BINDING GUIDELINES

THE RISKS ARISING FROM WORK ACTIVITIES AND THE MEASURES TAKEN TO MINIMISE OR ELIMINATE THEM

Document related to Directive 402 „Safety rules for employees of other organisations“

Issued: 01.06.2021

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Securing technology

Mechanical securing

1) For all work on the equipment where there is a risk of leakage of hazardous substances and danger to the health of workers, the equipment must be secured mechanically.
2) Designated employees of the production team are responsible that working equipment will be free of hazardous substances! For the purpose of the work, the individual production units or production elements will be mechanically secured at their boundaries, i.e. physically separated (by inserting plugs) from the surrounding process units.
3) To reduce the likelihood of unwanted contamination and increase worker safety, apparatuses or parts of apparatuses will be additionally blanked at all inlets and outlets for selected types of activities. This includes, in particular, inlets to closed vessels.
4) Designated production team members are responsible for preparing blanking plans.
5) If securing by inserting a plug or securing by fittings only presents a risk of leakage of a hazardous substance and danger to persons, the locking device must be doubled.

   Note:
   Where this cannot be ensured, the contractor must be made aware of the possibility of hazardous substances and the conditions for the safe execution of the work must be set out in the relevant work permit.

Sources of risk	Measures
Failure to blind specific apparatuses.	Based on the orders, submit a list of apparatuses that must be mechanically secured for the work. **Responsibility: Production Team, Maintenance Technician, Project Engineer**
Incorrectly performed blanking (installing a blank in an inappropriate place)	Prepare blanking plans detailing the locations to be blanked. **Responsibility: Production Team**
Injury due to leakage of hazardous substances when blanking or securing with fittings only.	Depending on the type of equipment and the operating load, perform one or more of the following operations – depressurise, flush, purge, evaporate. **Responsibility: Production Team** Close inlet and outlet fittings. The shut-off device must always be doubled (applies to hazardous substances only)! Describe in detail within the blanking plans the valves that must be closed in order to perform the blanking. In the event that doubling cannot be carried out, a committee must be convened to determine additional measures. **Responsibility: Production Team** Securing the fittings accordingly. **Responsibility: Production Team** When securing only the fittings, lock their control with a chain and lock. **Responsibility: Production Team**
Injury during assembly and dismantling work	Start work only if the equipment is secured, i.e. closed fittings and plugs are tagged. **Responsibility: Contractor** Check that the equipment being disassembled is released from pressure; apply safe disassembly procedures in accordance with the main contractor's regulations – gradual loosening of flange bolts, tapping the flange body after each release, standing on the opposite side; use a face shield and gloves against chemical hazards in case of a risk of splashing. **Responsibility: Contractor**
Leakage of substances during dismantling of machine parts.	Stop work immediately. Inform the operator. Secure the drip container.

	Responsibility: Contractor
Releasing the device after one activity when other activities are still in progress	Recording all mechanical securing requirements for all activities in the "Mechanical Securing" book (applies to JRAF), placing the appropriate number of tags on the securing elements. **Responsibility: Production Team**

Electrical securing

Electrical securing is necessary in the following cases:

- ✓ The equipment is driven by an electric motor (e.g. rotating machines) and it is essential to ensure that it does not start up spontaneously or by a remote or local switch during the work being carried out.
- ✓ Work directly on electrical equipment (LV and HV) where there is a risk of electric shock.

Sources of risk	Measures
Electric shock – burns, loss of consciousness, cardiac arrest Injuries from rotating parts of electrically powered equipment.	Create a list of equipment that needs to be electrically secured for the work. **Responsibility: Production Team** Secure the equipment at the substation according to the list. Write a record of the securing in the handling book located in the substation. **Responsibility: Contractor** Indicate in the list that the equipment is secured (e.g. stamp, electrician's signature). **Responsibility: Contractor** On the basis of the list, mark the secured devices (switches) in the operating files with a label, check the securing before marking (by switching the switch in place). **Responsibility: Production Team** Do not start work if the device (switch) is not marked with a label stating that the device is secured! **Responsibility: Contractor** When dismantling motors, it is necessary to use a different method of securing (e.g. disconnecting the power cables and connecting and insulating them together, etc.). **Responsibility: Contractor** All work on electrical equipment must be carried out only by a person with the appropriate electrical qualifications (according to Decree No. 50/1978 Coll., as amended). **Responsibility: Contractor**

Work at heights

1) Protection of persons against falling must be provided by collective or personal protection at all workplaces and access roads located at any height above water or above substances which, in the event of a fall, endanger the life or health of persons, for example by burning, scalding, acute poisoning, suffocation, and at all other workplaces and access roads that are more than 1.5 m above the surrounding level or where the free depth below them exceeds 1.5 m.

2) Preferably, fall protection shall be provided by means of collective protection equipment. Personal protective equipment to protect against fall (hereinafter referred to as personal protective equipment) shall be used where the nature of the work precludes the use of collective protective equipment or where the use of such equipment is not effective in view of the nature, expected extent and duration of the work and the number of persons or is not sufficient for the safety of persons.

