NUCLEAR ENGINEERING
SEIBERSDORF

INFORMATION FOLDER

CONTENT

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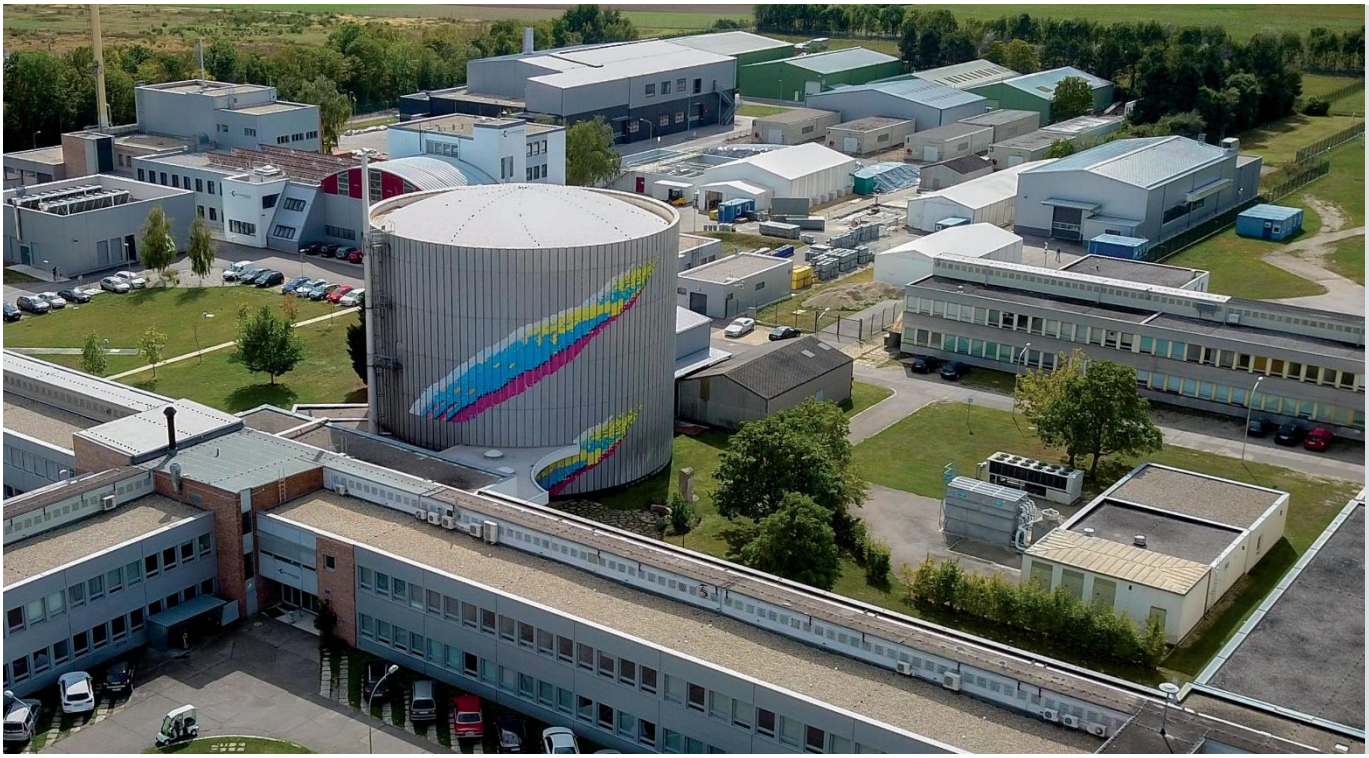
ABOUT US

SAFETY FOR OUR FUTURE – BUNDLED COMPETENCE IN NUCLEAR TECHNOLOGY

The main tasks of Nuclear Engineering Seibersdorf GmbH (NES) which are carried out on behalf of the Republic of Austria are the collection, treatment, conditioning, and storage of radioactive waste and the decontamination and decommissioning (dismantling) of nuclear plants, in particular from 45 years of research and development at the Seibersdorf site.

Pursuant to a contractual agreement between the Republic of Austria, the municipality of Seibersdorf, and Nuclear Engineering Seibersdorf GmbH (NES), NES undertakes to collect and condition all radioactive waste generated in Austria and to store it until final disposal in a final repository yet to be determined.

In fulfilling its statutory tasks and on the basis of long-term contracts with the Republic of Austria, NES guarantees the highest level of safety and the latest technical standards.



