

Environmental and Safety Regulations for Contractors

Norrenergi 110531



Welcome to Norrenergi!

This information brochure is intended to protect both the environment and your own safety as well as that of your colleagues. However, you should remember that all operational interruptions have major consequences for both Norrenergi's financial situation and tens of thousands of people!

1. Delivering services to Norrenergi

All contractors that deliver services to Norrenergi must be informed of the applicable basic rules concerning the environment, working environment and safety. Contractors must then confirm in writing that they have read and understood the information and that they will forward it to their employees who will actually perform the work. The main contractor is also responsible for ensuring that any subcontractors receive corresponding information.

Access to the facilities is granted after consultation with your contact person at Norrenergi, who will schedule the work. A work permit must be issued before any work may be commenced (see section 6). Norrenergi's main facility is situated at Solna Strandväg 37 and our peak-load facility is situated in Sundbyberg, at the address Dimslöjan 2. You can obtain information concerning other facilities, distribution

networks and customer facilities from your contact person at Norrenergi.

The facilities and associated properties are continually monitored by CCTV. All doors to the facilities and operations offices are kept locked at all times. Keys, codes or passes must therefore be used when entering any facilities and must always be returned after the completion of work.

Staffing

The Solna plant is staffed 24 hours a day by shift personnel. The duty operations manager is responsible for operation of the facility. During the period 1 October to 30 April, the plant is also staffed by a duty operations technician 24 hours a day. For emergencies where additional resources are required, there is a 24-hour emergency response team consisting of three technicians from the operations, electrical and network groups.



2. Traffic and parking regulations

General traffic rules and traffic signs must be obeyed. Vehicles must only be parked in marked parking bays.

The Hemvärnsgatan entrance to the Solna plant is used daily for the inward and outward movement of lorries and trailers. Parking is therefore prohibited in turning and manoeuvring areas within the site. You should also pay particular attention to vehicular movements to ensure that no accidents occur.

Storerooms, tools and other contractor equipment may only be erected after consultation with your contact person at Norrenergi.

Road closures must always be implemented where work is to be carried out in public thoroughfares. Remember that local traffic rules may apply to different roads and areas.

3. In the event of an accident

First of all: Stay calm!

Take a deep breath. If you are in charge of the work, you must be calm and collected. Then follow these instructions:

Potentially fatal situations

If the situation is potentially fatal, make sure that the injured are moved away from any dangerous areas, e.g. where there is hot water, oil, petrol, etc.

Rescue

Find out what has happened, summon help and immediately deal with the injured and administer first-aid. Check breathing, make sure the airways are clear, give artificial respiration and stop any bleeding.

Call an ambulance on tel. 112 (NB! Dial 0 first to access an external line)

Speak calmly and clearly. State the address and where on the company's premises the accident has occurred, the number of injured and the nature of the accident/damage.

Meet the ambulance

Be ready to meet the ambulance at the gate and direct the ambulance personnel to the site of the accident. NB! Do not leave injured persons alone.

Notify relatives

A list of relatives of Norrenergi employees can be found in the control room. All works supervisors also have a copy. Contractors are responsible for contacting the relatives of their own personnel.

Always report near-accidents and accidents to your works supervisor and contact person.

Accidents that result in fatalities and/or serious personal injury and near-accidents that result in a serious risk to life or health must be reported without delay to the Work Environment Inspectorate (Arbetsmiljöinspektionen) by the works supervisor concerned.

Crisis support

In connection with serious accidents, it can be of great benefit to arrange for someone to speak to the people involved and also to others such as colleagues. During normal working hours, crisis support services are available to Norrenergi from the occupational health service. Contractors who do not have their own crisis support apparatus can talk to their contact person at Norrenergi concerning help with crisis support.



4. Fire and evacuation

There are fire and evacuation alarms located in and around all production facilities. These alarms are activated when a smoke or heat detector is triggered. When the alarm sounds, a red light will also start to flash. The alarm is linked to the local rescue service. The alarm can also be activated manually via pushbuttons, which are mainly located adjacent to entrances. The green button boxes are evacuation alarms only and will not automatically send an alarm to the rescue service when activated.

Remember that an alarm may also be activated by the exhaust of a vehicle being driven into a building or by smoke from grinding, welding, etc.

