operational order, even in difficult economic environment, so that property losses can be avoided or significantly reduced. This applies particularly when locations are no longer manned or are only manned with a small number of employees, then automatic fire protection equipment such as fire protection gates, fixed protection and fire alarm systems become of particular importance.

The following measures should therefore be carried out consistently:

- maintenance and repair work as well as the usual routine checks by specialist companies and acknowledged experts,
- transmission of alarms to a permanently manned office. Alarm delays should be deactivated for the duration of the shutdown phase,
- training of personnel regarding the operation of fire protection equipment.

Important: If shutdown periods are to be used for performing alterations and/or repair work on fire protection systems such as the sprinkler system, the impairment of those systems must be reported to the responsible HDI contact person. This is essential to ensure that adequate alternative protection measures can be implemented by joint discussion.

2.5 Safety precautions on buildings and technical systems

After shutting down the production facilities and disconnecting the electrical systems from the mains supply, the other utilities may require particular attention, e.g. gas consuming appliances which are no longer in operation during the shutdown period should be disconnected from the gas supply at the main shut-off valves (which are usually located externally). Systems containing water as well as pipes (fresh, heating, process and fire water) must be protected against frost unless safeguarded and monitored heating of the buildings can be ensured during the cold season.

This applies in particular to water-filled wet pipe groups of fixed protection systems during frost periods. In the above cases, the building temperature must not drop to below +5°C without any frost protection measures in place, e.g. pipe insulations and trace heating.

Draining wet-pipe sprinkler systems is not allowed as a precautionary measure as fire protection is no longer provided after such a step. In dry-pipe systems, it must be ensured that they will be thoroughly drained after a test flooding or before the frost period.

2.6 Other organisational measures

Around 15 to 20 percent of all fire losses are attributable to negligent behaviour (see graphics right). For this reason, the personnel remaining on the premises and responsible for operations there should be prepared appropriately so they are able to handle the changed or new risk situation. The following measures must be emphasized in this context:

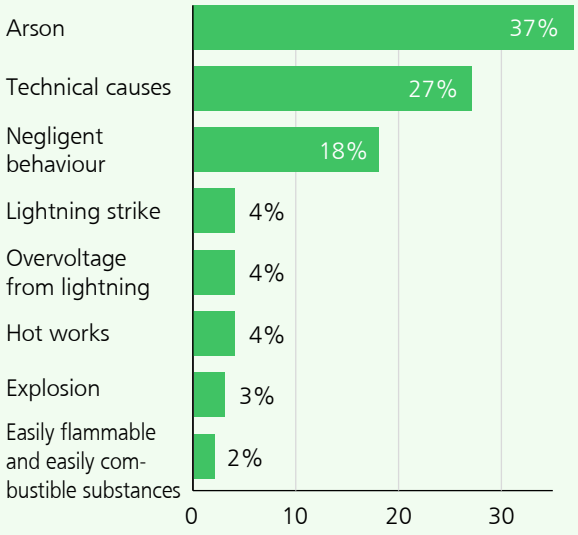
- updating/adaptation of alarm and emergency plans, e.g. regarding new contact partners/phone numbers,
- monitoring of hot works, especially works done at existing production equipment as well as roofs with combustible insulation.

Hot works represent an exceptionally high fire hazard: an undetected smouldering fire may develop into a large-scale fire even hours after completing the hot works in question. For these reasons, it is particularly important that such activities involving hot work are carried out with utmost care and are thoroughly monitored. To support this approach, your HDI contact person will make „Hot work permit" forms available to you (see p. 5).

The use of these hot work permit forms is to ensure that hot works on the premises are approved only after adequate protection measures are implemented prior to, during and after the works. One centrally responsible employee provided with rights and obligations directly by the business management should ensure the approval and the handing-over/acceptance of the works at a later date. Hot work permits may therefore have to be issued several times per day, depending on the location and the type of works.