3) All materials, tools and equipment must be transported, kept, or stored at heights so that they are secured against falling, slipping or being blown off during and after the work. This includes the security of small items with regard to slatted floors and structures with free passages.

4) It is forbidden to hang work tools on articles of clothing unless they are specially adapted or suitable equipment is used.

Sources of risk	Measures
Inadequate health of workers working at heights.	Work to be carried out only by medically qualified persons. Carry out checks on workers before and during work. **Responsibility:** Contractor's Manager Refuse working at height or stop working if you do not feel up to the type of work at the time. **Responsibility:** Contractor's staff
Inadequate competence of workers working at heights.	Work to be carried out only by qualified persons (minimum training interval for working at heights is 12 months). Carry out checks on workers before and during work. **Responsibility:** Contractor's Manager
Use of inadequate means of collective protection – temporary building structures (hereinafter referred to as scaffolding)	Enter the scaffolding only if it is marked at the entrance with a protocol on handing over the scaffolding for use **Responsibility**: Contractor Do not climb unmarked scaffoldings, scaffoldings marked with a no-entry sign and scaffoldings where the periodic inspections have expired **Responsibility:** Contractor Do not climb a scaffolding with defects (lack of proper entry and exit, unclean and loose floors, missing handrails and trench rails on the working floor, unstable structure, dirt, frost, etc.) **Responsibility:** Contractor Do not make spontaneous modifications to the scaffolding. **Responsibility:** Contractor
Use of scaffolding in violation of specified conditions	Use the scaffolding only for the purposes for which it was designed and assembled and in accordance with the conditions specified in the handover report. **Responsibility:** Contractor Load floors only up to the maximum permissible load capacity indicated on the label of the scaffolding or other working platform. No storage of materials on scaffolding or working structures. **Responsibility:** Contractor
Failure to provide staff with personal security equipment of providing inadequate personal security equipment	Ensure that staff are provided with the necessary personal security equipment corresponding to the legislative and normative requirements and the nature of the work (possibility to use at least one anchorage point at all times) **Responsibility:** Contractor's Manager
Ignorance of the use of personal security equipment	Familiarise workers with the operating instructions for the equipment. Carry out checks on workers before and during work. **Responsibility:** Contractor's Manager
Inappropriate determination of anchor points	Anchorage points to be determined by a responsible and competent employee, and these points to be demonstrably communicated to all workers who will be performing work at heights. **Responsibility:** Contractor's Manager
Failure to use personal security equipment	Carry out checks on workers before and during work. **Responsibility:** Contractor
Dropping an object from a height	Secure the area below work at heights so that persons moving below the work area cannot be injured – by taping the work area or setting up other means of securing the area. Bound

	work tools. Store materials and small items in bags, containers or boxes etc. **Responsibility: Contractor**
Unsecured openings on the walking surfaces.	Secure the openings with a solid barrier. **Responsibility: Contractor** Ensure the safety of workers against falling into the free depth when working near openings. **Responsibility: Contractor** Close gaps between floors of scaffolding if the scaffolding design allows it. Take extra care with other scaffolding. **Responsibility: Contractor** Close the gaps between scaffolding floors. **Responsibility: Contractor**

Scaffolding

Sources of risk	Measures
Injury to workers assembling and dismantling scaffolding as a result of falling from height.	When working, use a climbing harness with two points of attachment, each ending in a carabine. At all times, be attached by at least one of them. Always anchor as high as possible above the point of the harness. **Responsibility: Contractor**
Construction, modification and dismantling of scaffolding by workers without the necessary qualifications.	Scaffolding assembly and dismantling will be carried out exclusively by scaffolding licensed personnel. This also applies to any modifications to existing scaffolding. **Responsibility: Contractor**
Access to scaffolding by persons other than scaffolders during assembly, dismantling or rebuilding.	If the scaffolding is not ready for use, access to the scaffolding or its parts must be prevented by suitable barriers (e.g. removal of the access ladder) and the scaffolding must be marked with a prohibition sign. A prohibition sign shall be placed at each entrance to the scaffolding. **Responsibility: Contractor** Scaffolding is handed over to the user by means of a protocol based on a professional inspection of the scaffolding, confirming its complete assembly and equipment. The user shall confirm its takeover in the protocol. This protocol must be placed in a visible place on the scaffolding structure at the point of access to the scaffolding. **Responsibility: Contractor** In cases where the scaffolding, with regard to local conditions (technical or spatial possibilities), contains places with missing mandatory elements related to the possible fall of persons from height (non-standard construction), a special protocol is used in which it is necessary to record the reason why the construction is non-standard and the place at risk. **Responsibility: Contractor**
Defects in the scaffolding resulting from its use.	Carry out regular inspections at least once a month. This interval is reduced to 14 days for scaffoldings exposed to mechanical vibration, mobile scaffoldings and suspended scaffoldings. **Responsibility: Contractor**

Working in hazardous areas (confined spaces and below ground level)

