

SAFETY GUIDELINES FOR THOSE WORKING IN UNDERGROUND SPACES

SALMISAARI COAL STORAGE FACILITY (SaHi) SALMISAARI COAL CAVERN COOLING CENTRE (ShX)

April 2022



Safety observations with the QR code

Salmisaari power plants
Porkkalankatu 9-11
00180 Helsinki



Identifying hazards in the work area. Also available in Quentic

Area: _____ Author and date: _____

Working method	Does not apply to this area		Not in order, reason:	
	In order	Not in order	In order	Not in order
Safe method of working	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Permits to work and entries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protective equipment, clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct tools and working devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order and tidiness				
Access routes, floors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste containers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safe movement				
Structure of access ways and floors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaffolding, step stools, ladders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Limits of work area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fall protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exit routes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Contact details

General emergency number from all telephones 112

Helen Ltd telephone switchboard..... 09 6171
Occupational Safety and Health Representative 09 6171
Anton Laari, Occupational Safety and
Health Manager 050 535 4760

Salmisaari Guard..... 050 387 5633
Email savartio@helen.fi

SaB control room, Shift Engineer..... 09 617 3578
SaB control room, Duty Officer 09 617 3555

Before you start

The occupational safety and health courses must be completed.

Always start the tasks in the work area by identifying the hazards and carrying out a risk assessment. Before starting work, also become acquainted with the permit to work procedures for your work area, the reporting obligations at the start and end of the task, the emergency exits, weak corners of the boilers and, e.g. risks related to remotely operated devices.

Lifting accessories inspection colours

In-service inspection, i.e. so-called daily inspection is carried out always before a lifting accessory is taken into use. It is carried out by a person who attaches the lifting accessory to the load.

Green 2022
Orange 2023
Blue 2024
Yellow 2025
White 2026

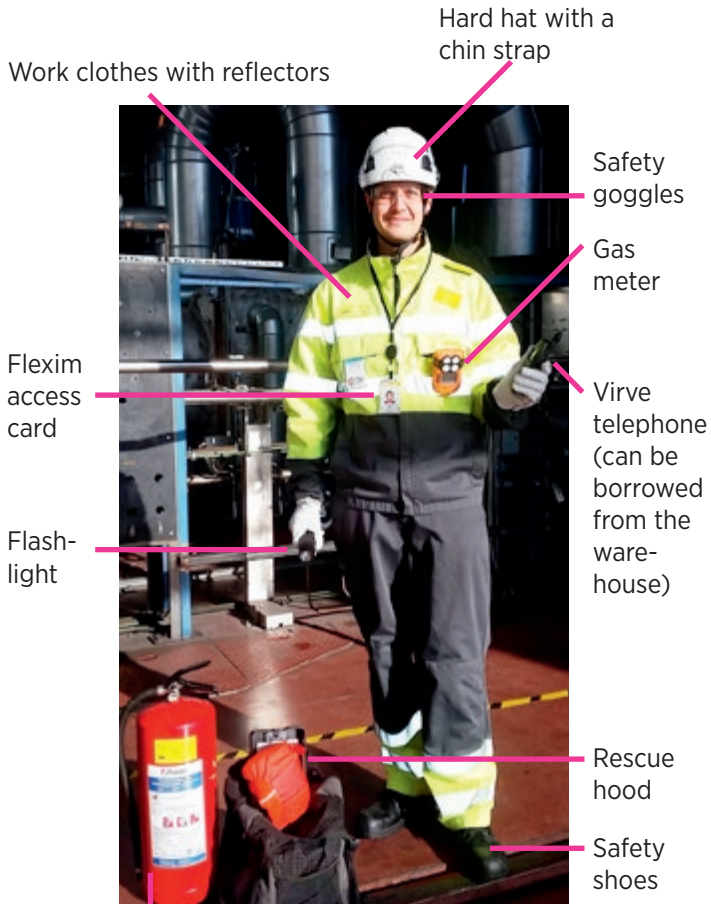
What to do in the event of a fire or accident

 **SOITA / CALL 112**



1. **Rescue**
2. **Alert:**
 - A. Call the emergency number 112 (works from all telephones). In the event of a fire, you can alert the emergency services with the red **fire alarm** button.
 - B. Call the power plant control room:
Salmisaari SaB, B stair, 5th floor, tel. 09 617 3555
 - C. In the process facility, press the power plant's emergency alarm button.
3. **Extinguish**
4. **Restrict**
5. **Guide**