An in-house fire fighting group or a company fire brigade which may be available should be integrated into the protection concept as a support for providing additional protection in the work areas concerned. In addition, it is recommended to report the new operating situation to

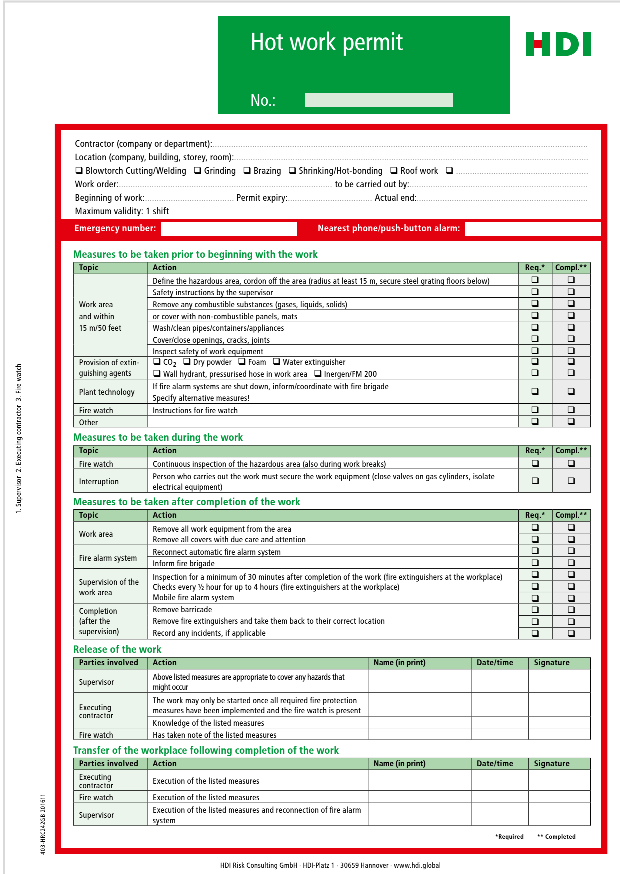
Causes of fire and loss amount



Data source: Loss statistics of GdV (German insurer association)

the local police and fire brigade as well and/or to consider them in the planned measures. The fire brigade must have unrestricted access to all operational areas at all times. The risk situations arising in the process of a business standstill/shutdown are manifold and may increase the local hazard potential. For these reasons, we recommend that you contact your HDI contact person in good time in all circumstances. In the usual partner-like cooperation with the HDI Risk Consulting specialists, it can be ensured that your business is protected in the best possible way both technically and commercially during such periods.

Note: Requirements made by authorities are not covered by our recommendations.



Hot work permit

HDI

No.:

Contractor (company or department): ....

Location (company, building, storey, room): ....

❑ Blowtorch Cutting/Welding ❑ Grinding ❑ Brazing ❑ Shrinking/Hot-bonding ❑ Roof work ❑ ....

Work order: .... to be carried out by: ....

Beginning of work: .... Permit expiry: .... Actual end: ....

Maximum validity: 1 shift

Emergency number: **Nearest phone/push-button alarm:**

1. Supervisor 2. Executing contractor 3. Fire watch

Measures to be taken prior to beginning with the work

Topic	Action	Req.*	Compl.**
Work area and within 15 m/50 feet	Define the hazardous area, cordon off the area (radius at least 15 m, secure steel grating floors below)	❑	❑
	Safety instructions by the supervisor	❑	❑
	Remove any combustible substances (gases, liquids, solids)	❑	❑
	or cover with non-combustible panels, mats	❑	❑
	Wash/clean pipes/containers/appliances	❑	❑
	Cover/close openings, cracks, joints	❑	❑
	Inspect safety of work equipment	❑	❑
Provision of extinguishing agents	❑ CO_2 ❑ Dry powder ❑ Foam ❑ Water extinguisher	❑	❑
	❑ Wall hydrant, pressurised hose in work area ❑ Inergen/FM 200	❑	❑
Plant technology	If fire alarm systems are shut down, inform/coordinate with fire brigade Specify alternative measures!	❑	❑
Fire watch	Instructions for fire watch	❑	❑
Other		❑	❑