1) Work in confined spaces such as parts of production technology (tanks, columns, furnaces, reactors, etc.) and work below ground level (sewers, shafts, sumps, excavations, etc.) are among the most hazardous jobs ever, as they present hazards that are generally not found anywhere else. The basic categories of hazards arising from work in confined spaces are as follows:
   - ✓ hazardous oxygen concentration (below 19% and above 23.5% by volume)
   - ✓ elevated concentrations of toxic and harmful substances
   - ✓ increased concentrations of flammable and explosive substances
   - ✓ collapse or sinking
   - ✓ other mechanical or electrical hazards
   - ✓ temperature above 50°C
2) Strict adherence to all specified measures is essential for all activities carried out in these areas.
3) Before entering confined spaces, the contractor is responsible for establishing supervision of work in confined spaces.
4) The contractor is responsible that the given supervisor:
   - ✓ will be demonstrably trained in the knowledge of surveillance activities,
   - ✓ will be familiar with the risks of the job and any measures to minimise them,
   - ✓ will record the movement of workers inside the confined space (by removing ID cards / training cards)
   - ✓ have a functional system of communication with workers inside the confined space at all times
   - ✓ will not carry out any activities other than supervising work within the confined space in question
   - ✓ will be familiar with the plan for rescuing persons and with the activities of the supervisor in the event of an emergency
   - ✓ will be marked with a blue armband for easy identification.

Sources of risk	Measures
Insufficient assessment of work risks	Develop a risk analysis as a basis for the preparation of work permits and conditions for rescuing persons. **Responsibility: Production Team, Contractor**
Occurrence of hazardous gaseous substances in the equipment (toxic, flammable, inert).	Disconnection and mechanical locking **Responsibility: Production Team** Vent the equipment during the work according to the risks identified: - ventilate the facility for a sufficient time before entering, - use the stack effect where possible, - use additional ventilation (air handling units) **Responsibility: Contractor, Production Team**
Occurrence of hazardous solids and liquids in the plant	Prepare the facility to allow contractors to work inside the premises (flush, clean, ventilate, or take other necessary steps to minimise risks associated with substances in the facility) **Responsibility: Production Team** Clean the inside of the vessel by a specialist company, remove solids from the equipment **Responsibility: Production Team, Contractor**
Injury due to intoxication after entering a confined space.	Monitor the working air before entering the vessel (use a non-flexible or flexible probe)! If this is not possible, enter the space wearing a gas mask to take the first measurement. **Responsibility: Production Team, Contractor** Carry out continuous monitoring of the working air. **Responsibility: Contractor**
Difficult handling of the immobile body inside the vessel in the event of an emergency	Establish and adhere to the measures of the Rescue Plan. **Responsibility: Contractor, Production Team**

Inadequate health of workers working in confined spaces	Carry out checks on workers before and during work. **Responsibility: Contractor's Manager (recipient, the accepting person)** Refuse a job or interrupt it if I do not feel up to the type of work at the time. **Responsibility: Contractor's staff** Set safety breaks for personnel working inside hazardous areas according to the influences (temperature, atmosphere, equipment, etc.) **Responsibility: Contractor, Production Team**
Unauthorised persons entering the containers during non-working hours.	Place a solid barrier at all other entry openings to the handed over workplace that do not serve as an entrance to the hazardous area and close the hazardous area with a solid barrier before leaving the workplace. **Responsibility: Contractor**
Electric shock.	Do not use electrical equipment with a voltage greater than 50 V without using a safety isolating transformer or current protector. **Responsibility: Contractor**
Entry of a company employee when a contractor is working in the vessel	Each employee of the company must ask the supervisor of the work in the hazardous area for permission to enter the hazardous area and become familiar with the conditions in the work permit and all relevant attachments. **Responsibility: Company employee entering the area**
Entry of company employees when no one else is working in the vessel	Work must be carried out based on a valid work permit. **Responsibility: Company employee entering the hazardous area**

Work with open flames

Work with open flames is any activity that may cause a fire (in particular welding, the use of tools that produce sparks or heat the material being worked on to a temperature that is likely to ignite if a flammable substance is touched).
It is essential that all the specified measures resulting from the risk assessment of the specific activity are strictly followed.

Sources of risk	Measures
Starting work with open flames when the equipment is not yet completely emptied.	Only allow work with open fires once arrangements have been made through the work permit. **Responsibility: Production Team**
Occurrence of flammable gaseous substances in or around equipment on which work with open flames is being carried out.	Before commencing work with open flames, measure the concentration of flammable gases and vapours of flammable liquids – on the basis of the measures specified in the work permit. **Responsibility: Contractor** Carry out a leakage check of the surrounding equipment, cover manholes and ducts according to the conditions in the work permit. **Responsibility: Contractor / Production Team** Remove flammable, combustible and explosive substances from the workplace and its surroundings in accordance with the conditions of the work permit. **Responsibility: Contractor / Production Team**
Flying hot particles when working at heights above places which must be	Establish a buffer zone within the distance of the work permit. Remove combustible materials within the required distance