NES premises

COMPANY POLICY

In all our activities, we want to adhere to the highest standards in terms of quality, environmental protection, occupational safety and health protection.

- The activities of Nuclear Engineering Seibersdorf GmbH are aimed at maintaining a high level of quality at economically acceptable costs. We want to meet our customers' wishes in the agreed time, at agreed costs and at the agreed quality level.
- We want to reduce the risk of accidents in our work processes and the risks associated with handling radioactive substances to a minimum in order to protect the health of our employees at all times.
- We want to safely handle, enclose, and store radioactive materials to prevent release to the environment.
- We want to carry out our activities in such a way that risks to employees' health and safety posed by ionizing radiation (radioactive substances) can be excluded.
- We enclose the radioactive substances in a stable and long-term manner. We strive to minimize the volume of radioactive waste in order to keep the burden on future generations as low as possible.
- We want to optimally inform the population and in particular all stakeholders about our activities.

Central entrance building and water treatment plant

RADIOACTIVE WASTE IN AUSTRIA

Although no nuclear power plants or other larger nuclear facilities are operated in Austria, low- and intermediate-level radioactive waste is generated in medicine, industry, and research as well as in the course of dismantling projects from facilities from previous nuclear research activities. In contrast to high-level radioactive waste, such as that generated by the operation of nuclear power plants, this is only waste with a comparatively low "hazard potential" and usually half-lives of a maximum of 30 years.

Nuclear Engineering Seibersdorf GmbH (NES) handles the treatment and interim storage of this waste on behalf of the Republic of Austria until it is brought to a final repository.

For this purpose, NES operates numerous plants and facilities in order to be able to carry out the collection, sorting, processing, conditioning and interim storage of Austrian radioactive waste in accordance with the current state of the art and in accordance with the highest safety and radiation protection standards.

Drum drying plant

Transfer storage

Waste sorting


Stainless steel caisson

WASTE FROM MEDICINE, INDUSTRY AND RESEARCH

Radioactive materials are used in various areas, and all of these applications also generate radioactive waste. Below are some examples of waste producers:

MEDICINE:

- Medical diagnostics
- Laboratory tests
- Medical and pharmaceutical research
- Radiotherapy

INDUSTRY:

- Radiation sources from safety-related measuring and control devices in industrial plants (e.g. measuring devices for level, flow)
- Radiation sources for quality assurance (e.g. for radiography and checking of safety-relevant weld seams)
- Ionisation smoke detectors
- Waste from laboratory activities

RESEARCH:

- Basic scientific research and applied research
- Medical, physical, chemical, biological research, ...

WASTE FROM DECONTAMINATION, DECOMMISSIONING AND DISMANTLING PROJECTS

When decommissioning and dismantling nuclear research facilities, radioactive waste is generated, e.g. in the form of contaminated plant components, laboratory equipment, building rubble, etc. Since intensive nuclear research activities took place at the Seibersdorf site, particularly from the 1960s to the 1980s, extensive decommissioning projects are required. One example is the dismantling of the 10 MW ASTRA research reactor completed in 2006.

Radioactive waste is also generated outside the Seibersdorf site as part of dismantling work and the removal of contaminated soils (most of them historical).

Waste drum in the caisson

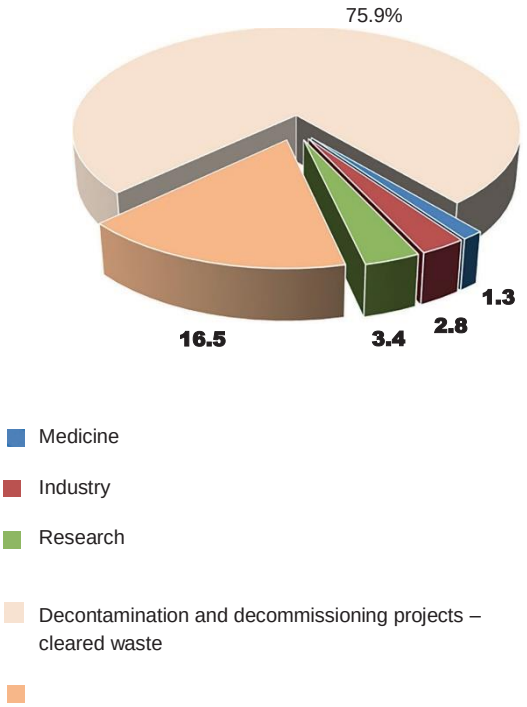
WASTE QUANTITY

The following graphic shows the radioactive waste 2010–2019, detailed according to its source – medicine, industry, and research – as well as waste from the dismantling of plants.