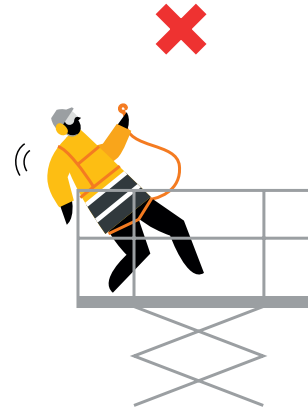
In the power plant area, always report to the control room if you encounter an accident situation in the power plant area.



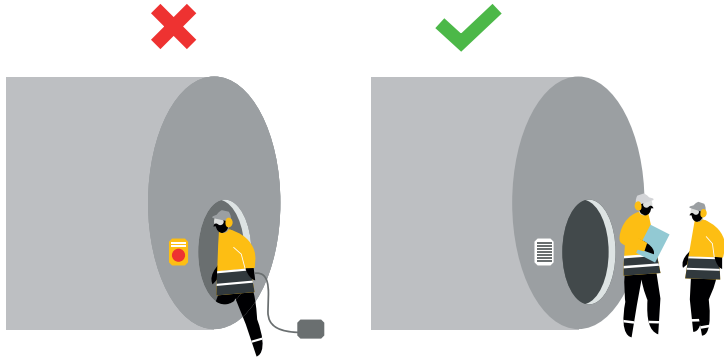
A diesel-powered vehicle must be used when entering the caverns on a vehicle or work machine, and at least two 6-kg portable fire extinguishers or one 12-kg one must be carried on board the vehicle

Think before taking action!

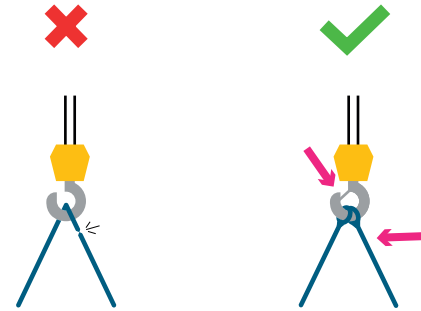
Familiarise yourself with safe working methods and procedures.



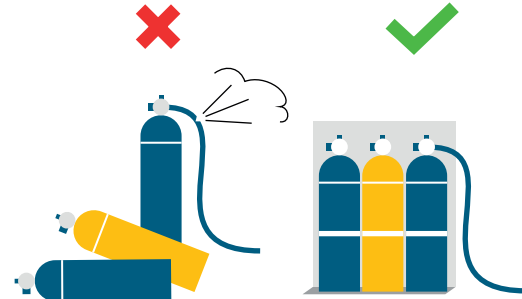
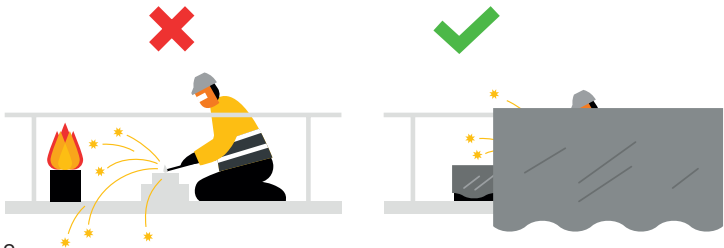
Before starting work, make sure that the permits to work are in order and familiarise yourself with the work instructions.



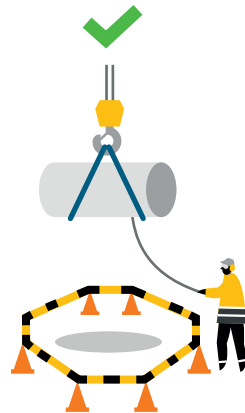
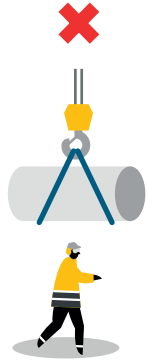
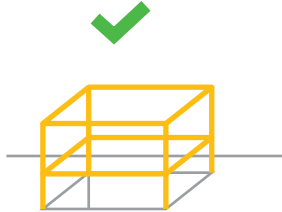
Only use the correct, undamaged tools and accessories, and also make sure that they are stored in an appropriate way.