The facility must be evacuated when any alarm is activated. You must therefore always find out the nearest evacuation route. All evacuation routes are marked. Remember that evacuation routes must never be obstructed and fire doors must never be jammed open.

In the case of evacuation from a tunnel, mustering must take place next to the descent shaft.

IN THE EVENT OF AN ALARM

- Leave your workplace immediately and go to the muster point
- If possible, use the nearest exit
- Report to your works supervisor or contact person
- Remain at the muster point until told otherwise

Action in the event of a fire

If you discover a fire, follow the general rule: RESCUE – RAISE THE ALARM – EXTINGUISH, but not necessarily in that order.

RESCUE

Rescue anyone who is in obvious danger. Warn others. Do not take any risks. You must be convinced that you will be able to get out yourself.

RAISE THE ALARM

Press the nearest alarm button or call the fire service on 0/112 and calmly and clearly state the following:

- Address and department
- What is on fire
- The extent of the fire

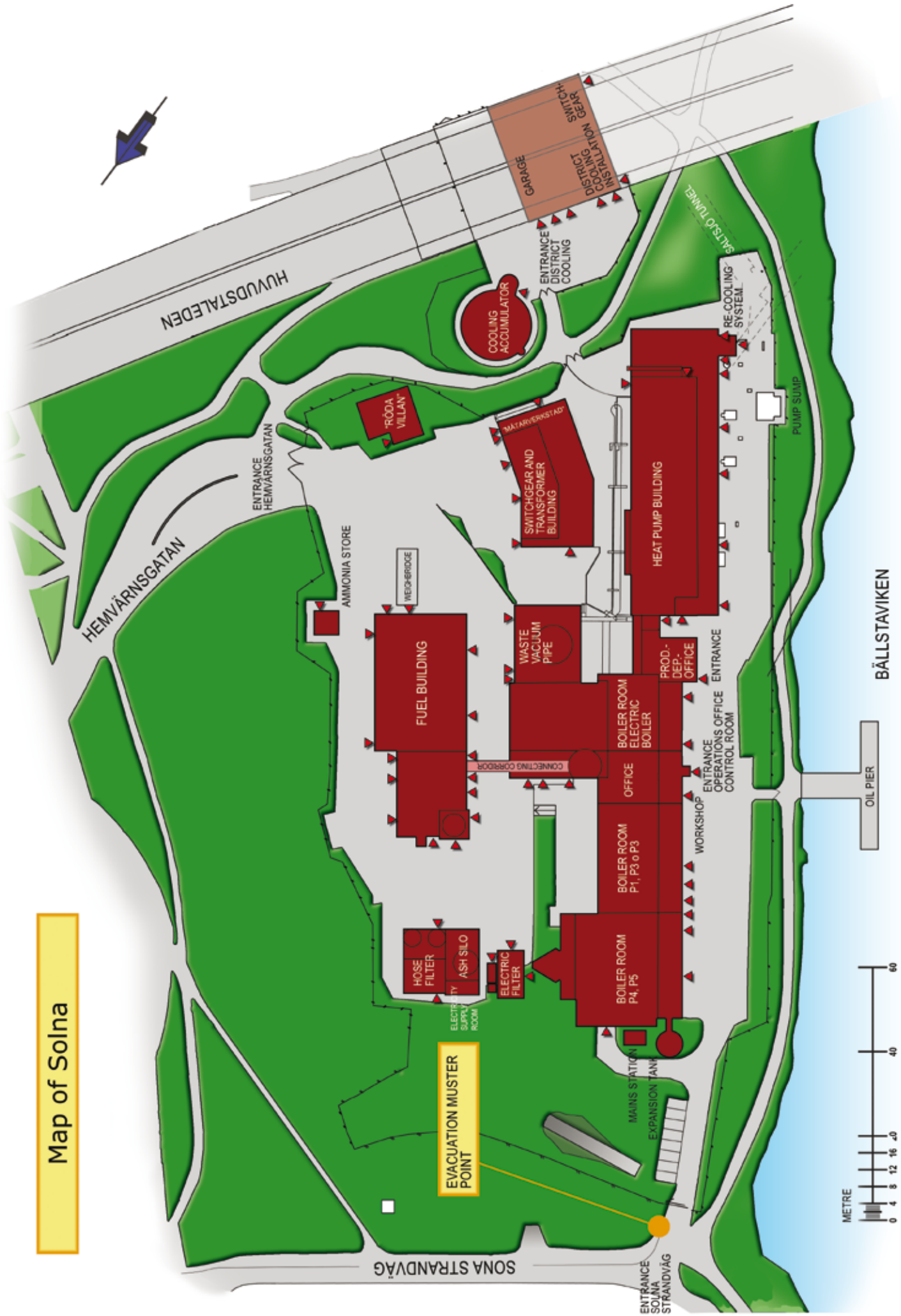
EXTINGUISH

If the fire is small, try to extinguish it. If not, the workplace must be evacuated.