After the conditioning process (placing it in a chemically and physically stable form and enclosing it in a container), an average of around 200 drums of radioactive waste are left each year from the two waste streams listed which are then taken to the transfer storage facility for long-term storage.

At the end of 2019, there were approx. 12,000 containers with radioactive waste in the Austrian interim storage facility in Seibersdorf.

Waste per year (average value 2010–2019) In total approx. 280 t/a



Waste from decontamination and decommissioning project

RADIOACTIVE WASTE MANAGEMENT

Nuclear Engineering Seibersdorf GmbH (NES) handles the treatment of radioactive waste generated in Austria, from collection to sorting, processing, conditioning and interim storage on behalf of the Republic of Austria. The relevant trilateral contract between the Republic of Austria, NES, and the municipality of Seibersdorf (waste disposal contract) runs until 31 December 2045. By then, a solution to the final disposal question for the radioactive waste has to be found.

THIS FIG. WILL BE PHOTOGRAPHED ANEW AND DELIVERED LATER

Waste management essentially pursues two main objectives:

- Bringing the waste into a physically and chemically stable form and enclosing it in a container; this should enable long-term interim storage and ensure that the environment is safely sealed off from radioactivity
- Minimizing the volume of waste; the volume of radioactive waste is to be minimized as much as possible, because on the one hand this will minimize the costs for later final disposal and, on the other hand, the impact on future generations can be kept as low as possible

Extensive facilities are available at NES to achieve the stated goals; the main systems are briefly outlined below:

TAKEOVER BUILDING (ÜNG):
The building is used for waste collection, for initial characterizations and for documentation. The entire material flow into the company premises (radiation area) and out of the company premises runs through the ÜNG.

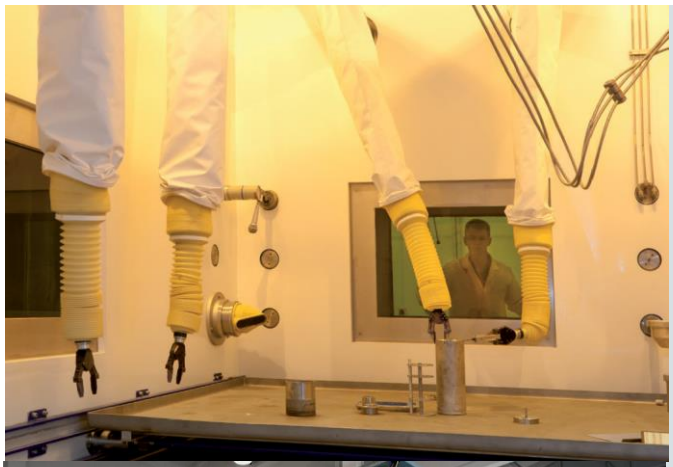
BUFFER STORAGE
For the intermediate buffering of unconditioned waste before processing or between individual process steps, several buffer storage halls are available on the NES premises in which the waste can be separated as mono-fractions and stored by category.

NEW TREATMENTCENTRE (NHZ)

The NHZ was built between 2010 and 2013. During planning and construction, the main focus was on optimizing the flow of materials and people, on occupational safety and radiation protection.

The NHZ is equipped with a ventilation system that generates a high level of air exchange and negative pressure throughout the building in order to minimize the risk of radioactive substances being released into the environment. The exhaust air from the building is filtered and monitored accordingly.

The NHZ has numerous facilities for processing and conditioning radioactive waste. The main facilities are:



HOT CELL WITH FLOOR STORAGE

For the treatment of high-acvitify sealed radioactive sources. Since the radiation emitted by these sources is so strong, they can only be handled with external manipulators in the hot cell consisting of 1m thick heavy concrete

SOURCE PROCESSING CENTRE

The facilities for the treatment of sealed radioactive sources are available here.

STAINLESS STEEL CAISSONS

These are essentially large processing booths in which radioactive waste can be disassembled, crushed, decontaminated and prepared for further conditioning by personnel wearing externally ventilated protective suits.

High force compactor
The fully enclosed and remotely operated high force compactor along with the necessary automatic handling system is used to compress non-combustible radioactive waste.