Protect the work area and use the necessary protective equipment.



Keep the work area safe and make sure it is clean and tidy.



Access passes

Access pass

It is compulsory to have an access pass in the power plant area. It is obtained by the representative of Helen Ltd after receiving the employee's details. The employee must have completed the necessary courses. The employee signs for a Flexim card, which acts as an access pass and a key for the main access routes.

ID card

All contractors' employees must carry an ID card identifying the person and their employer.

Reporting to the control room

Report by writing the required information on the notice board in the lobby of the SaB control room.

Access control

All persons shall show their Flexim card to the reader at the door when entering and leaving SaHi and ShX.

Movement in underground spaces

The Salmisaari underground coal storage facility consists of about 4,300 metres of underground tunnels and four coal storage silos with a total volume of 200,000 m³. The lowest level of the storage facility is about 120 metres below sea level

Vehicle traffic

- If a driver of a vehicle drives into the underground facility for the first time, or they are not familiar with the facility or don't have an access pass, the contractor related to the drive must organise a guide for the driver.
- The vehicles must be **diesel-powered**.
- The vehicles must carry at least two 6 kg **powder extinguishers** or one 12 kg one.
- The maximum permitted driving speed is 20 km/h.
- The vehicle's lights must be switched on.
- The obligation to give way follows the rule of "ascending traffic gives way to descending traffic".
- The accessways must be kept clear at all times. Parking is not permitted.
- The vehicle's engine must be switched off, the gear and hand brake must be engaged, and tyres at an angle. The vehicle must always be parked facing the exit.

Passenger traffic

- Shaft K4 has a passenger lift for the purpose of passenger traffic. The Flexim card is stamped by the lift door at ground level +3.0m.
- The use of vehicles for passenger transport alone must be avoided
- When moving on foot, always wear high-visibility reflective clothing and carry a hand torch. **Note! Accessories according to page 6.**

When entering the underground facility

- Equip yourself with high-visibility reflective clothes or vest, hard hat and other necessary protective equipment.
- Collect and sign for one Virve telephone per group from the warehouse.
- Collect and sign for one gas content meter per group from the warehouse.
Meters are also available from the A6 office in SaB.
Outside normal working hours, please ask Helen's supervisor.
- Write on the notice board in the lobby of the SaB control room:
 - Details of the contact person.
 - Sign for a gas content meter, one meter per group.
 - Sign for a rescue hood, one hood per person.
- Go underground on a diesel-powered vehicle or use a lift to ShX (check the process status from the Energy control room of ShX.)
- All persons going underground shall show the Flexim card to the reader:
 - H1 entrance to the vehicle tunnel
 - C1 maintenance tunnel (the old coal tunnel)
 - K4 lift (ShX)
 - K1 crushing plant
 - K0 mutteri
 - K9 cable (Tammaaarenkatu)

When leaving the underground facility

- All persons leaving the underground facility shall show the Flexim card to the reader.
- Return the multi-gas monitor and rescue hood to their storage place.
- Erase your details from the notice board.
- Return the Virve telephone to the warehouse if you have borrowed one.

Power plant areas and car parks

Emergency assembly points



SaB: A

Those leaving the underground facility by vehicle

SaA: C

Those leaving the underground facility using the lift

Door and gate numbers (P1-P18)