protected from the effects of such work	before commencing or provide measures to protect against the effects of combustible particles. **Responsibility: Contractor / Production Team** Prevent hot particles from flying away by barriers made of non-flammable material. **Responsibility: Contractor**
Fire occurrence during work with open flames	Equip the workplace with material means of fire protection (bucket of water, portable fire extinguisher, etc.) according to the work permit, establish fire supervision (designated employee of the contractor with written rights and duties in this supervision). Mark the supervisor with red armband for ease of identification. **Responsibility: Contractor**
Occurrence of fire after the completion of work with open flames.	Carry out fire supervision at the specified interval as per the work permit. **Responsibility: Contractor / Production Team** Store the welding set outside the production unit after the welding process. **Responsibility: Contractor**
Change in conditions from those under which the work was authorised or the occurrence of an emergency (release of substances from a device)	Interrupt work, remove source of open flame, cool hot spots with water. **Responsibility: Contractor**
Employees' ignorance of the conditions of work with open flames	Carry out a familiarisation session with the work permit for all affected personnel before work commences. **Responsibility: Contractor**
False alarm of the fire alarm system during work with open flames.	Take the relevant fire alarm system sensors out of service for the time necessary to carry out the work. **Responsibility: Production Team**

Work in areas where there is a risk of hydrogen sulphide (sulphane)

Hydrogen sulphide (H2S or sulphane) is a highly toxic and extremely flammable gaseous substance that is produced during the refining of petroleum fractions as one of the intermediate products from which pure sulphur is subsequently produced. Based on the hydrogen sulphide content of the production facility, the Refinery's operating units are classified as one of three hydrogen sulphide risk areas:

- ✓ low risk of occurrence — H2S-free facility
- ✓ medium risk of occurrence — content of H2S in the facility is up to 10 thousand ppm (1% by volume)
- ✓ high risk of occurrence — content of H2S in the facility is between 10 thousand and 1 million ppm (1–100% by volume)

The inclusion of workplaces in the low risk of H2S occurrence is announced by the responsible personnel of ORLEN Unipetrol RPA s.r.o. only after the complete emptying of the production facility. Until then, it is essential to observe the following basic safety measures for work in areas with H2S risk:

Sources of risk	Measures
Workers' ignorance of H2S risks	Organise training for all contractors' employees who are on the company's premises on the risk of H2S. **Responsibility: ORLEN Unipetrol RPA s.r.o.**
Late identification of H2S leaks in the air	Equip all personnel that will work in areas of medium or high risk of H2S with personal detectors **Responsibility: Contractor** Equip the H2S RDS workgroup that will work in a high H2S RDS area for ongoing communication with operational staff.

	Responsibility: Contractor
H2S poisoning	Equip all personnel working in medium and high H2S risk areas with respirator-protective H2S escape masks. **Responsibility: Contractor**
Evacuation in the wrong direction (into a toxic gas cloud)	Before starting work in an area with a medium or high risk of H2S, familiarise yourself with the location of wind bags to determine wind direction, always escape perpendicular to the wind direction. **Responsibility: Contractor**

Work on equipment containing H2S

This includes work such as opening equipment or blanking equipment that has contained or may contain H2S or where there is a risk of contamination of the surrounding atmosphere and danger to persons in the vicinity. The basic precautions for this type of work are:

Sources of risk	Measures
H2S poisoning during work	Carry out work only when using an isolation gas mask or a long-distance gas mask **Responsibility: Contractor**
Unauthorised persons entering the area where work is being carried out on equipment containing H2S	Identify the danger zone and secure it against unauthorised entry (e.g. with warning tape) and mark it. **Responsibility: Contractor, Production Team**
Inadequate assessment of occupational risks.	Develop a JHA for each job of this type, including identification of supervisory responsibilities, how to control workers performing the hazardous activity, how to communicate between the supervisor and the work group, etc. **Responsibility: Contractor**
Failure to summon help in time in the event of an emergency.	Work to be carried out by a minimum of two workers. **Responsibility: Contractor** Provide supervision by a third person who will be equipped with an isolation gas mask in the standby position for immediate use (gas mask worn on the back). Supervision is conducted from a safe area to ensure visual contact (if unable to provide, follow JHA) **Responsibility: Contractor**
Spontaneous ignition of sulphide compounds (occurring in equipment that contained H2S)	Continuously scrape the sulfides with water, avoid contact with dry air. **Responsibility: Contractor**

Lifting equipment and cranes

For each operation of a lifting device – a crane, a safe working system (hereinafter referred to as SBP) must be prepared and followed, whether it is a single lift or a group of repeated lifts, an integral part of which is the so-called footing plan – i.e. an orientation diagram of the crane's position in the area (situational plan), including the marking of the reach of the arm.

