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	Dokumenttype Teknisk spesifikasjon FOV	Dokumentnummer 224	
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Introduction

This document is prepared as an attachment to Celsio's General EHS requirements for Contractors. It contains additional EHS requirements for specific work operations, workplaces, equipment and use chemicals.

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1 Personal protective equipment

Minimum requirements for personal protective equipment are given in the document "General EHS requirements for Contractors".

Additional requirements for personal protective equipment may arise from a safe job analysis (SJA) or apply to specially marked areas.


The following may apply:

- Eye protection
 - Safety goggles using angle grinders and at risk of chemical spills and dust
 - Face shield/ mask at risk of chemical splash and when working with special chemicals
 - Welding goggles/ welding shield for welding work
- Respiratory protection
 - Dust mask, minimum P3 filter, at risk of inhalation of dust
 - Gas/vapour filter or supplied- air respirators at risk of inhalation of hazardous gases
 - Supplied- air respirators in case of contaminated working environment
- Hearing protection
 - In noise zones (>85dB)
- Disposable workwear
 - At risk of chemical spillage, dust and biological infection
- Safety gloves
 - Cut resistant gloves (according to NS-EN 388, level 3) for hot work and at risk of mechanical damage
 - Chemical gloves when handling chemicals and infectious waste
- Fall protection
 - When working at heights over 2 meters and at risk of falling
- Personal gas monitor
 - At risk of hazardous concentration of H₂S, CO, O₂ and LEL (lower explosive limit)

The list is not exhaustive and protective equipment shall be assessed in relation to the identified risks.

It is the Contractor's responsibility to have the required protective equipment available.

Personnel shall have documented training in the use of personal protective equipment and the hazards it protects against. The training shall also include storage, maintenance and control of the equipment.

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2 Lighting


The following is intended to ensure adequate working to ensure that work can be done safely, comfortably and without risk to personnel or equipment.

Responsibility Purchaser (does not apply to Net and Customer Centrals):

- Connection points for power
- Sufficient light in the premises
- For supplementation when general lighting is weakened by provisional installations
- Emergency lightning of sufficient strength
- Escape routes shall be illuminated

Responsibility Contractor:

- Use of approved lighting fixtures and cables to ensure adequate working light
- Constricted or confined spaces shall be illuminated
- The voltage should be lower 25V and with earth-leakage circuit breaker
- Lighting installations in working rooms, workplaces, access roads, transport roads and cargo area shall be placed in such a way that it does not represent any risk to the personnel

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3 Entering and working in confined spaces

Entering and work in confined spaces include entering and working in containers, boilers, tanks, silos, wells, pipelines and other confined spaces with poor air exchange.

The Purchaser shall have a list of permanent confined spaces on their facilities.

For work in confined spaces, the Purchaser will prepare local instructions which cover this type of work.

In addition, the following shall be available before entering and work in confined:

- Work description
- Risk assessment / SJA
- Safety and rescue plan
- Requirements for personal protective equipment and other safety equipment
- Special requirements to equipment for work in confined spaces

Personnel who is going to carry work in confined spaces shall have training required for this type of work.


The Purchaser shall perform gas measurement before entering. Work certificate shall be posted at the entry opening.

When entering, there shall always be at least two persons present. An entry guard shall stand outside to monitor the work. Entrance guard shall be able to communicate with the person (s) working inside the confined space. If, after a risk assessment, one considers the working atmosphere and other factors not to represent any risk, the requirement for a guard may be waived. This shall be reflected in the work permit.

Additional requirements for protective equipment are lanterns and gas meters for H₂S, CO, O₂ and LEL (lower explosive limit) .

In the event of an accident, the control room shall be notified which then contacts emergency services.

Entrance guard may under no circumstances enter the confined space until emergency personnel have arrived.

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4 Working at height

Working in height means work that is carried out more than 2 meters above ground / floor level.

Personnel who work at height shall have approved training and shall be informed of the risk involved.

All working in height requires a work permit (WP) and shall be risk assessed using a safe job analysis (SJA).

Protection against falling shall be risk assessed at all work places, access and transport routes where there is a risk of a fall to a lower level, even when the height is below 2 meters.

Fall protection equipment shall be used when working over 2 meters at risk of fall.

The equipment shall be hooked on to a sufficiently solid anchor point.

Fall protection equipment shall be used when other preventive measures are not an option.


Fall protection equipment shall always be used when working from a lift.

As a safeguard at least 2 persons shall be present when fall protection equipment is applied. Buddy check shall be performed.

The use of fall protection equipment requires completed and documented training.

Tools and work materials shall be secured to prevent fall to lower levels.

Barrier off areas where there is a risk of falling objects. Barrier shall be tagged with date and time for startup and finish of the work, as well as name of responsible person, company and mobile number. Upon termination of the barrier, all chains and tags shall be removed.

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5 Lifting operations and lifting equipment

All lifting equipment shall be approved and tagged in accordance with applicable regulations.