Measures to be taken during the work

Topic	Action	Req.*	Compl.**
Fire watch	Continuous inspection of the hazardous area (also during work breaks)	❑	❑
Interruption	Person who carries out the work must secure the work equipment (close valves on gas cylinders, isolate electrical equipment)	❑	❑

Measures to be taken after completion of the work

Topic	Action	Req.*	Compl.**
Work area	Remove all work equipment from the area	❑	❑
	Remove all covers with due care and attention	❑	❑
Fire alarm system	Reconnect automatic fire alarm system	❑	❑
	Inform fire brigade	❑	❑
Supervision of the work area	Inspection for a minimum of 30 minutes after completion of the work (fire extinguishers at the workplace)	❑	❑
	Checks every ½ hour for up to 4 hours (fire extinguishers at the workplace)	❑	❑
	Mobile fire alarm system	❑	❑
Completion (after the supervision)	Remove barricade	❑	❑
	Remove fire extinguishers and take them back to their correct location	❑	❑
	Record any incidents, if applicable	❑	❑

Release of the work

Parties involved	Action	Name (in print)	Date/time	Signature
Supervisor	Above listed measures are appropriate to cover any hazards that might occur			
Executing contractor	The work may only be started once all required fire protection measures have been implemented and the fire watch is present			
	Knowledge of the listed measures			
Fire watch	Has taken note of the listed measures			

Transfer of the workplace following completion of the work

Parties involved	Action	Name (in print)	Date/time	Signature
Executing contractor	Execution of the listed measures			
Fire watch	Execution of the listed measures			
Supervisor	Execution of the listed measures and reconnection of fire alarm system			

*Required ** Completed

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HDI Risk Consulting GmbH · HDI-Platz 1 · 30659 Hannover · www.hdi.global

Check list for preparing business standstills/shutdowns

Attached you will find a checklist for business shutdowns with the most important measures to secure your property. For more information please ask your responsible HDI Risk Consulting Risk Engineer in your HDI branch.

Checklist: Measures for business shutdowns

Measures	Completed Yes	Completed No	Remarks
General information:			
Which business areas are shut down? (location, building, building section, systems, machinery)?			
For how long will the above business areas probably be shut down?			
Protection against arson, theft and vandalism:			
Are the premises completely enclosed by a fencing?	☐	☐	
Are all buildings/halls sufficiently protected against unauthorized access, e.g. by installing locks that are adequate for the risk as well as door and window protection?	☐	☐	
Are locks, doors and windows checked at regular intervals for damage and repaired without delay?	☐	☐	
Are burglar alarm systems provided (if yes, please give a brief description)?	☐	☐	
Are the premises supervised around the clock?	☐	☐	
Was the concept of premises monitoring by guards coordinated with HDI regarding the manpower, number of rounds and definition of the routes?	☐	☐	
Are safety-relevant rooms, the outer building shell and the fences checked every day (at least every 2 days)?	☐	☐	
Are the premises including the fence, any possible outdoor storage areas and the building envelope lit 24/7? (Alternative: lighting system controlled by motion detection alarms).	☐	☐	
Minimisation of ignition sources:			
Is an unrestricted ban on smoking in force on the entire premises during the business standstill?	☐	☐	
Are mobile electric appliances (coffee machines, water boilers, refrigerators, mobile heaters) disconnected from the power grid by removing the plug from the socket outlet?	☐	☐	
Are areas electrically centrally isolated? (If so, which areas?) Note: Safety-relevant equipment/systems such as fire protection systems or emergency lighting systems must not be affected by electrical isolation.	☐	☐	
Operative electric devices/systems should still be inspected according to local and HDI requirements by an expert.	☐	☐	
Cleaning/minimisation of operational fire loads:			
Are all relevant production areas and rooms cleaned thoroughly prior to the business standstill?	☐	☐	
Are production facilities shut down completely and cleaned?	☐	☐	
Are unnecessary fire loads such as packaging which are not needed in the near future and combustible raw and base materials (solid/liquid or gaseous) removed from/reduced in the production and storage areas prior to the business standstill?	☐	☐	Reduction in %: _____
Are stocks of combustible finished/semi-finished goods reduced to the greatest possible extent?	☐	☐	Reduction in %: _____
Are combustible materials removed from yards, external areas etc. (as arson protection)?	☐	☐	
Are combustible materials stored at a distance of 20 m from buildings and 10 m from the boundary of the premises?	☐	☐	

