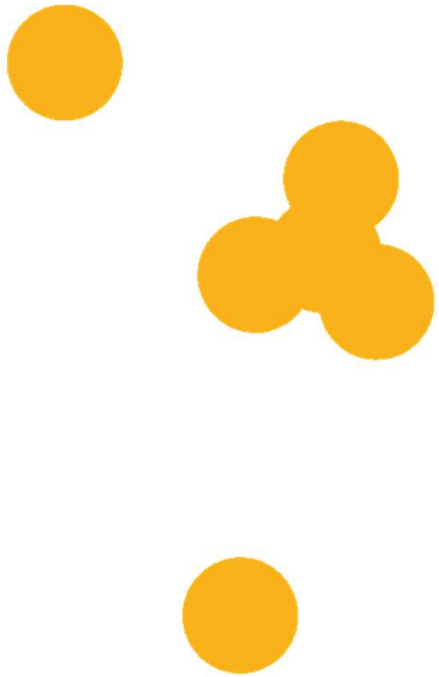


Nuclear power

www.nuclear-power.sk

IN THIS DOCUMENT YOU WILL GET THE FOLLOWING INFORMATION:

ABOUT COMPANY NUCLEAR POWER

Company Nuclear Power, a.s. was established in 2013. The company is focused on the supply of EPC and EPCM projects. The supply of special equipment with all the relevant legislation support and technical documentation for energetic sector.

The staff of company consists of skilled project managers, engineers and former employees of NPPs. Our employees have years of experience in the construction, operation and decommissioning of NPPs and in conventional sector.

The company is certified by:

ROLE OF NUCLEAR POWER IN NUCLEAR INDUSTRY

The company is targeted to the EPC turnkey supplies:

- Basic and detail engineering, supply of designed scope, construction works, operation maintenance and decommissioning of nuclear facilities
- Engineering and consultancy services :
    - operation manuals/procedures, implementation of operation procedures
    - decommissioning engineering, decommissioning plans and strategies, decommissioning database, technical support in accordance with local law and regulations
- Technology for processing, transport, handling and storing of RAW

MEANING OF TURNKEY SUPPLIES

Concept of the turnkey supply:

- Detail design
  - Safety system
  - Technology
  - Electro
  - I&C
  - Civil
- Supply of material, services and works in scope of detail design
  - In scope of Civil/technology/Electro/I&C
- Implementation of Detail design
  - Dismantling/demolition/decontamination/waste & RAW management
  - Construction of Civil/technology/Electro/I&C parts
- Commissioning (if needed)
- Warranty and post warranty service

MAIN REFERENCES OF THE COMPANY NUCLEAR POWER AND PROJECT TEAM IN FIELD CONSTRUCTION OF THE NUCLEAR SOURCES:

LAST REFERENCES FROM CONSTRUCTION OF NPP MOCHOVCE 3,4
Support to construction and coordination of interfaces in construction of NPP Mochovce Unit 3,4
Functional test execution support for commissioning of NPP Mochovce Unit 3,4
Expert support team for construction of NPP Mochovce Unit 3,4
Report on the assessment of cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce“ on environment
Civil finishing works

MAIN REFERENCES OF THE COMPANY NUCLEAR POWER AND PROJECT TEAM IN FIELD DECOMMISSIONING OF THE NUCLEAR SOURCES

The V1 NPP Conceptual Decommissioning Plan
The Environmental impact assessment report of V1 NPP Decommissioning
The V1 NPP Decommissioning database (including the characterization of NI: Mogilnik, reactor, main components, etc.)
Increasing capacity of existing fragmentation and decontamination facilities
Dismantling of pipelines and technology in the controlled area
Automated line for processing of contamined air filters
Fragmentation workshop for solid RAW

REFERENCES FROM CONVENTIONAL INDUSTRY

Engineering:

- Civil
- Technological
- Electro
- I&C systems

Supply, construction, commissioning, sale&after sale service:

- Civil
- Technological
- Electro
- I&C systems

REFERENCES FROM CONVENTIONAL INDUSTRY

NAME OF THE PROJECT

Biogas power station in sawage treatment plant – Zeleneč (330kWe)
Biogas power station in sawage treatment plant – Nitra (250kWe)
Safety and I&C system in Logistic park Senec
Helium loop – Trnava
Innovation and modernization of ship chambers to increase safety and intensity of water transport on Danube dam: Gabčíkovo
Reconstruction of the heat distribution system - Nitra