SOS 112
Ambulance/Fire service/Police

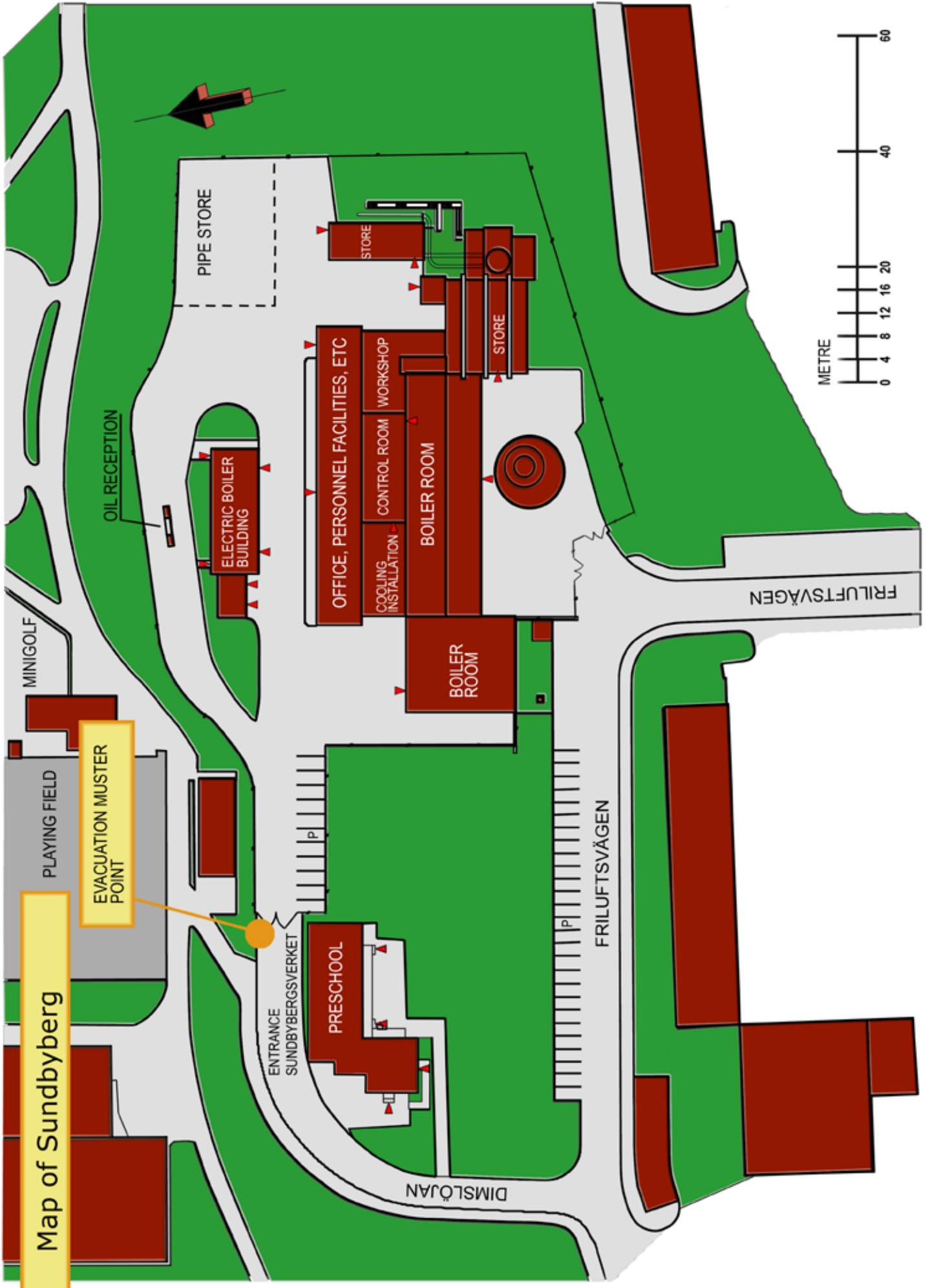
Map of Solna



EVACUATION MUSTER POINT



Map of Sundbyberg



5. Other alarms

In the event of a coolant leak in the heat pump facility, an alarm in the form of a siren and yellow

