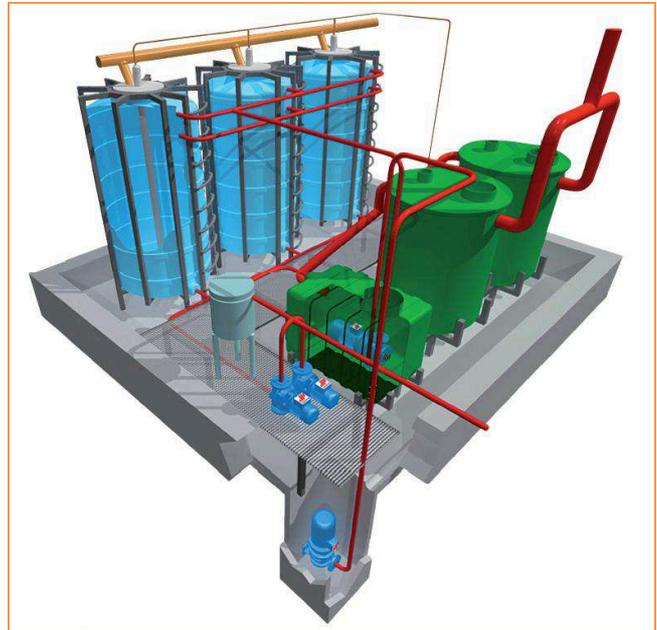


MONITORING AND DISPOSAL SYSTEM FOR RADIOACTIVE WASTEWATERS

WDMS NT-VK

MAIN FEATURES

- **Fully customizable system according to specific requirements**
- **Automatic system managed by remote PC**
- Detector: 2"x2" NaI(Tl) with MCA
- Measurement geometry: Marinelli beaker
- Lead shielding well
- Release pumps
- Safety devices against flooding
- Power supply switchboard with PLC and local emergency push-button
- Remote management software with virtual emergency button



DESCRIPTION

The diagnostic and therapeutic procedures involving radioactive substances, and their partial elimination through the patient's metabolism, require the mandatory use of controlled "hot" toilets before the patients are dismissed or during their hospitalization. This is necessary to hold the radioactive wastewaters in proper tanks for the required time before releasing them in the public sewers.

The **WDMS NT-VK** system is designed to collect and monitor radioactive wastewaters, which can be released only after their radioactivity drops below a defined value.

The **WDMS NT-VK** main components are the following:

- Purification group: Imhoff tanks designed to collect the wastewaters coming from the wards and to separate liquid from solid waste
- Sorting group: pumps and conduits system designed to pour the wastewaters in the decay tanks
- Decay group: decay tanks array to hold and stock the wastewaters until their radioactive level drops below a defined value
- Sampling system: valves and pumps to perform the washing of the sampling circuit and the sampling of the stocked wastewaters, allowing the measurement in Marinelli geometry
- Release group: depending on the monitoring results, the wastewaters contained in the sampled tank can be released in the sewers
- Safety groups and devices: they mainly consist in guard levels - installed in all the system critical stages - which stop the wastewaters flow in case of detected anomaly, and a safety flooding well which can collect and stock wastewaters potentially overflowing from any system group

The entire system is locally managed by a PLC, which is commanded by a remote management software installed on a PC.

Through the interactive synoptic interface of the software the operator can activate the system automatic cycles, set the measurement parameters, visualize the alarms and release archives, and monitor the system's status (filling levels, pump stages, measurements, alarms). Depending on the measurement results, and as defined by the procedures in force, the operator can also activate the monitored wastewaters release in the sewers.

TECHNICAL SPECIFICATIONS

System layout:

Some components of the system, mainly the number and the type of the decay tanks, can change according to specific installation requirements; however, the groups of the systems, as described in this document, as well as the functioning logic, are essentially the same.

Radiological monitoring specification:

- Detector 2"x2" NaI(Tl)
- MCA electronics
- 1 liter Marinelli beaker complete of connections to the system
- Lead well: 5 cm thickness

SAFETY DEVICES

Redundant critical elements:

The elements of the hydraulic system that manage the flow of the wastewaters (pumps, purification tanks, etc.) are designed to minimize the risks of overflowing due to any malfunctioning, and to guarantee the operational functioning of the system also during maintenance procedures.

In particular, the critical elements are installed in couples: if the first Imhoff tank gets clogged, or if it needs maintenance, the second tank allows to continue the normal operations without risks or interruptions. This redundancy is applied also to the sorting pumps, which works alternatively even in normal functioning, to minimize their wear.

Containment group:

It consists in a perimetral waterproof containment barrier built on the floor, able to contain wastewaters potentially flooding from any system stage and to convoy them to a safety flooding well; from here, under the operator's command, the wastewaters can be poured back in the sorting group through a dedicated pump.

Level signal systems:

These devices indicate to the operator the progressive filling of the decay tanks, the sorting group and the safety flooding well.

OPTIONS

- SCA as an alternative to the MCA