TURNKEY SUPPLIES FOR PROCESSING OF RADIOACTIVE WASTE (RAW)

Komplex technological base for processing of solid and liquid RAW for NPP‘s under operation and decommissioning

- For example: Decontamination line, Dryer, Burning facility
- Chemical substances for stabilization of the liquid RAW




RAW PROCESSING BY NUCLEAR POWER

We offer supplies of engineering, technology, ware material in these fields:

- solidification of radioactive waste (sludge, ion exchangers, concentrates) by cementation method
- solidification of radioactive waste (sludges, ion exchangers, concentrates) by the method of alkali-activated aluminosilicate matrices (so-called geopolymers) into our GEOSIL matrix itself
- contaminated water treatment (separation of nuclides below legal levels and subsequent treatment of concentrate)
- solid waste sorting and treatment

We are ready to supply mentioned technologies for NPP under operation and in decommissioning phase.

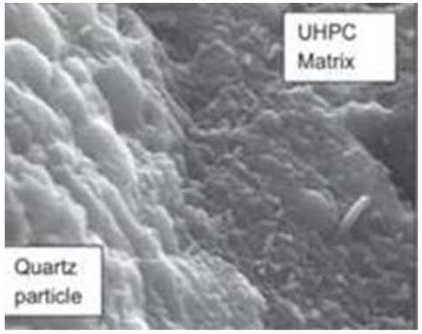
The processing of radioactive waste is not only focused on the supply of equipment, but also on the provision of services in the area of solidification and waste management, we offer also the operational or financial leasing of technological equipment.

BRIEFLY ABOUT OUR OFFER OF SPECIAL CONCRETE MIXTURES

- We can create and supply mixtures designed to customer's special needs
- We are able to provide application in the most extreme environments, like: lyes, acids, molten salt, gamma radiation, etc.
- Products made based on our mixtures are commonly used in the chemical environments, nuclear energy as well in the waste management technologies

VALUES OF CONCRETE MIXTURES USED IN THE WORLD IN COMPARISON WITH OUR CONCRETE MIXTURE

#	Name of the parameter	Paremeters requested for RAW container used wordwide	Paremeters of our concrete mixture
1	Compressive strength of concrete	min. 60MPa	67MPa
2	Transverse tensile strength	min. 4,0MPa	4,6MPa
3	Waterproofness of concrete (leak)	max. 20mm	15mm
4	Shrinkage of concrete	max. 400μm	max. 297μm
5	Diffusion coefficient of tritium water by concrete	max. $1{,}5.10^{-3}$ cm^3/day for thickness 20mm	max. $(3{,}7\pm3{,}4).10^{-5}$ cm^3/day for thickness 20mm
6	Diffusion coefficient of cesium by concrete	max. $1{,}0.10^{-3}$ cm^3/day for thikness 10mm	max. $(1{,}1\pm1{,}3).10^{-5}$ cm^3/day for thikness 10mm
7	Nitrogen permeability by concrete	max. 5.10^{-18} cm^2	max. 3.10^{-20} cm^2
8	Resistance of concrete to gamma radiation	At a total absorption dose of gamma radiation of 1.10^6 Gy, the decrease in compressive strength is max. 11%	At a total absorption dose of gamma radiation of 1.10^6 Gy, the decrease in compressive strength is max. 7%
9	Material thermal expansion	12.10^{-6} K^{-1}	12.10^{-6} K^{-1}
10	Puncture resistance of the filled container	2,8MPa	3,5MPa
11	Pressure resistance of the filled container	71MPa	75MPa



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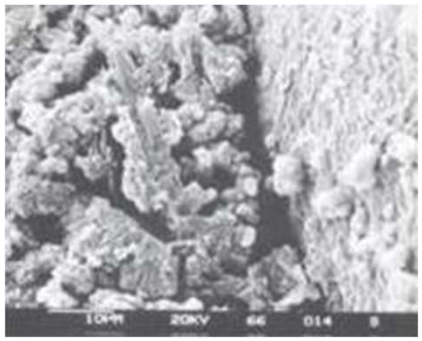
VALUES OF CONCRETE MIXTURES USED IN THE WORLD IN COMPARISON WITH OUR CONCRETE MIXTURE