flashing light will be activated. There are equivalent alarms in the district cooling facilities in both the Solna plant and the Sundbyberg plant, but these have a blue flashing light.



6. Work permits

For all work that is to be performed by contractors, a work slip must be completed and submitted to the control room at least 24 hours before the work is commenced. Work slips can be obtained from the control room or your contact person. The work slip must state the name of the company, the works supervisor responsible and a telephone number, as well as the number of people who will carry out the work and the type of work involved. Before any work is commenced, the workplace must be adequately sealed off. This means for example that valves must be closed, pipes must be drained, all systems must be depressurised, the fire alarm must be isolated and signs concerning the work must be erected.

The operations manager in the control room will issue a written work permit and give permission for the work to commence. After the work has been completed, the workplace must be restored to its

original condition and the responsible contact person summoned to inspect the work and the condition of the workplace.

Work that is to be carried out after 16.00 must always be reported to the operations manager in the control room.

Work on the distribution system and customer facilities must not be commenced under any circumstances until the responsible project manager has given appropriate permission. Written work permits may also be issued for work on the external district heating and district cooling networks.

Remember that there is a working environment plan for every construction site. This plan sets out the rules that apply, risk assessments and the way in which work relating to the working environment is to be carried out.



7. Hot work

'Hot work' means welding, cutting, soldering with an open flame, work using grinders, drying and heating with an open flame and, in some cases, drilling.

In order to perform hot work, a temporary written permit is required. Within production, the control room manager is responsible for filling out the permit. For hot work on the district heating network, the project manager or emergency response personnel will issue the permit. For all hot work in the pellet building, the operations support manager or his deputy will issue the work permit. If the work requires a welding monitor, the contractor must arrange and pay for such a monitor unless other-

wise agreed. Both the person who issues a welding permit and the person receiving it must have at least completed SFFPA training in hot work. Welding monitors must also have completed training in hot work. As a contractor, you must be familiar with and follow the requirements specified in the permit document.

A welding licence and approved welding certificate must be shown before work on pressure-classed systems is commenced.

Remember to always find out the nearest evacuation routes, the nearest telephone and the location of fire-extinguishing equipment.



8. Work involving the handling of dangerous substances

Flammable, corrosive and toxic substances are handled at the plants. A description is given below of some risks that you should be aware of when working at Norrenergi.

Treated wastewater

The wastewater, i.e. the treated wastewater that is

used as a heat source for the heat pumps, contains some residual bacterial activity. For this reason, thorough hygiene precautions should be taken after visiting an area where wastewater is transported openly. In connection with work in the spray evaporator room in the heat pump facility, approved safety equipment such as safety suits, gloves and full masks must be worn.

Ash from incineration

Ash from pellet incineration can contain slaked lime, which is corrosive. In connection with all work involving the handling of ash, the safety regulations for the flue gas cleaning facility must be studied and the applicable rules followed. In some cases, a filter mask and eye protection are recommended safety equipment.

Ammonia 25% solution

Near the upper entrance to the Solna plant is an ammonia tank which supplies boilers 1 and 2 with ammonia. There is also a monitoring system here that will send an alarm to the control room in the event of an ammonia leak. The pipes are equipped with a pressure monitor that will stop the pumps in the event of low pressure in the system. If you can smell ammonia when you are in the boiler room, you must immediately leave the room and inform the control room.

Hydrazine

In connection with the electric boilers at both the Solna and Sundbyberg plants, hydrazine is used to remove residual acid in the water for the electric steam boilers. Hydrazine is a base and a strong

reducing agent. Protracted exposure to hydrazine can cause cancer. Hydrazine is also corrosive and can cause allergic reactions in the event of protracted skin contact.