Waste collection points *

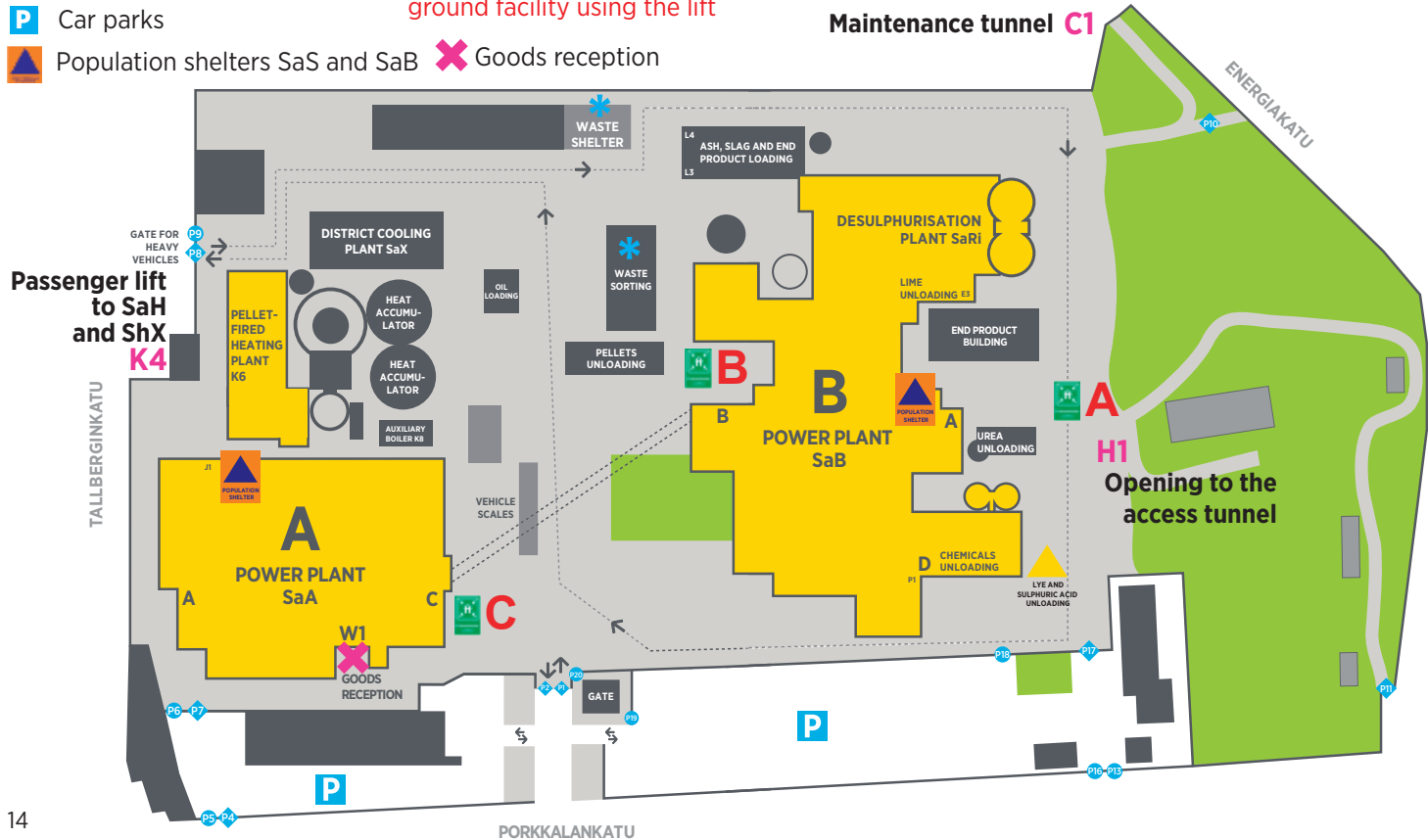
P Car parks

▲ Population shelters SaS and SaB **✕** Goods reception

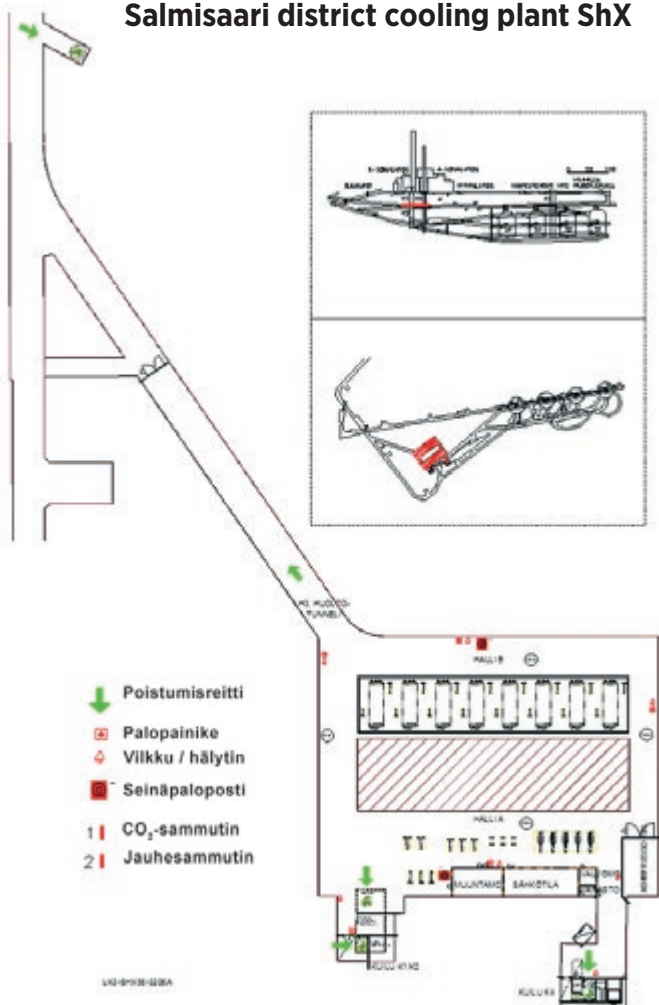
Salmisaari power plants