Cranes and crane operators shall be certified, and certificates shall at all times be presented at inspections.

Rigger, slingers and signalmen shall have relevant and documented training.

Planning of lifting operations is carried out by using safe job analysis (SJA).

Crane operator shall prepare a work description in connection with blind lifts and tandem lifts.


The lifting area / route shall always be planned so that the load is not carried over personnel or other critical structure or equipment.

The lifting area / route shall always be evacuated and barrier off at a safe distance.

Suspended loads shall be secured with wire straps and chains. Suspended loads shall never be left unattended.

For complicated lifting operations, a written safety plan shall be prepared. The plan shall be approved by the Purchaser.

Use of personnel lifts requires valid documented training. Fall protection equipment should always be used when working on a lift. The crane to be used for the lift shall be approved for this.

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6 Hot work

Hot work is defined as work that generates sparks or involves the use of flames or other heat sources that pose a fire hazard. Hot work include the use of open flames, hot air, cutting and/or grinding equipment.

Hot work shall only be carried out by persons who have a valid certificate for hot work issued by the Norwegian Fire Protection Association (Norsk Brannvernforening) or cooperating organization in the other Nordic countries.

In addition to WP and SJA, "Work instruction when performing hot work" shall be completed.

[The insurance companies' safety regulation](#) for hot work shall be followed.

A fire guard shall at all times be present and continuously evaluate the risk of fire during the work, during breaks and at least on hour after the work has been completed. A fire guard shall also have a valid certificate for hot work. Executing personnel can be a fire guard where the risk of fire is considered low.


Additional requirements for personal protective equipment for hot work are:

- Goggles
- Face shield / mask – should be used only with safety goggles or safety glasses with side shields
- Cut resistant gloves (according to NS-EN 388, level 3)

Angle grinders are only permitted when they meet all safety requirements for safety features, including auxiliary handles, kickback protection, safety switch and restart protection. Personnel who are going to use this type of tools shall have training.

Approved extinguishing equipment shall be brought by the Contractor. Minimum 2 pcs. 6 kg powder apparatus, with minimum power 34 A 233 B C, shall be easily accessible in the immediate vicinity of where the work is carried out.

A hand extinguisher can be replaced with a fire hose with an internal diameter of 19 mm.

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7 Work on pressurized equipment

As a rule, all equipment shall be made energy and pressure-free before starting work. The exception is pressure tapping on pressurized pipes.

The Contractor shall obtain a work permit (WP) and any safe job analysis (SJA) prior startup.

The workplace shall be isolated from the rest of the plant in good time before the work starts. Work shall not start until temperature has reached 55°C.

Check the possibility of drainage and that the valves are tight.

Pressure relief and drainage shall be performed by certified operating personnel.

The Contractor shall ensure that the system is cooled and depressurized. In case of doubt, the work shall not be started.

At opening, at least two persons shall be present. Please note that water may have accumulated in the bottom of the object. This water may still have a high temperature.

When the work has been completed, the Contractor shall notify the control room for resetting to normal operation.


Pressure tapping:

In cases where work is carried out on pressurized equipment, for example in connection with pressure tapping, there are separate instructions. Work on pressurized equipment involves high risk and must only be carried out during the day.

Pressure tapping shall be reported to Fortum operating personnel 2 weeks in advance. The control room shall be contacted before tapping commences.

Pressure tapping shall be tested for tightness before being drilled through. The drilling equipment must be in good condition and used according to the supplier's requirements.

Personnel who perform pressure tapping shall facilitate easy escape of ditch / work site should a larger leak occur.

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8 EX work

EX work includes work that takes place in an explosive atmosphere.

Personnel who work in areas where explosive atmosphere can be formed shall have explosion protection training.

Work in EX zones requires work permits (WP) and shall also be risk assessed using a safe job analysis (SJA).

Work in EX zones shall be carried out in accordance with written instruction.


Additional requirements for personal protective equipment for EX work are antistatic work clothes.

Mobile phone or communication radio (walkie talkie) shall not be brought into any EX zone if it is not approved for use in the relevant zone.

Work certificate for gas measurement is required before the starts and shall be placed well visible where the work site is entered. The measurement shall ensure that personnel are not exposed to toxic substances.

Gas measurement shall only be performed by qualified personnel.

It is expected that personnel are familiar with the site's explosion protection document and follow the requirements and guidelines set by it.

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9 Chemicals

Contractor shall notify which chemicals to be used at the workplace. Purchaser shall receive safety data sheets relevant chemicals for review and approval.

Contractor shall continuously evaluate substitution of chemicals that are harmful to health and environment and is obliged to inform the Purchaser of the chemicals that are on the REACH candidate and approval list and the Norwegian priority list.

Safety data sheets shall be available at the location and the Supplier shall ensure that its personnel have training in its use.

Use of chemicals shall be included in risk assessments.


All containers shall be labeled with labels indicating which chemicals they contain.