Sources of risk	Measures
Improperly chosen lifting technique (choice of crane, binding, etc.)	Develop a safe system of work for each stroke and comply with the provisions described therein. **Responsibility: Contractor**
Improper/insufficient crane latching (risk of collapse)	Draw up a footing plan well in advance of the start of work. **Responsibility: Contractor**

Failure to prepare a footing plan due to failure to submit a map.	Provide the contractor who will be providing the crane work with cut-outs from the master plan showing the location of the underground infrastructure. Hand over well in advance. **Responsibility: Company Manager**
Incorrect location (marking) of the crane in the footing plan.	Check the footing plans (crane locations/drawings). **Responsibility: Company Manager**
Incorrect placement of the crane according to the footing plan.	Check the location when the workplace is handed over. **Responsibility: Production Team**
Entry of unauthorised persons into the lifting area (entry under suspended loads)	Secure the workplace against unauthorised persons (demarcate, security guard, etc.) **Responsibility: Contractor**
Lack of binder identification for the crane operator while performing the lift	Mark binders with yellow tape for easy identification. **Responsibility: Contractor**
Incompetent staff	The crane operator must be licensed to operate the type of crane in question. A list of crane operators, including a copy of their qualification document, shall be submitted before work commences. **Responsibility: Contractor** Binding work to be carried out only by workers who hold a binding licence and are authorised to carry out this activity. A list of binders, including a copy of their qualification document, shall be handed over before each event. **Responsibility: Contractor**
Load fall: - slipping of the bonder from the hook - breaking/cracking of the bonder - pulling out, twisting the threaded eyelet from the load body - Dangerous swinging of the load due to strong wind	Use only hooks with an anti-slip load securing system. **Responsibility: Contractor** Do not use damaged or otherwise inadequate binding equipment, check their condition before each lift. **Responsibility: Contractor** Ensure the appropriate method of binding or unbinding the load by an authorised person, always in coordination with the operator of the equipment, so as to prevent damage to the binding device by inappropriate binding over a sharp edge, etc. **Responsibility: Contractor** The threaded hanging eye must always be screwed into the load body all the way to the seating surface and tightened firmly to prevent unintentional unscrewing by the movement of the load. Carry out visual checks on the integrity of these hanging fixtures before use **Responsibility: Contractor** Do not lift at wind speeds greater than 10 $m.s^{-1}$ **Responsibility: Contractor**
Crane tipping over	Always perform the lift with the stabilising struts fully extended. **Responsibility: Contractor** On unpaved surfaces, use pads under the stabilising struts to distribute the weight. **Responsibility: Contractor** Do not overload lifting equipment beyond its safe load capacity. **Responsibility: Contractor**
Dangerous handling of the load during lifting	Use a guide rope for all load handling during the lift. Do not perform manually! **Responsibility: Contractor**
Injuries caused by falling loads	Observe the prohibition of movement under suspended loads **Responsibility: Contractor**

Collision of two or more cranes	A crane coordinator will be designated to manage the lifting operations. **Responsibility: Contractor**

Duties of the binder:
The binder is responsible for binding and unbinding loads and for the proper installation and use of appropriate lifting equipment in accordance with the proposed handling procedure. He/she shall always be demonstrably familiar with the lifting and binding equipment used and the conditions for their proper use Familiarisation must be carried out either by a specialist or according to the manufacturer's instructions for use or the supplier of the lifting or binding device.

Lifting work of two or more cranes:
If it is necessary to carry out work with more than one crane and there is a risk of collision, the work will always be managed by a responsible person – the crane coordinator.
However, the work must be identical in scope and nature and the 'work permit' must be accompanied by several footing plans with lifting equipment plotted, where all crane positions for dismantling/assembly must be taken into account as described in the 'work permit'. The single "lifting plan" or safe system of work for a particular "work permit" will then indicate the number of mandatory attachments – "footing plans", which will be numbered, and each time a crane adopts a new position or is moved to a different working position, the unit operator's approval of the new crane position will be recorded in the "work permit" in the "extension" box. **It is not permissible to commence work on the lifting equipment without approval of the change of the crane position by the responsible company employee!**

Radiography

Radiography is used to perform non-destructive defectoscopy to find hidden internal or surface defects. Radiography is based on the ability of X-rays to penetrate metallic materials. The following precautions must be observed to perform work safely using X-rays.

Sources of risk	Measures
Unauthorised persons entering the radiography areas	Enclose the workplace at a sufficient distance from the workplace itself, mark with warning signs. **Responsibility: Contractor** Perform radiography predominantly outside of core working hours under a valid work permit specifying the day and time of commencement. **Responsibility: Contractor**
Lack of knowledge of other staff about the performance of radiography	Inform the company's control room in advance through the responsible company personnel about the location of the work and the start date of each radiography at least 1 day before the start of these activities. **Responsibility: Contractor**
Failure of level gauges during radiography at the time of or after the units have been moved to a position	Report radiography to the CV Shift Manager (by phone) and perform tests when approved. **Responsibility: Contractor**
Incompetent staff	Radiography to be performed only by persons authorised to perform this type of measurement. **Responsibility: Contractor**

Use of portable electrical equipment

Electrical equipment includes manual power tools as well as any temporary electrical equipment such as extension cords, construction switchboards and mobile cell electrical equipment. The use of electrical appliances is subject to the following rules:

Sources of risk	Measures

Electric shock due to damage to equipment	Use only portable electrical equipment and mobile switchboards that have a valid inspection. Use them only in accordance with the manufacturer's instructions. Check the condition of the appliance before starting work. **Responsibility: Contractor**
Electric shock due to water in the equipment	Use only portable electrical equipment suitable for the environment for which it was manufactured (appropriate electrical protection classes, certified products). **Responsibility: Contractor**
Short-circuit, fire, electric shock when using an extension cable that is too long.	Use extension cables with a maximum length of 50 m. **Responsibility: Contractor**
Tripping on cables, damage to cables	Hang up (hooks, tripods – do not use wires for fixing!) or cover or bury (in a suitable protector) all cables from electrical equipment so that they do not obstruct movement on footbridges or communication corridors (cables cannot be crossed by mobile means, must not lie on sharp gravel, roadway). **Responsibility: Contractor**
Unprofessional handling of building switchboards by unauthorised persons	Secure building switchboards against unauthorised entry (keyed cabinet, lock, etc.). Installation, connection, relocation and alterations may only be carried out by a qualified electrician. Equipment equipped with a grounding clamp must be properly grounded (grounding rope with molded eyelets). **Responsibility: Contractor**

All building switchboards shall be marked with the owner/operator, registration number, contact information for the responsible person, shall be enclosed, grounded and properly secured against toppling, and shall be equipped with a master and accessible switch for quick shutdown.
A portable powder fire extinguisher shall be provided at each building switchboard.

Pressure cylinders

When using, handling and storing cylinders, it is necessary to comply with the rules set out in the normative requirements. The most basic measures for handling cylinders are as follows:

Sources of risk	Measures
Damage and leakage of gas due to falling cylinder	Store only in an upright position, secure against falling, tipping and rolling (with a chain, etc.). During transport, ensure protection against impact, protect valves with protective caps. **Responsibility: Contractor**
Fire/explosion when working with open flames.	Use only hose connections with a minimum length of 5 m without coupling adjustments, fitted with a backflow preventer valve. **Responsibility: Contractor** Ensure a minimum distance of 3 m of steel cylinder from an open fire. **Responsibility: Contractor** Ensure a minimum distance of 3 m between cylinders in use (welding, burning, heating) and other cylinders in use. **Responsibility: Contractor**
Poor storage of cylinders	Mark stored cylinders with safety labels. Store empty cylinders and full cylinders separately. **Responsibility: Contractor**

Tightness and pressure tests

All leakage and pressure tests pose a high health risk to all persons in close proximity to the equipment due to the possible accumulation of high energy potential in the equipment.
Leak and pressure tests are carried out based on legislative requirements and the company's internal regulations to verify reliability.

Pressure test (LTO) with water
Pressurisation is carried out to the prescribed pressure of the dedicated pressure/gas equipment in order to verify the strength of the casing and assembled parts – always in the presence of a certified and authorised inspection engineer.

Pressure test (LTO) with inert gas (nitrogen)
The pressurisation is carried out to the prescribed pressure of the dedicated pressure/gas equipment in order to verify the strength of the casing and assembled parts and is used wherever a water pressure test cannot be carried out because the water cannot be removed from the equipment after the test or the equipment cannot be fully watered for the previous type of pressure test – always in the presence of a certified and authorised inspection engineer.

Leak test (LT) of the device
This is carried out with several types of media – water, inert gas, steam, on the production equipment as a whole – i.e. after removing all the seals inside the unit that served as safety separation of the equipment during repair, cleaning, inspection, etc. activities inside the equipment or for "pressure test (LTO)". Flanged joints of dedicated pressure/gas equipment that have been disassembled during a given repair/shutdown shall be inspected by a validly certified and licensed inspection technician(s). Other disassembled joints shall be inspected by the Contractor's Authorised Officer(s) of the main repair contractor. It is recommended that accessible flange joints not disassembled in repair be inspected by plant personnel or contracted contractor personnel.
For the above reasons, the following messures are accepted for all types of tests:

Water pressure test (LTO)

Sources of risk	Measures
Injury to operators or bystanders due to rupture of pressurised equipment or leak test equipment	Equipment to be subjected to a water pressure leak test must be completely degassed/dehydrated (compressing the gas volume could create an undesirable energy charge in the equipment). **Responsibility: Contractor** Enclose the workplace with warning signs and information boards about the work being carried out. **Responsibility: Contractor** Work to be carried out only by personnel familiar with safe procedures for pressure testing – monitoring pressure build-up as a function of time (with perfect watering, the pressure build-up must be almost instantaneous – water incompressibility) **Responsibility: Contractor** Only pressurise the device up to the test pressure specified on the device label – or according to the documentation for the device! **Responsibility: Contractor** Fasten the fixture with the full number of screws/bolts of the appropriate length and cross section. **Responsibility: Contractor** Use connection fittings/flanges with a design pressure higher than the pressure for pressure testing. **Responsibility: Contractor**

	Do not use motex tape to connect hoses, do not use damaged pressure hoses. **Responsibility: Contractor**

Gas pressure test (LTO)

It is used wherever it is required by state legislation or internal company regulations. Furthermore, it is used wherever the perfect removal of water from the plant would not be possible and therefore this alternative medium is resorted to.

