



Supplement of

Development of an automated milling system for the decontamination of the wall surface in a nuclear power plant

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Development of an Automatic Milling System for the Decontamination of the Wall Surfaces in Nuclear Power Stations

Founded by the Federal Ministry of Education and Research (BMBF)

1. Research at KIT-TMB in ROBDEKON

2. Aim of the Automatic Milling Tool

During the reasearch project ROBDEKON the participans are working on the automatisation of the decomissioning processchain. At the moment this tasks are carried out manually.







- (a)
- Autonomous environmental exploration and radiation measurement (a)
- Digitalisation and modelling using BIM (b)
- Automatic decontamination (mobile platform and milling tool) (C)
- Automated measurement of contaminations on surfaces (d)

- Disadvantages of the current approach
 - Personnel deployment by machine aided decontamination
 - Monotonous work with little communication that must be carried out for hours
 - Production of secondary waste



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\rightarrow Automatic Milling of Contaminations on Flat Wall Surfaces

- Reducing of decontamination work and time
- Relief of employees and reduction of personal radiation exposure
- More flexibility to reach difficult areas using automatic mobile platform

3. Technical Requirements and Practical Implementation

- Automatic decontamination of wall surfaces using a milling tool with impact lamellas
- Automatic lateral motion of the milling tool using a compact DC-Motor
- Robust milling process using a speed controlled Servo-Motor
- Accurate horizontal positioning using an electro cylinder which keeps the acting force on the set value



 \rightarrow Measuring acting force on the tool and distance from the wall in order to perform an optimal automatic milling process



Fig. 2: Toolhead with impact lamellas

Fig. 3: Speed robustness of the Servo-Motor during the milling process

Fig. 1: Structure of the milling tool with sensors and actuators

4. Outlook

- Automation of the robot platform to position the milling tool in a correct location
- Programming the compact DC-Motor in order to automat the lateral movement
- **Controller implementation for the Electro-Cylinder** in order to keep the acting force on the set point

Project Information







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