Measures	Completed Yes	Completed No	Remarks
Are water, emulsion, lubrication and hydraulic oil contents removed from machinery and systems as a fire and frost protection measure if this can be justified from an operational/ technological point of view?	☐	☐	
Are machinery and systems protected against corrosion by greasing or by protective covers and checked at regular intervals?	☐	☐	

Safety precautions relating to fire protection equipment:

Is the insurer notified about the shutdown of fire alarm or fixed fire protection systems if this is required at short notice in exceptional cases? Are compensation measures relating to fire protection coordinated with the insurer?	☐	☐	
Is maintenance work, revisions and repair work on fire protection systems (fire alarm system, fixed fire protection systems, fire protection gates, etc.) carried out by own personnel, specialist companies, by experts according to technical rules and at regular intervals?	☐	☐	
Is alarm transmission from fire alarm systems updated to reflect the possibly changed personnel situation?	☐	☐	
Is it ensured that in areas with water-filled wet pipe groups of fixed protection systems, the building temperature will not drop below +5°C and that sufficient freezing protection is provided by other measures, e.g. by redundant trace heating systems?	☐	☐	
Are all fire protection gates and doors closed as the business is shut down?	☐	☐	

Safety precautions on buildings and technical systems:

Are vehicles parked in such a manner on the premises that they will not represent a fire hazard for the building, i.e. in areas covered by a sprinkler system or externally at a distance of at least 10 metres from buildings? Note: The local building code or legal requirements for garages must be considered.	☐	☐	
Are all systems containing water as well as pipes (fresh, heating, process and fire water) protected against frost unless safeguarded and monitored heating of the buildings can be ensured?	☐	☐	
Are gas consuming appliances which are not operating during the shutdown period disconnected from the gas supply at the main shut-off valves?	☐	☐	

Other organisational measures:

Are particular safety precautions taken when performing hot works? Are hot work permits being issued before starting such works?	☐	☐	
Are alarm plans updated regularly, e.g. regarding new phone numbers and other changed conditions?	☐	☐	
Are selected employees informed 48 hours in advance through the local natural hazard information systems in order to take safety precautions e.g. in case of predicted storms or heavy rain?	☐	☐	
Is the safety and control personnel trained to handle the existing hazards/fire hazards and to operate the alarm systems and fire protection systems properly?	☐	☐	
Was the business shutdown reported to the insurer?	☐	☐	
Remarks / notes:			

Place, date

Signature (optional)

The experts in the local HDI branch offices or HDI Risk Consulting at +49 (0)5 11 / 6 45 - 32 19 will be glad to assist you with further information.

About HDI Risk Consulting.

HDI Risk Consulting GmbH supports major corporations, industrial and mid-size companies with loss prevention and in establishing risk management systems.

HDI Risk Consulting offers its' customers access to some 180 engineers and experts from a wide range of technical disciplines. We aim to support companies with the management of risks and the development of individual risk-based concepts for insurance cover.

HDI Risk Consulting operates globally in the Property, Motor, Engineering and Marine markets, with particular focus on the identification and assessment of risks and the development of appropriate, individual protection concepts.

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HDI Risk Consulting GmbH
HDI-Platz 1 – D-30659 Hannover
Phone: +49 511 645-3219
Fax: +49 511 645-4542
Internet: www.hdi.global

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