Sources of risk	Measures
Injury to operators or persons in the vicinity due to rupture of equipment	Notification or decision to carry out a gas pressure leak test **Responsibility: Maintenance (Inspection) Technician, Contractor** Determination of the pressurisation schedule – pressure increment versus time (pressurisation rate). Determination of the number of pressurisation interruptions (reaching control pressure limits) and the time intervals between the next pressurisation to check the equipment. (All recorded in the pressure test plan). Establishing procedures and measures when leaks are detected. **Responsibility: Contractor and Maintenance Technician (Inspection)** *Application of JHA, which is at the end of this chapter.* **Responsibility: Contractor and Maintenance Technician (Inspection), Production Team** Determination of the time when the pressure test will be carried out (with regard to the work in progress – usually after normal working hours – night hours) **Responsibility: Group Officer in Charge – Head** Enclose the workplace with warning signs and information boards about the work being carried out. **Responsibility: Contractor** Work to be performed only by personnel knowledgeable in safe procedures for performing pressure testing. **Responsibility: Contractor** Only pressurise the device up to the test pressure specified on the device label – or according to the documentation for the device! **Responsibility: Contractor** Fasten the fixture with the full number of screws/bolts of the appropriate length and cross-section. **Responsibility: Contractor** Use connection fittings/flanges with a design pressure higher than the pressure for pressure testing. **Responsibility: Contractor** Do not use motex tapes for hose connections, do not use damaged pressure hoses. **Responsibility: Contractor**

Leak test of equipment (LT)

Sources of risk	Measures

Injury to operators or persons in the vicinity due to rupture of equipment	Notification or decision to carry out a leak test **Responsibility: Contractor + Maintenance Technician (Inspection)** Determination of the pressurisation schedule – pressure increment versus time (pressurisation rate). Determination of the number of pressurisation interruptions (reaching control pressure limits) and the time intervals between the next pressurisation to check the equipment. (All recorded in the leak test plan). Establishing procedures and measures when leaks are detected. **Responsibility: Contractor and Maintenance Technician (Inspection)** Determination of the time when the leak test will be carried out (with regard to the work in progress – usually after normal working hours – night hours) **Responsibility: Company Manager** Enclose the workplace with warning signs and information boards about the work being carried out. **Responsibility: Contractor** Work to be performed only by personnel knowledgeable in safe procedures for performing this type of test. **Responsibility: Contractor** Only pressurise the device up to the test pressure specified on the device label – or according to the documentation for the device! **Responsibility: Contractor** Fasten the fixture with the full number of screws/bolts of the appropriate length and cross-section. **Responsibility: Contractor** Use connection fittings/flanges with a design pressure higher than the pressure for pressure testing. **Responsibility: Contractor** Do not use motex tapes for hose connections, do not use damaged pressure hoses. **Responsibility: Contractor**

Note: additional procedures and risks are determined on a pressure test by pressure test basis.

Blasting

During blasting, the surface of the material is treated with a stream of fine particles (abrasive particles). For this reason, it is necessary to protect workers carrying out the work and persons in the vicinity of the work from being hit by the abrasive stream or breathing in the abrasive particles. The following precautions must be observed:

Sources of risk	Measures
Injury from flying abrasive particles	Wear appropriate PPE – protective clothing, head and face protection, gloves. **Responsibility: Contractor** Secure the work area against contact of abrasive parts with persons moving around the work. **Responsibility: Contractor**
Carcinogenic diseases	Do not use silica sand without respiratory protection. Do not use silica sand without providing space for the protection of persons in the vicinity. **Responsibility: Contractor**
Inhalation of abrasive particles during work	Use appropriate PPE based on risk assessment – face shield, face mask, respirator, full face mask in combination with a suitable filter.

	Responsibility: Contractor
Noise	Wear appropriate PPE – earmuffs (earplugs or earmuffs depending on noise level). **Responsibility: Contractor**
Work in hazardous areas (closed containers)	See chap. 5.4.

Pressure water cleaning

In pressure water cleaning, a high-pressure water jet is used. It is therefore necessary to protect the workers carrying out the work and persons in the vicinity of the work from being hit by the water jet or from breathing in hazardous substances that may be released during cleaning. The following precautions must be observed:

Sources of risk	Measures
Damage to body parts by water spray or flying particles from cleaning	Wear appropriate PPE – waterproof protective clothing, head, face, hand and foot protection (PPE must be designed for the pressure). **Responsibility: Contractor** Secure the work area against unauthorised entry. **Responsibility: Contractor**
Release of hazardous substances into the air after they are released from the surface to be cleaned.	Based on a job-specific risk assessment, carry out workplace air monitoring or use respiratory protection at work. **Responsibility: Contractor**
Noise	Wear appropriate PPE – earmuffs (earplugs or earmuffs depending on noise level). **Responsibility: Contractor**
Difficulty breathing in confined spaces due to water vapour or aerosol in the air	See chap. 5.4. **Responsibility: Contractor**
Scalding (if water heating is used)	Wear appropriate PPE – protective clothing, head and face protection, gloves. **Responsibility: Contractor**

Work hygiene

Contractors are obliged to comply with the conditions set out in the National Civil Code No. 361/2007 Coll., as amended, which sets out additional conditions for occupational health protection.