Coolant

R134a is used as a coolant within the heat pump facility and within our district cooling facilities at the Solna and Sundbyberg plants. Large quantities of leaking coolant can cause asphyxiation. Contact with the liquid can cause frostbite. Toxic gases are produced if coolant is heated. Good ventilation is therefore important in the event of leakage. In the event of a major leak, an alarm will be activated and the premises must then be evacuated immediately.

Sawdust

At the facility, pellets are broken down to form a fine wood pulp, which accumulates in all equipment through leakage. This dust should not be inhaled over a protracted period of time and a protective mask is recommended during all work on the premises. Under certain conditions, the dust can give rise to dust explosions. No hot work must therefore be carried out on the premises without a special permit (see also section 7).

9. Work in tunnels or vessels

In the case of work in tunnel systems or vessels, double staffing must always be used. In the case of tunnel work, the task must be carried out jointly, whilst work in vessels must be carried out by one

person with a second person monitoring the situation at ground level. Gas tubes may only be inserted into tunnels with special permission from the project manager. Always remember to find out the nearest evacuation routes, the nearest telephone and the location of fire-extinguishing equipment.

10. Excavation works

Electricity cables and pipelines must be marked in excavation areas. In the case of mechanical excavation close to a risk zone for electricity cables/telecom cables, the project manager must always be contacted.

Excavation adjacent to buildings must be carried out with great care, preferably manually. If covering bricks, etc. are encountered in situ which are not marked, excavation must always be carried out by hand.

11. Electrical safety

All electrical equipment and the use thereof is subject to the Swedish National Electrical Safety Board's regulations for electrical power current installations. The ESA electrical safety instructions must also be followed.

Work on electrical systems must not be commenced until the person responsible for electrical systems has been informed and given permission for the work to commence.

Authorised installation contractors

Electrical installations and repairs, even temporary installations and repairs, must only be carried out by an authorised installation contractor.

Electrical works supervisor

An electrical works supervisor must always be appointed before work is commenced.

Leads, loose conductors, etc.

Make sure that temporary leads, loose conductors and other temporary electrical equipment are placed so that they are not damaged by doors, collisions with



vehicles or damage caused during installation work, etc.

Open area in front of switchgear cabinets

Do not block switchgear cabinets. Maintain an open distance of at least 80cm in front of the cabinet.

Floodlights and hand lamps

Floodlights must have cased mountings. Hand lamps

must have a safety glass and grille.

Work in conducting enclosed areas

When it is necessary to take electrical equipment inside boilers, tanks, cisterns, etc., hand lamps must be fed via 24V (SELV). The voltage to handheld tools and portable measuring equipment can be fed via an isolation transformer when only one tool or one item of measuring equipment is being used.



12. Safety responsibility and working environment

Norrenergi has legal responsibility for project planning, advance notification, the working environment plan and documentation. This responsibility can never be transferred either in part or in full. The responsibility for coordinating measures to protect against ill-health and accidents can however be transferred in a written agreement. Through the responsible works supervisor, each contractor has a separate safety responsibility for its own workers and must be familiar with applicable working environment legislation. The person responsible for coordination must be familiar with the local rules that apply at Norrenergi and inform his personnel or hired contractor of these rules. Remember that a shared workplace imposes particularly strict requirements on everyone to ensure that the working environment is also safe for those in the immediate vicinity and elsewhere.

Keep your workplace tidy

Workplaces must be cleaned at least once a week. Leave the areas tidy. Make sure there are no tripping or slipping hazards. Always clean up any oil spills.

Waste products

All waste that is generated during the work must be sorted and placed in the appropriate containers. See also section 13, Environmental information for contractors.

Personal protective equipment

Personal protective equipment must be used where such equipment is prescribed or where it is obviously required. Work clothes must be clearly marked with the company's name.

Scaffolding/platforms

Scaffolding and other platforms and stands must be installed in accordance with the applicable regulations in the working environment legislation.

Barriers and closures

Barriers must always be erected around holes in the

floor, walls and pits in the ground. Erected safety devices and closures must be respected.

Work on mechanical, process or media systems

Before performing work on mechanical, process or media systems, the person concerned must ensure that the necessary preparations have been made.

Safety rope during work on roofs

Use a safety rope when working on a roof or similar. Think about the risks associated with work on several floors simultaneously!

Cranes and works machinery

Work involving the use of cranes and other lifting devices must follow the relevant instructions issued by the Swedish National Board of Occupational Safety and Health.