Drum drying plant
In the 32-drum dryer, drums are dried before being sealed and transferred to the interim storage in order to minimize the risk of chemical processes and corrosion in the drum.

Decontamination room
Here, slightly contaminated objects and materials, empty drums, etc. can be cleaned and decontaminated, e.g. by high-pressure water jets.

INCINERATION PLANT

The incineration plant (VA), which is operated on average for 3–4 months per year, essentially consists of the shaft furnace and the associated infrastructure, such as gas burners, flue gas pipes, an afterburner chamber and a four-stage flue gas cleaning system.

WATER PURIFICATION PLANT

All facilities necessary for the treatment of radioactively contaminated wastewater are installed in the water purification plant.

INTERIM STORAGE

In this modern storage facility, where an inspection of every single drum is possible at any time, optimal room climate conditions were created (maintaining a minimum room temperature and a maximum permissible relative air humidity) in order to minimize the risk of condensation effects on the drums and to therefore preclude corrosion.

DECOMMISSIONING AND DECONTAMINATION

Decommissioning work

Decommissioning work

Decommissioning and decontamination mainly deals with the dismantling of plants and facilities from 45 years of research and development activities at the Seibersdorf site. External projects are taken over as well. Examples from the past few years include the decommissioning of a radiochemical university institute, a laboratory complex of the IAEA as well as minor remediations of historical contaminated sites.

In addition to the operational handling of dismantling projects, the focus is also on the development and application of procedures and techniques for decommissioning nuclear facilities and on maintaining and expanding expertise in this area in order to be able to carry out complex tasks safely, efficiently, and cost-effectively. NES can draw on decades of experience, for example the highly successful dismantling of the ASTRA research reactor which set international benchmarks in terms of safety, project duration, and cost.

EXPERTISE IN DECOMMISSIONING PROCESSES AND DISMANTLING TECHNIQUES

All decommissioning procedures for decommissioning systems, components, buildings, and terrain are used, as well as different separation, disassembly, and demolition techniques.

The dismantling techniques mainly use conventional methods with the associated radiation and occupational safety measures.

EXPERTISE IN DECONTAMINATION TECHNIQUES

Radioactive substances adhering to surfaces can be removed by chemical and/or mechanical means (decontamination). This reduces the activity and dose rate of plant components.

NEW DEVELOPMENTS AND PERSPECTIVES

When decommissioning and decontaminating nuclear facilities and plants, special attention is paid to the use of innovative methods which enable the radioactive waste to be minimized as much as possible while complying with the highest safety standards for human beings and the environment and minimizing radiation exposure (e.g. Gel decontamination method, development of soil measuring and sorting system including material preparation, ...).

OPERATIONAL SAFETY

Radiological measurement

Water sampling

As operator of a number of plants for which radiation protection licenses are required, Nuclear Engineering Seibersdorf GmbH (NES) takes responsibility for radiation safety as well as compliance with existing statutory regulations and official stipulations. In order to adequately meet this responsibility, compliance with the following aspects must be ensured:

- Safe handling of radioactive substances and radiation sources
- Compliance with the ALARA (as low as reasonably achievable) radiation protection principle for all employees
- Minimizing the likelihood of contamination in the facilities
- Minimizing the likelihood of releases of radioactive substances into the environment

Monitoring and controlling the compliance with these points is carried out at NES by an independent organizational unit, the head of which is also the NES radiation protection officer. In addition, it is also responsible for all aspects of conventional occupational safety.

INDUSTRIAL RADIATION SOURCE SERVICE (IQS)

The IQS is responsible for the procurement of highly radioactive, certified, tested and contamination-free radiation sources exclusively for applications within the scope of “non-destructive material testing” and industry.

In detail, these are the following sources:

- Ir-192 (Iridium 192)
- Se-75 (Selenium 75)
- Co-60 (Cobalt 60)
- Cs-137 (Caesium 137)

It is also an authorized group for the maintenance and repair of gamma radiography equipment and accessories.

Our services also include the return of disused radiation sources – sourced from us (NES) – to the manufacturer/supplier.

The IQS staff not only takes care of the return of old gamma radiography devices with a shielding from depleted uranium, but also takes care of the on-site source change in appropriate application rooms.

“Ad hoc repairs" of gamma radiography equipment are of course also carried out in the event of malfunctions.

ACCREDITED LABORATORY

NES operates inspection body ID 314 which has been accredited according to ISO 17025 since 2009. Activity measurements of radioactive sources and radiation protection-relevant measurements are carried out according to the highest and strictest quality standards.