The Contractor shall take measures to prevent accidents and spills of oil, fuel and chemicals stored and used at the workplace.

The Contractor shall have all necessary permits for the use of chemicals, as well as the transport and handling of explosives.

It is Contractor's responsibility to remove all chemicals when the work is completed.

Legal requirements for use, storage and disposal of chemicals shall be adhered to.

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10 Compressed gases

All use of gas bottles shall be agreed with the Purchaser.

Contractor shall ensure that safety data sheets for gas cylinders in use in the area, is available and that user has familiarized himself with this.

Damaged gas cylinders shall not be used or stored in the area.

Bottles shall be stored properly and as instructed by the Purchaser. Placement shall take into account any emergencies that may occur to enable rapid removal from the area.

Bottles shall be used and stored standing, and it shall be ensured that they cannot tip using a wall bracket, suitable fixed or mobile frame.


Bottles containing gas and empty bottles shall be stored separately. Empty bottles shall be labeled. Tom/Empty.

Bottles with different contents shall not be stored together (flammable gases, inert gases, oxidizing gases etc.).

Gas bottles shall be stored well away from combustible materials such as fuel, oil, paint or corrosive liquids.

Propane bottles shall never be stored closer than five meters from other gas cylinders.

Propane, and other cryogenic, liquid or compressed gases heavier than air shall not be stored in or near low-lying areas such as drains, basements and underpasses.

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11 Access and barriers

Ladders shall only be used for access. The ladder shall be well secured/anchored.

Scaffolding shall be properly designed, constructed and maintained by qualified personnel.

Inspections shall be performed every 4 weeks and after each change.

Scaffolding shall be equipped with scaffolding cards.

Scaffolding shall have a safe access and shall not block the escape routes.

All scaffolding shall have kick plates, knee braces and hand braces.

In areas where hot work is performed, wood shall not be used.

Scaffolding users shall be trained in the use of the scaffolding.

The Purchaser shall ensure that a scaffolding report is prepared if the floor is higher than 5 meters above the ground.

Barriers shall prevent people from entering hazardous areas (danger of falling, falling objects, etc.) or protecting equipment and installations.

Red/white chain is used when only involved personnel can cross the barrier.


Yellow/black chain is used when the barrier allows others to pass, provided that particular care is shown.

Areas at risk of falling to a lower level, such as openings, shall be blocked off with fence.

All barriers must be marked (why, who and telephone number) and removed when they are no longer needed.

For barring in streets, the following requirements apply:

- Miniguard (or equivalent) shall be used for roadway blocking. If working on the national road / county road, varioguard should be used. It shall be assessed in each individual case whether a fence shall be used in addition to the miniguard / varioguard by order from the state.
- For blocking against pavement, walkway and cycle path, 2 m high braiding fences must be used, which must be mounted continuously. The braiding fence against the pavement must be mounted so firmly that it is not possible to push it down into the ditch. The feet shall be placed so that they do not endanger those who go there.
- Miniguard with fence is used for barring between infrastructure and pedestrians.

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12 Preparing objects (lockout/tagout)

The guidelines will ensure that machinery and equipment are emptied of hazardous energy and that it is locked and labeled as long as maintenance is in progress.

Hazardous energy are Electrical, Hydraulic, Pneumatic, Chemical, Radiation, Fall or gravity, Mechanical and Thermal energy.

Procedure for implementing lockout and tagout:

1. Map and prepare for lockout and tagout:
 - a. All energy in the system shall be mapped.
 - b. Work instructions for disconnection shall be prepared.
 - c. Work requires work permit (AT).
 - d. Risk assessment through a secure job analysis (SJA).
2. Notify all interested parties:
 - a. What, why, how long, responsible person.
3. Shut down and stop the system:
 - a. According to the system's instructions for shutdown.
 - b. Check that all switches are in the "off" position.
 - c. Check that all moving and rotating parts have stopped completely.
4. Detect, disconnect and isolate energy supply:
 - a. Identify and check all dangerous energies listed in paragraph 1.
 - b. Disconnect and isolate energy sources and residual energies. Use written work instructions for the system or process.
 - c. Empty or isolate residual energy and stored energy according to procedure / instructions.
5. Lock and tag:
 - a. Lock switches and valves in "OFF" by setting the padlock on the devices that isolate the power supply. Objects shall be locked and marked by all parties involved. Contractor is responsible for bringing own padlock.
 - b. Similarly, lock stored residual energy blockages.
 - c. Tag lock with disconnect information.
6. Ensure that locks and tags are not removed before work is done.
7. Check that the system is shut down and dead:
 - a. Choose the method that best ensures that the system is disconnected and emptied, or follow the procedure/instructions.
8. Perform maintenance.
9. Finish maintenance:
 - a. Consider whether it is safe to put the system in operation.
 - b. Wait to remove the lock and tags until the system is ready to be put into operation again.
 - c. Notify affected workers that the system is in operation again.

Reference is made to the [Safe Stop of Machines - "Lockout and tagout"](#).