Karlsruhe Institute of Technology

Institute for Technology and Management in Construction
Technology and Management of the Decommissioning of Nuclear Facilities
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Research project – Innovative Demolition Of Reinforced Concrete Components (INAS)

Sponsored by the Federal Ministry of Education and Research

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Background

- There is currently no procedure available for the dismantling of reinforced concrete in a single working operation for depths of up to 30 cm (e.g. in cracks), so that the surfaces can be released afterwards.
- The requirement of an universally deployable system for the dismantling of reinforced concrete in a single working operation can without having to change the system or its components.
- The project is a cooperation between the Karlsruhe Institute of Technology (KIT), represented by the Institute of Technology and Management in the Construction as well as the Institute of Automotive Systems Engineering, and Herrenknecht AG.
- Project duration: October 2009 through September 2012

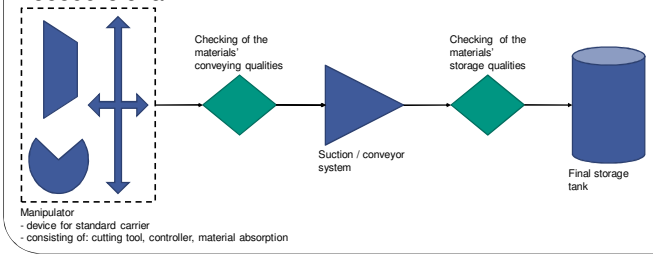
Partners

tmb

MOBIMA
LEHRSTUHL FÜR MOBILE ARBEITSMASCHINEN

HERRENKNECHT
Tunnelvortriebstechnik

Procedure chain



Research Program

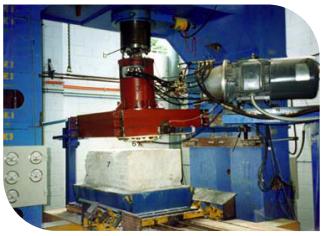
- Illustration of the comprehensive procedure chain from the demolition of reinforced concrete to the appropriate packaging for the final disposal site in contaminated or activated areas – with respect to the prevention of secondary waste and minimization of operating staff
- Separate investigations of the optimum demolition technologies for concrete and reinforced concrete and consequent combination of both procedures in one cutting tool
- Development of the tool cavity with automatic process control and an automated conveyor system
- Implementation of monitoring functions for the supervision of the demolition as well as conveyor and disposal characteristics
- Test realization in situ and optimization of individual parameters with respect to the entire process chain

Current State

- Verification of the oscillating disc cutter (ODC) technology for the demolition of concrete
- Basic experiments of cutting reinforcements with standard tools and cutting raw materials
- Determination of process parameters and reaction forces for both demolition technologies
- Development of the cutting tool concept

Advantages & Special Features

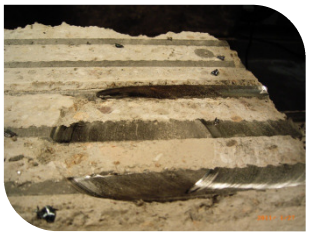
- Reinforced concrete can be dismantled without changing the system or its components
- Direct absorption, transport, and packaging of the waste
- Avoidance of secondary waste
- Modular construction method, device for standard carrier (e.g. mini excavator)
- High dismantling performance for unreinforced concrete



ODC experimental setup
Quelle: CRC Mining, AUS

ODC – ring cutter
Quelle: CRC Mining, AUS

Milling tool for concrete



Cut concrete

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