Examples of tests/measurements carried out are contamination tests, air and water activity measurements and tests of gamma radiography devices in accordance with the relevant DIN standard.

Bundesministerium
Digitalisierung und
Wirtschaftsstandort

Die Nationale Akkreditierungsstelle / *The National Accreditation Body:*

AKKREDITIERUNG AUSTRIA

bestätigt die Akkreditierung der Rechtsperson / *confirms the accreditation of*

Nuclear Engineering Seibersdorf GmbH

A-2444 Seibersdorf

Identifikationsnummer / *ID-number*: **0314**
als / *as* **Prüfstelle / *Testing Laboratory***
gemäß / *according to* **EN ISO/IEC 17025:2017**
Datum der Erstakkreditierung / *Initial date of accreditation*: **01.10.2009**

Standort/Organisationseinheit / *site/unit*:
Nuclear Engineering Seibersdorf GmbH, A-2444 Seibersdorf

Informationen zum Akkreditierungsumfang und zu Akkreditierung Austria / *Information about the accreditation scope and Akkreditierung Austria* http://www.bmdw.gv.at/akkreditierung

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Dipl.-Ing. Dr. Norman Brunner
Wien, am 14. Juni 2019

INTEGRATED MANAGEMENT SYSTEM (IMS)

NES operates an IMS; there, all internal processes and procedures are brought together in one system.

The Integrated Management System consists of:

- Quality Management System (ISO 9001)
- Environmental Management System (ISO 14001)
- Occupational Health and Safety Management System (ISO 45001)

The IMS enables a holistic view of the operational processes. The aspects of occupational safety and environmental protection are included in the procedures. This is also an implicit requirement of EU Directive 2011/70/EURATOM which demands a holistic view so that safety can be given top priority.


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Erfolg mit Qualität

ZERTIFIKAT

Die Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH stellt folgender Organisation ein qualityaustria Zertifikat aus:

Dieses qualityaustria Zertifikat bestätigt die Anwendung und Weiterentwicklung eines wirksamen

Nuclear Engineering Seibersdorf GmbH
AT-2444 Seibersdorf

QUALITÄTSMANAGEMENTSYSTEMS
entsprechend den Forderungen der
ISO 9001:2015

Sammlung, Aufarbeitung, Konditionierung und Lagerung von radioaktiven Abfällen sowie die Dekommissionierung und Dekontaminierung nuklearer Anlagen.

Registriernummer: 20239/0
Erstausstellung: 23. Februar 2018
Gültig bis: 22. Februar 2021

Die Gültigkeit dieses qualityaustria Zertifikates wird durch jährliche Überwachungsaudits und dreijährliche Verlängerungsaudits aufrechterhalten.

Wien, am 23. Februar 2018

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH, AT-1010 Wien, Zelinkagasse 10/3

Unterschriften aus Sicherheitsgründen entfernt

Konrad Scheiber
Geschäftsführer

Dr. Mag. Arni Koubek
Fachbeauftragte


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CERTIFICATE

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH awards this qualityaustria certificate to the following organisation:

This qualityaustria certificate confirms the application and further development of an effective

Nuclear Engineering Seibersdorf GmbH
AT-2444 Seibersdorf

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM
complying with the requirements of standard
BS OHSAS 18001:2007

Decommissioning and Decontamination of Nuclear Facilities; Radioactive Waste Management

Registration No.: 01899/0
Date of initial issue: 8 March 2017
Valid until: 7 March 2020

The validity of the qualityaustria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

Vienna, 8 March 2017

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH, AT-1010 Vienna, Zelinkagasse 10/3

Signatures removed for security reasons

Konrad Scheiber
General Manager

Eckehard Bauer, MSc
Specialist representative


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CERTIFICATE

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This qualityaustria certificate confirms the application and further development of an effective

Nuclear Engineering Seibersdorf GmbH
AT-2444 Seibersdorf

ENVIRONMENTAL MANAGEMENT SYSTEM
complying with the requirements of standard
ISO 14001:2015

Decommissioning and Decontamination of Nuclear Facilities; Radioactive Waste Management

Registration No.: 03321/0
Date of initial issue: 8 March 2017
Valid until: 7 March 2020

The validity of the qualityaustria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

Vienna, 8 March 2017

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH, AT-1010 Vienna, Zelinkagasse 10/3

Signatures removed for security reasons

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