FUSION FOR ENERGY

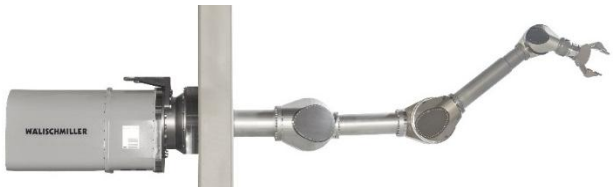
TECHNOLOGY OFFER



TELBOT® Radiation-hardened Robotic System

Wälischmiller Engineering offers TELBOT®, a semi-autonomous, modular robotic system for remote handling in radioactive, contaminated and underwater environments. TELBOT® is designed for high availability, precise teleoperation and safe execution of tasks in hot cells and other hostile areas in the fusion and fission industry where direct human access is impossible or uneconomical.

Through their collaboration with Fusion for Energy (F4E), Wälischmiller has adapted their system to address specific fusion remote handling maintenance requirements of the ITER Divertor Remote Handling System and Blanket Remote Handling System.



The technology

- Modular robotic arm architecture with selectable arm lengths, joint modules, drives and mounting concepts.
- Sealed arm design: motors/electronics in drive unit; motion via bevel gears and concentric tubes — no cables in or on the arm.
- Installation options: wall, floor, ceiling, rails, bridge/carriage/telescope systems or mobile units.
- Control via Joystick console or Haptic Input Device.
- Typical envelope: up to 8 axes; approx. 5–100 kg payload; 1.200–4.500 N gripper force; ~0.2 mm repeatability.

Advantages and Potential Applications

- Designed for radiation, heat, and contaminated hot-cell operation. Can withstand up to 1.2 MGy cumulated dose rate.
- Cable-free, smooth and sealed arm/joint bodies reduce snagging risk and simplify cleaning and decontamination.
- Precise teleoperation in Cartesian space with force feedback, variable speed, overload protection, collision avoidance, teach/repeat routines and straight-line tracing.
- Typical uses: inspection, maintenance, repair, decontamination, reprocessing service tasks, fuel-rod handling, decommissioning and underwater work.
- Fusion relevance: active cell remote intervention, hot cell tooling, waste handling, mock-up training and procedure validation.

Collaboration opportunities

Wälischmiller offers engineering support, customization and integration services in relation to robotic systems for extreme industrial environments. TELBOT®'s modular architecture enables adaptation to customer-specific operational environments requiring dexterity paired with high radiation resistance.

Fusion for Energy Technology Transfer Programme

Email:technologytransfer@f4e.europa.eu