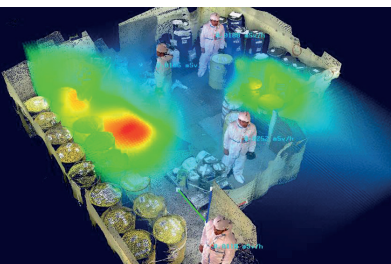
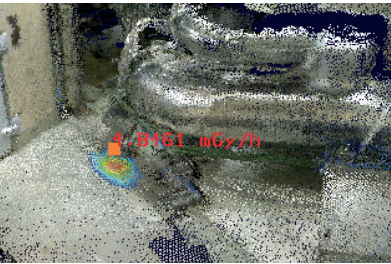
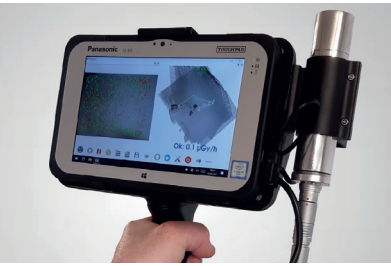


MANUELA™

Construction of 3D radiological and topographical maps



Scope

3D radiological mapping

- Simultaneous 3D radiological and topographical mapping of facilities
- 3D reconstruction of the existing environment in which the radiological measurements (dose rate, gamma spectra of emissions) performed by the operator are very precisely positioned

Spatial identification of the location of hot spots and their characteristics

- Visualization of the distribution of the gamma radiation intensity within the premises or the cell at the time of measurement
- Spatial identification of irradiation sources location and characteristics

Assessment of the accumulated operators dose performing interventions

- Interpolation and back-projection of data to simulate intervention scenarios and optimise workstations
- Integration of virtual operators (avatars) into the reconstructed mapping to assess the accumulated dose of personnel performing interventions within the framework of ALARA approaches

Transmission of information to teams prior to performing intervention

- Present the worksite environment to the operators, rehearse and repeat the gestures, understand the risks and thus make the intervention more reliable
- Export of data to a virtual reality interface for immersion of operators into the workspace

Advantages

- **SAFETY**
Conducting risk and dose rate optimization studies
- **QUALITY**
Ensuring the reliability and traceability of radiological measurements and their spatial positioning
- **PERFORMANCE**
Enhancing the quantity of information transmitted to teams performing interventions
- **UNIVERSALITY**
Adaptability to all nuclear environments
- **EXPERTISE**
Analyzing data using specific post-processing software

Key data

- **Autonomy:** 4 hours of scanning
- **Weight:** approx. 1.5 kg
- **Measurement probes:** dose rate and gamma spectrometry (CdZnTe)
- **Data processing:**
 - Back-projection of radiological gamma distribution on a 3D model
 - Visualization in real time of the 3D reconstruction and of radiological measurements
- **Data export:**
 - Interface with various different modeling tools for the estimation of activities
 - Interface with Virtual Reality tools (MANUELA™ VR): prejob briefing, training, etc.

Portable system that is autonomous and easy-to-use, to perform real-time 3D radiological mapping

Our services

- Comprehensive service for the constitution of input data
- Inspections conducted at your premises by an experienced team working closely with your own team
- Provision of data (radiological and physical readings/measurements), which remain your property



MANUELA™ is patent-protected

Contact us to discover the range of possible applications and services with MANUELA™

Our references

Mapping of facilities

- **Chinon and Fessenheim NPPs:** Mapping of different areas within the reactor building with the aim of identifying hotspots, validating the marking out of orange zones and making sure the radiological input data is reliable in anticipation of maintenance projects



Preparation of worksites and ALARA studies

- **Cattenom NPP:** Provision of 3D mapping as part of the ALARA study for the Steam Generator replacement worksite
- **Fessenheim NPP:** Participation in the ALARA study for maintenance activities
- **CEA Marcoule:** Simulation of worksite layout based on 3D mapping
- **Orano La Hague:** Radiological mapping as part of the preparation work for a dismantling project



Design studies

- **Tricastin NPP:** 3D mappings performed as part of the project to modify biological protection



Watch our presentation video for MANUELA™

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