Porkkalankatu 9-11

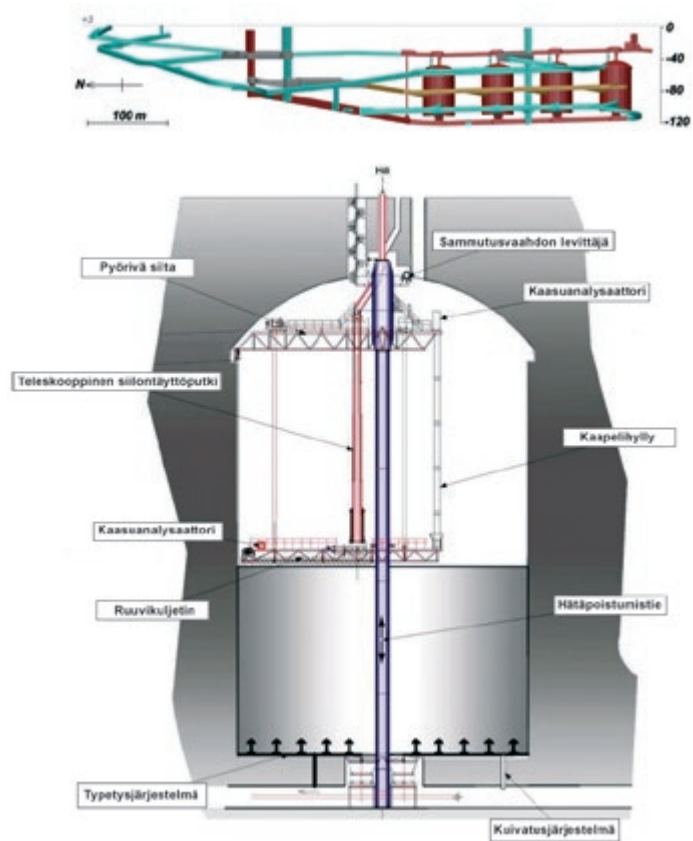
00180 Helsinki



Salmisaari district cooling plant ShX

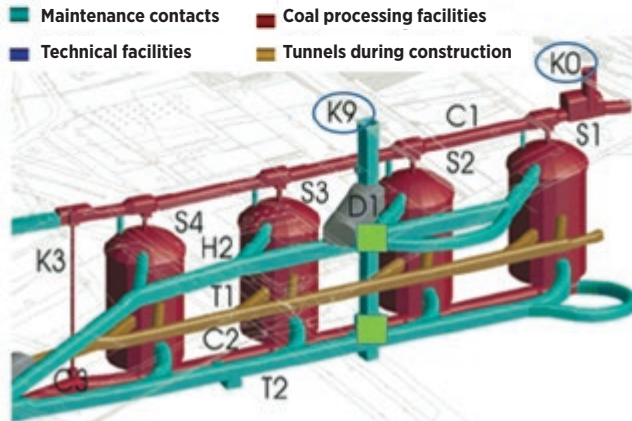
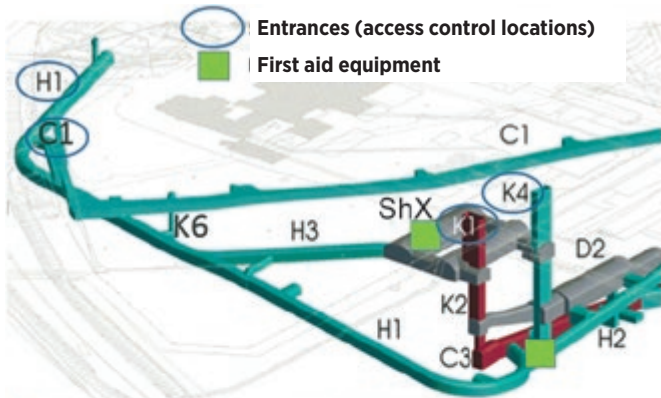