#	Name of the parameter	Paremeters requested for RAW container used wordwide	Paremeters of our concrete mixture
12	Dimensions and it´s tolerances	**Body of the container (mm):** Length: External: 1 700±6 Internal: 1 490 ±6 Height: External: 1 700±6 Internal: 1 575±6 Width: External: 1 700±6 Internal: 1 490±6 **Lid (mm):** Length: 1 514±4 Width: 1 514±2 Thickness: 142 ±3 **Stopper (mm):** Diameter: 300±3 Height: 142±3	**Body of the container (mm):** Length: External: 1 700±2 Internal: 1 490 ±2 Height: External: 1 700±2 Internal: 1 575±2 Width: External: 1 700±2 Internal: 1 490±2 **Lid (mm):** Length: 1 514±2 Width: 1 514±2 Thickness: 142 ±1 **Stopper (mm):** Diameter: 300±1 Height: 142±1
13	Compaction	N/A – used concrete mix needed to be compacted on the vibration table	self compacting concrete
14	Steel fiber	YES	Not needed – due to the concrete properties of concrete it self



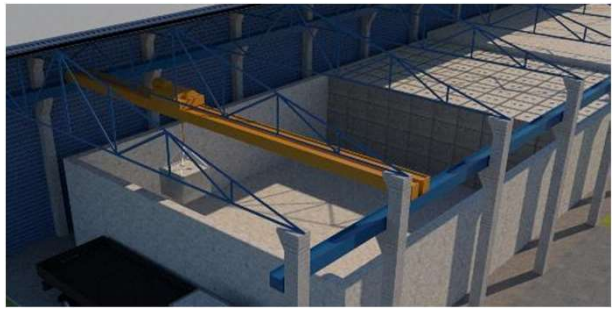
OUR OFFER FOR THE RAW WAREHOUSE/REPOSITORY

We are offering You a turnkey supply of:

1. Basic & detail design of the solid RAW warehouse for the low, intermediate and high level waste
    i. The BD & DD will be in compliance with EU/national nuclear legislation
    ii. Later the RAW warehouse could be re-licensed as the RAW repository
2. The licensing design of storage containers for solid RAW for storing of the low, intermediate and high level waste
3. Supply of licensed containers:
    4. From our manufacturing site to the customer
5. Turn key construction of the RAW warehouse/repository site in the complex scope: civil, technology, electro, I&C, safety and radiological systems
6. Operation personnel training
7. Sale and after sale service

THE MAIN TECHNICAL ADVANTAGES OF OUR RAW WAREHOUSE/REPOSITORY DESIGN

1. Main construction, where the containers are stored will be build as the monolithic „bath“ produced from the similar mixture as the containers will be produced from
2. The casks are stored in layers, because the mixture strength is allowing us to do so
3. The construction of „bath“ and the building steel structure will be engineered in line with the local earthquake, wind, nuclear energy and other requirements requested by the national Nuclear Regulatory Authority
4. The overall site safety will be 24/7 secured by:
    1. safety camera system of the site, including the buildings interior
    2. data log entrance system for cars & personnel
    3. radiological survey of the site, buildings
    4. radiological survey of the leakage from the „bath“ to the ground
5. In the case, when the personnel will become contaminated, will be used the on-site hygienic loop

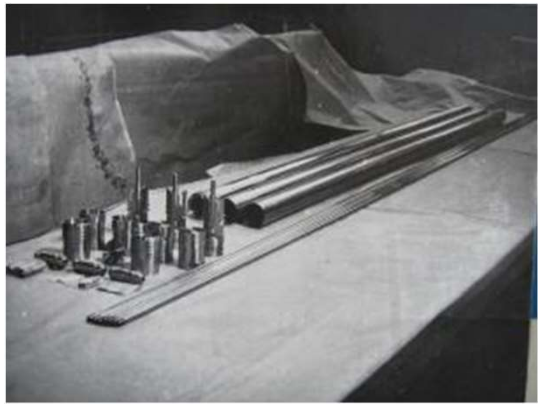
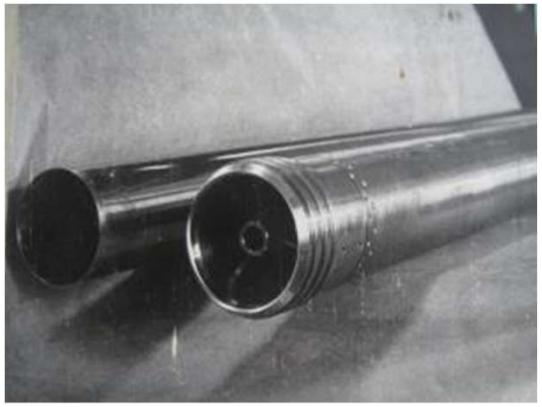