Heat/cold stress – protective drinks

Sources of risk	Measures
Operating temperatures below 4°C	Provide protective drink to protect against cold stress, PPE and breaks. **Responsibility: Contractor**
Heat stress	Provide sufficient quantities of a heat protective drink containing less than 6.5% sugar, less than 1% alcohol by weight and mineralised according to the job classification. **Responsibility: Contractor**
Entry to high temperature equipment.	Avoid entering equipment with a temperature higher than 50°C. **Responsibility: Contractor** Based on the temperature in the equipment (30–50 °C) and the class of work, work for the maximum time specified in Part B of Annex 1 to the National Electrical Code No. 361/2007 Coll. **Responsibility: Contractor**

Ingestion of hazardous chemicals and mixtures instead of a protective drink.	No eating or drinking in the production area. Establish a refreshment area (near the workplace) where drinks are stored in a marked container, box, etc. **Responsibility: Contractor**

Noise

Contractors are responsible for assessing the risks of their own work in terms of protecting workers from the effects of noise.

Sources of risk	Measures
Noise level greater than 80 dB.	Provide workers with appropriate hearing protection. **Responsibility: Contractor**
Noise level greater than 85 dB	Ensure the use of hearing protection. **Responsibility: Contractor**
Noise caused by technological processes (e.g. steam running, etc.)	Inform well in advance of technological processes associated with excessive noise emissions. Ensure that work is organised with regard to noise levels. **Responsibility: Production Team / Contractor**

The exception is at the time of stoppage. All production equipment is out of operation. There is therefore no risk of noise from the company.

Asbestos and other mineral fibres

Due to the age of some production facilities, these may contain asbestos. In the event of its detection or suspected presence, the following measures should be applied immediately:
These measures must also be applied when working with insulations where the properties/composition of the material used is not known – cannot be documented.
For example, it can be mineral wool containing asbestos, mineral wool containing glass fibre or pure glass fibre insulation wool – insulation wool/material made up of so-called ceramic fibres.
These materials are hazardous because they produce short fibres that disperse freely into the atmosphere and can be inhaled.

Sources of risk	Measures
Lack of knowledge about the dangers of asbestos and short-fibre releasing materials and working with them	The work will only be carried out by personnel with proven knowledge of the risks of working with this material and safe working practices. The contractor shall supply proof of competence of its workers. **Responsibility: Contractor** Develop a written procedure for carrying out work with asbestos or, in general, with materials that release short fibres and enter the body by inhalation. **Responsibility: Contractor**
Inhalation of fibres (risk of asbestosis, silicosis)	Wear appropriate PPE – disposable protective clothing over outer work clothing, closed goggles, PVC or rubber gloves, filtering half mask with suitable filter (class P3). **Responsibility: Contractor**
Danger to surroundings and other work groups	Prevent other workers from entering the workplace, mark the area where this type of hazardous material will be handled with a warning sign, warning tape or supervision. **Responsibility: Contractor**
Unprofessional handling of asbestos waste and materials that release short fibres and work with them	Collect all waste insulation material in closed and sealed containers marked in accordance with the Waste Act immediately after removal from the installation and have the relevant hazardous waste identification sheet available in the vicinity of these collection containers. When considering the reuse of insulation material, take measures to prevent the possible spread of the insulation material, or parts of

	it, around the area. **Responsibility: Contractor**
Dispersion of hazardous fibres (short fibres) into space	Do not work in windy conditions that could cause hazardous substances to drift into areas remote from the work site. Do not tear off insulation violently or drop it from a height. **Responsibility: Contractor**

Order in the workplace

Each contractor is responsible for maintaining cleanliness and order in its work area. Work will be stopped if it is observed that a messy work area may endanger the work group or other work groups working in the area and will not be allowed again until a remedy is agreed upon.
Responsibility – Contractor Managers.

Sources of risk	Measures
Material and equipment parts (including fasteners) left in the way	Store the material at the appropriate facility in containers or plastic bags and label properly. Storage areas will only be established in locations agreed by the operating representatives, properly marked and secured. **Responsibility: Contractor**
Equipment and tools – hoses, cables, etc. left in the way	Welding cables or hoses should be coiled and stored, welding cylinders should be taken to a safe place away from the process equipment **Responsibility: Contractor**
Spilled products or cleaning products	Ensure the remediation of the area **Responsibility: Contractor**
Dropping of unsecured material from overhead workstations	Store dismantled material and/or material to be assembled in special lockable containers and/or closed bags/trays, secured against shifting and falling **Responsibility: Contractor**
Unmarked storage sites and facilities	All vehicles and equipment (containers, cells, switchboards, welding sets) will be marked with the logo or name of the owner (other organisation) or the organisation using them for the activity (in case of rentals). **Responsibility: Contractor**