Salmisaari underground coal



Salmisaari underground coal storage

Functional facility



K9 shaft, Tammasaarenkatu
K0 shaft, Tammasaarenranta

Qualifications and permits to work

A valid Occupational **Safety Card** and, depending on the task, a **hot work card** are required at the power plant.

In addition to the Finnish Occupational Safety Card, the following international cards are also accepted:

- BasicElements of Safety SCC
- ECITB/CCNS Safety Passport Scheme
- SSG Entre
- FAS Safe Pass
- OSHA Outreach Training Program
- CSCS Construction Skills Certification Scheme

Permits to work used at the power plant:

Permission to start work

Report at the control room at the start and end of every shift and when completing a task. You must **always** obtain a permission to start the task from the contact person or corresponding supervisor.

At the start of the task, the following are reported to the control room: The task, the device to be repaired, working time, number of persons, and contact details.

When working at the heating and cooling plants on a work order, the permit to work is issued by the operating team of the heating plants or the maintenance supervisor responsible for the task.

Hot work permit

In hot work carried out in the power plant areas, Helen's hot work plan is complied with, and there must also be a written hot work permit.

Discuss the hot work with your supervisor before applying for the permit.

ATEX permit

Working in an environment with an explosive atmosphere requires an ATEX permit.

After the safety of the area has been ensured with the permit to work procedures, it will be possible to work there in the same way as in any unclassified area. If the safety of the area cannot be ensured, ex-classified tools and equipment suitable for the area in question must be used during the task.

Container work permit

A container work permit is required when entering containers, ducts or similar spaces. There must be constant supervision (safety person) when working inside these facilities.

The sign at the opening of the container must be in the "Access permitted" position and signed (name and date).

For hot work, isolation of fire detectors is carried out by the Sa shift supervisor, and therefore the hot work form must also be given to him for information purposes.

General safety instructions

Scaffolding and the railings of temporary openings must display a valid scaffolding card with:

- an entry of the weekly inspection
- the name and telephone number of the supervisor concerned.

Hot work and fire protection

- In addition to a hot work card, a written hot work permit must always be issued for hot work. The hot work permit is issued by Helen's representative.
- It is necessary to organise a fire watch during and after work.
- Hot work includes all tasks involving heat, flames or sparks.
- If there is a risk of combustion gases during hot work, it must be ensured that the fire detectors have been switched off and combustion gases are led away.
- The use of liquefied petroleum gas in underground facilities is forbidden.

Other instructions

- In the event of sudden blackout in underground facilities:
 - telephones are out of action, sense of direction is lost
 - stay where you are, help will get to you by the end of the shift at the latest
- Working in vertical shafts:
 - ensure that no one can go below you
 - ensure that nothing will fall from above
 - ensure that you know the exit routes

Contact persons and instructions

Salmisaari Guard 050 387 5633
Email savartio@helen.fi

SaB control room, Shift Engineer 09 617 3578
SaB control room, Duty Officer 09 617 3555

Contact details for ShX

Energy control room 09 617 3037
Deputy 09 617 2994
(SaB control room 09 617 3555)

Production and Asset Management

Fuels and by-products, Team Manager
Mikko Sillanpää 050 372 8038
Fuels and by-products, Fuel and Operation Services Supervisor
Janne Peltonen 040 162 6022
Desulphurisation plant and oil storage facilities,
production expert
Reino Lappalainen 050 328 5855
Maintenance Manager
Kari Taivainen 050 559 2953
Mechanical Maintenance Supervisor
Sami Linnamäki 040 354 7498
Electrical and Automation Supervisor
Janne Heinonen 050 434 0178
Manager of the fire sprinkler system
Mikael Granlund 040 531 6392