ADVANTAGES OF OUR TECHNICAL SOLUTION COMPARING TO COMMONLY USED UNDERGROUND STORAGE:

1. Our design of warehouse/repository is much cheaper and faster to build, than the commonly used underground storage systems (see pictures on right)
2. Our concrete mixture has better results than the commonly used mixtures
3. The customer could produce the containers in his own manufacturing site
4. Any leakage from the „bath“ where the container are stored will be collected in the construction, which is bellow the „bath“, so there are not needed any underground collection/sampling tunnels

HISTORICAL REFERENCE

Manufacturing of the fuel rod housing for the first Czechoslovak NPP – A1,
which was done in the manufacturing premisses of our sister‘s company, STM POWER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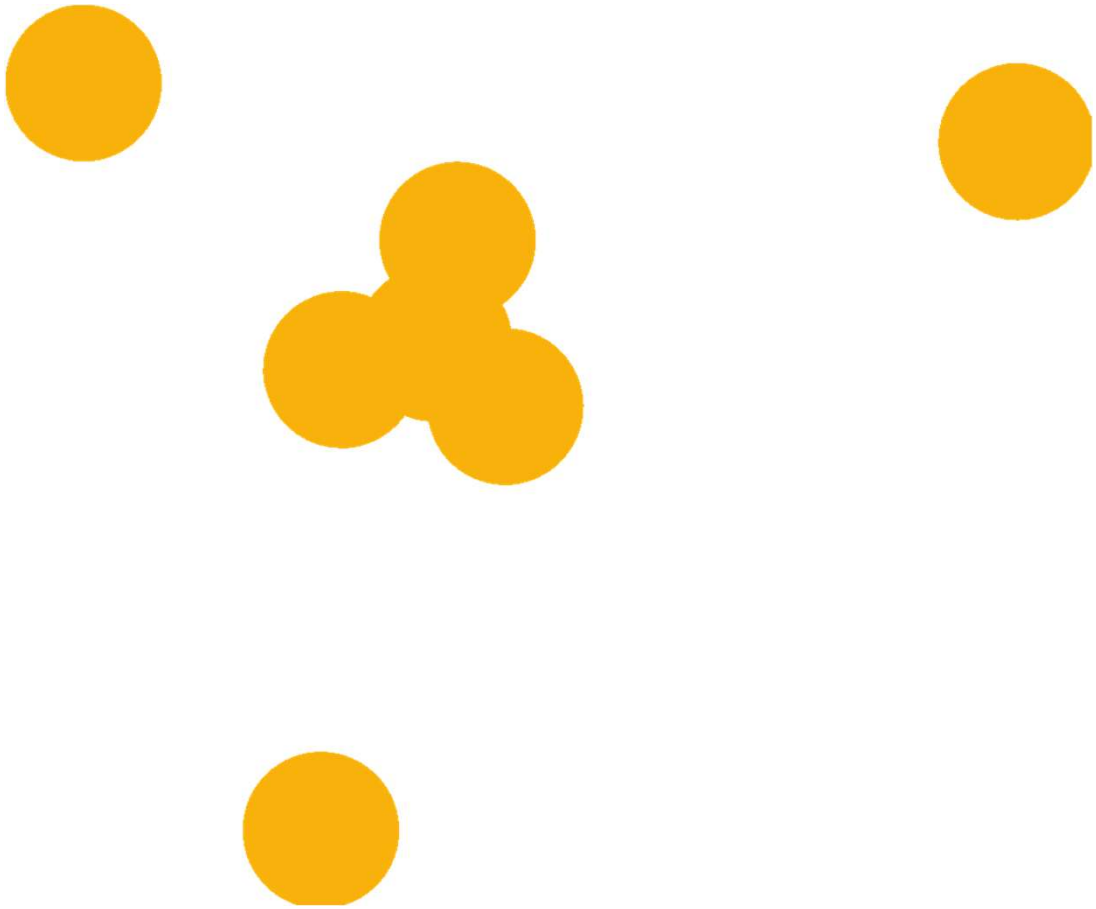

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