

## Mobile water treatment unit for the treatment of easily radioactive contaminated waste water

### Problem definition so far

There are countless combinations of waste water, which individually do not pose a technical problem for classic cleaning systems. In particular, radioactively contaminated variants with radionuclides (e. g. Co-60, Cs-137) cannot be satisfactorily conditioned for the currently existing wastewater treatment plants. On the one hand, there is a filter press that is capable of conditioning solids (e. g. concrete dust) or solid residues from wire saws or core drilling up to a residual moisture content of approx. 7 to 10 %. However, all dissolved components remain in the residual water and must be collected and treated using a different process. A subsequent drying of the filter pressing would be necessary in any case for disposal as radioactive waste.

The dirty water evaporators used in nuclear power plants (thermal evaporators or vacuum evaporators, e. g. from Loft) are able to safely condition the radiological impurities, but they fail completely when separating solids. If the solids content of the waste water to be purified is between 15 and a maximum of 30%, the maximum limit is reached and the concentrate produced must be collected and conditioned according to a further costly and high dose rate procedure. Evaporators and also thermal plants have been proven to have grown overgrown due to the disregard of these limits in the solids content in the heat exchanger due to the addition of micro-concrete on the inside of the pipe and become unusable in a short operating period.

### Idea

With a mobile cleaning system that is able to condition various combinations of impurities including radioactive contaminants. The waste produced should be processed to its final state and the purified water produced should be ready for disposal in the sense of a water-legal permit. Ensure the processing of small quantities (10 to 15 m<sup>3</sup>) and larger quantities on the basis of a reliable chemical and radiological waste water analysis of plants in operation as well as under the difficult conditions of decommissioning nuclear power plants.

### Applicsign-Solution

Our water treatment and decontamination module fully meets the requirements of the operators of nuclear facilities, with the accumulation of waste water with radiological load (research reactors, teaching facilities, state institutions) as well as those of nuclear power plants in decommissioning and treatment centres. problematic waste water (sedimented fractions, metal chips, radiological components in solution, fine concrete dust, oils, etc.) Usually in 200 litre drums can be prepared in shortest time according to the rules and conditioned (with approx. 7% residual moisture).

None of the cleaning and conditioning systems currently available on the market is able to produce clean water (discharge to the environment) and end-conditioned residues by combining different processes from waste water with different impurities. With our developed assembly we have succeeded in making the entire process energy-efficient, cost-effective, environmentally compatible and compliant with the applicable laws and regulations. The problem definition of the operators is thereby comprehensively solved.

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### Dimensions

L-W-H: 6 x 2.5 x 2.6 m  
Weight: 3.8 t

### Possible equipment:

Centrifuge for solids 1 pcs.  
various filtration units 2x 100%  
spec. hybrid compound mem. 2x 100%  
Collection and water tanks 3 pcs.

### Technical dates:

Pump performance: max. 5 m<sup>3</sup>/h  
Air supply: 10 bars  
Max. capacity 1.5 m<sup>3</sup>/h

### Short description TYPE 1000

applicsign's mobile water treatment unit is a system for the separation of undesirable solids, chemical and / or radiological components by mechanical, chemical or physical processes. The result of the wastewater treatment is water, which can be discharged from the radiological and the chemical point of view. This water does not require any further treatment. The resulting wasters are bound in the filter material, this filter material is combustible. The quality of the waste water to be treated and the determination of the atomic (radiation protection legislation) permit as well as the water law permit decide on the selection of the cleaning modules and the cleaning strategy. We offer this treatment of waste water from the dismantling of the nuclear power plants as a service and charge our water per cubic meter of incoming water

If you would like a customized offer, please feel free to contact us

### Advantage of our ISO container module

- Modular design for combination of various processes according to purity requirements
- Simple construction as part of the control area (indoor in the control area or outdoor docked at the container)
- Suitable for high heavy metal contents
- Water treatment and decontamination in-house
- No transports with contaminated waste water
- Meets the requirements of nuclear facilities
- Energy-efficient, cost-effective and environmentally compatible
- Cost planning / Forecast

### Applications expandable to separate

- Concrete sludge
- Heavy metals
- Modules for use in the control area of nuclear power plants or research facilities

### Field of application for a special treatment

- ✓ Nuclear Power Plant in deconstruction
- ✓ Intermediate storage facility
- ✓ Research reactor
- ✓ Training institutions
- ✓ Development center
- ✓ Waste management companies

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