Smoke exhaust systems
Presto / Tero Haapaniemi 010 387 7251
Electrical operation 0455 2791 9686
Warehouse services, goods reception
SaA door W1 040 334 6551
varastopalvelut.salmisaari@helen.fi
Real estate maintenance, HVAC on-call service 050 559 2701
On-call service outside normal working hours 050 559 2701

Person responsible for area safety

Safety Manager
Jarmo Hagström 050 559 2797

Permits to work

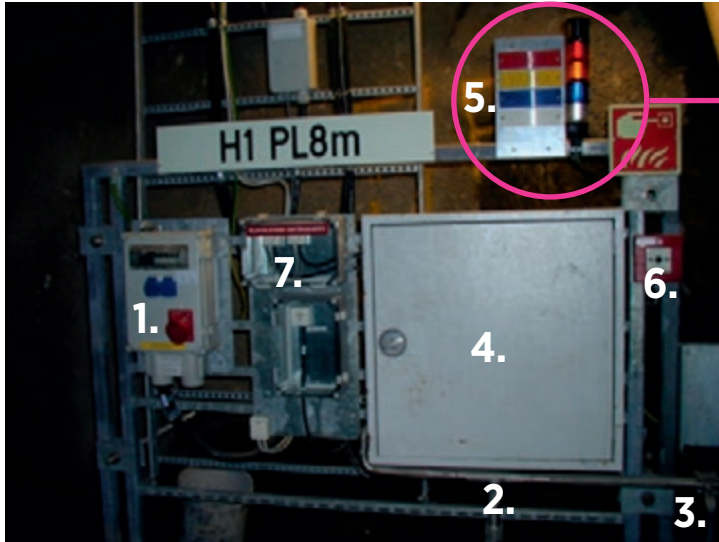
Hot work

Mikko Sillanpää 050 372 8038
Janne Peltonen 040 162 6022
Hot work, container work and ATEX permits for ShX,
operations supervisor
Markku Taipale 050 5591 626

Environmental protection and waste management

Please contact the person in charge of waste if you do not recognise the type of waste, you are unsure which collection point it should go in, or you have hazardous waste.
Person in charge of waste
Nina Konttinen 040 334 6610

Hot work and fire protection



Light tower at the technical point

Buzzer signal

Fire alarm

Emergency alarm

Refrigerant leak



Technical point (65)

1. Socket outlet centre
(3-phase 32A and 16A, single phase)
2. Domestic hot water
3. Fire water
4. Fire hose reel
5. Warning lights and buzzer signal
6. Fire alarm
7. Field telephone of the emergency services

First aid in a refrigerant leak

Breathing

The person must be moved to fresh air if they have inhaled gas. If they seem to be having breathing difficulties, trained persons may administer oxygen or CPR. Contact a doctor if necessary.

Skin contact

Freezing injuries must be treated in the same way as burns.



Further information about the refrigerant

Refrigerant R134a (liquefied colourless gas, mild ethereal odour) is heavier than air and in higher quantities replaces oxygen in the room.

According to the standards, it is permitted to work in a concentration of 1,000 ppm for 8 hours. However, at the plants the alarm limit has been set as low as 50 ppm and emergency ventilation kicks off at 200 ppm as they are underground facilities and the measuring range of the sensors only goes as high as 1,000 ppm.

Normal O₂ concentration of respiratory air is 20.9%. If the O₂ levels are below 19.5%, the multi-gas monitor used in the tunnels will trigger an alarm.



Gas meter

What to do when you hear the warning signal

A rising/falling alarm signal is the alarm for a hazardous situation. If you hear this signal, go to the designated assembly point and wait for further instructions.

A continuous alarm is an internal emergency notification for the power plant control room staff. You can carry on working, but make sure you are not in any danger. If you notice anything out of the ordinary, exit the building and go to the assembly point.

When you hear the fire bell, make sure you are not in any danger and go to the assembly point.

The fire alarm is given separately with the siren at SaA, SaB, SaHi and ShX.

The siren concerns all those working in the area and means that

- All members of the operating team must go to the control room immediately.
- Other persons must leave their work areas and go to the outside assembly points via the shortest safe route (not by lifts). At the assembly points, the supervisors will check that everyone is present and provide further instructions.

The assembly points at the Salmisaari power plants in emergencies, see areas A and C marked on the map on p. 14-15.