Works machinery must be inspected and the operator must hold an operator's certificate. A crane report must always be available and presented on request.

The plant's works equipment

Norrenergi's tools, lifting equipment, lifting devices and other equipment may not be loaned or used by any contractor's personnel without permission. Loaned equipment must be returned in the same condition it was in when loaned out. Costs for lost or carelessly treated equipment will be charged to the contractor. Norrenergi is responsible for the safety of the equipment.

Cooperation and respect

Cooperate with your works supervisor and your safety representative. The safety representative's orders and instructions must be respected.

Alcohol and drugs

It is of course not permitted to consume or be under the influence of alcohol or drugs at the workplace.

Smoking

There is a general smoking ban indoors. Smoking outdoors should in the first instance take place in the specified areas.

13. Environmental information for contractors

Rules for waste management

Norrenergi provides marked containers and vessels in and around the production facilities. All contractors must sort their waste and use these containers and vessels. If dangerous waste is generated, the waste type, quantity, transport permit and recipients must be notified to the responsible works supervisor at Norrenergi. Dangerous waste may not be transported away from the site without the permission of the responsible works supervisor. Reuse and recycling must be applied wherever possible.

Each and every contractor is responsible for:

- sorting their waste according to source
- fragmenting waste, i.e. breaking it down so that packaging does not take up too much space for example
- giving sufficient advance notice of anticipated needs for containers over and above normal usage
- notifying the responsible works supervisor when containers and vessels are full

Rules for the handling of chemicals

Information in the form of safety sheets for chemicals that are used to carry out ordered work must be handed to the responsible works supervisor at Norrenergi. Contractors must not use any products that are registered in the Swedish National Chemicals Inspectorate's restriction database. All chemical products that are used by contractors must be labelled. In the case of dangerous chemicals, a safety sheet must also be available at the site. Waste chemicals must always be handled as dangerous waste and disposed of by the contractor unless otherwise agreed.

The following waste fractions are sorted at Norrenergi:

Non-dangerous waste	Dangerous waste
Corrugated cardboard	Batteries
Plastic	Fluorescent light tubes, lights
Metal	Waste oil
Glass	Oily rags
Timber waste	Electronics
Other	

This is Norrenergi

Norrenergi is a municipally owned energy company that supplies Solna and Sundbyberg, as well as parts of Bromma and Danderyd, with district heating, district cooling and energy services. We are investing in renewable energy and are the first energy company to mark our district heating and district cooling services with the Swedish Society for Nature Conservation's Bra Miljöval ('Good Environmental Choice') ecolabel. Annual production amounts to approx. 1 TWh of heating and cooling, equivalent to a value of approximately MSEK 650. We have around 70 employees and are located in Solna Strand.

Production is carried out at the Solna and Sundbyberg plants. At Haga heat exchanger station, Norrenergi's district heating network is connected to the central district heating network in Stockholm.

The Solna plant consists of a heat pump system with four units, two sawdust boilers, two oil boilers, a boiler that is fired using tall oil pitch and an electric boiler. The installed power is over 400 MW. At the Solna

plant, there is also a contingency store of oil housed in a large underground cavern.

The heat pumps utilise treated wastewater from Bromma wastewater treatment works and water from Lake Mälaren as a heat source. The water is transported through a 12km-long tunnel from the treatment works in Nockeby, via the heat pump plant in Solna, to its outlet just off Kastellholmen in central Stockholm.

The Sundbyberg plant is remotely controlled from the control room at the Solna plant, which is staffed 24 hours a day. The plant is largely operated using bio-oil in three hot water boilers with a combined output of 142 MW. There are also two electric boilers (2x30 MW) at the plant.

Norrenergi's district cooling is generated at three plants - the Sundbyberg plant, the Solna plant using the cold wastewater after the heat pumps and the Frösunda cooling station, where the cooling is obtained from cold seawater. At the Solna plant, there is also an accumulator for day storage, which holds 6,500m³ of cold water.

Contact

Control Room, Solna	+46(0)8 475 04 60
Main Safety Representative Lars Lundborg	+46(0)70 675 04 58
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Safety Representative, office Anne-Lie Friberg	+46(0)70 325 04 31
Environmental Manager Mattias Lindberg	+46(0)70 325 03 97
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