

# Remote Handling Technologies

**TECNUBEL**  
Your project needs our care

**TRANSNUBEL**  
Logistics through technology

**ECS**  
Your Safety, Our Skill

# PRESENTATION OF THE ACTIVITIES

## Services related to remote handling techniques

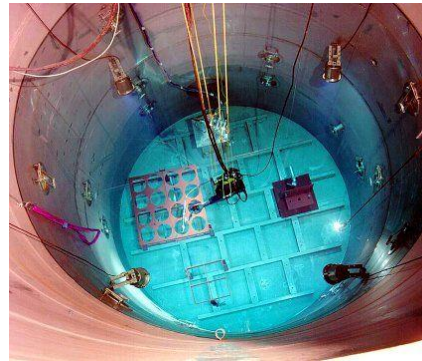
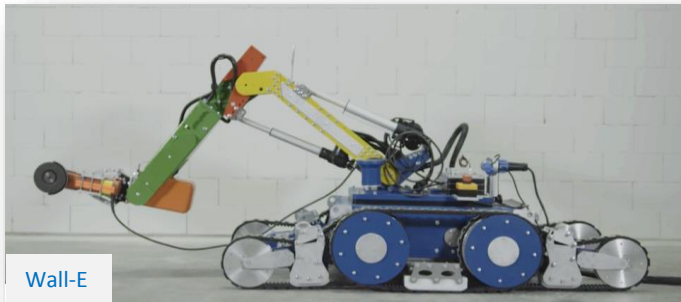
- Planning and implementation of remote handling techniques in controlled areas
- Maintenance services
- Measurement, sorting and packaging of high radioactive waste
- Disassembly and dismantling
- Consultancy related to the design, development and construction of remote handling equipment



# PRESENTATION OF THE ACTIVITIES

## Equipment

- Electric manipulators (master and slave EMSM2B and EMSM3B)
- Mechanical manipulators (MMSM)
- Robotised vehicle ANDROS (remote controlled)
- Various remote handling tools



# QUALIFICATIONS

## Qualifications of Tecnubel

- Professional experience in techniques for remote controlled interventions in highly radioactive areas with robot manipulator arms (master/slave)
- Full knowledge of all the remote controlled equipment at KHG Karlsruhe (pompiers du nucléaire)
- Experience in the use of caterpillar vehicles (Top-Tec) for the dismantling of reactor components
- Interventions on open cells, transport with shielded containers, decontamination techniques etc.

# QUALIFICATIONS

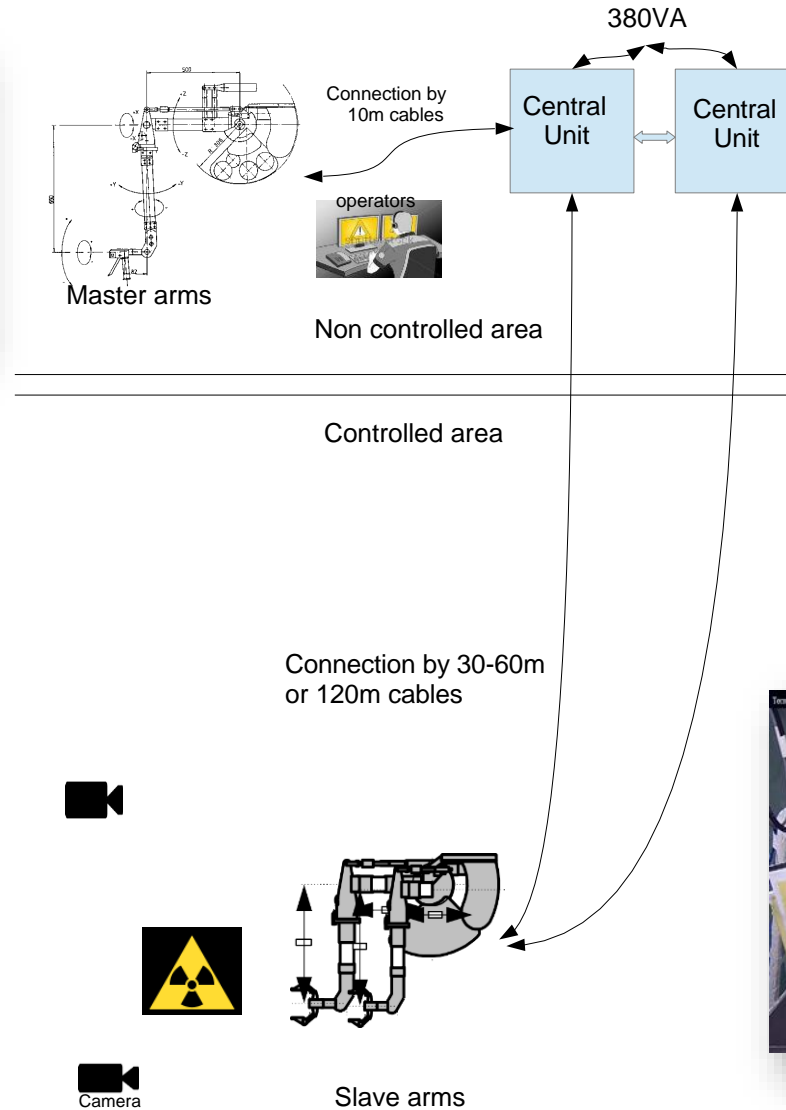
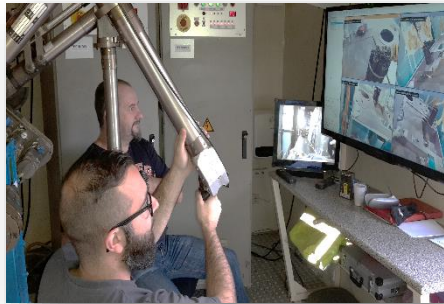
## Qualifications of the operators

- Safety Culture
- Radiation Protection
- First Aid
- Overhead Crane Operator





# ELECTRO MASTER SLAVE MANIPULATOR



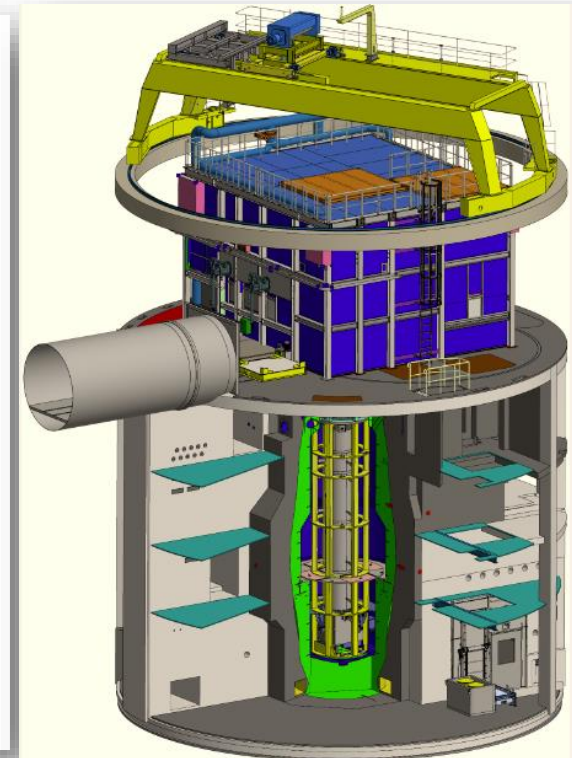
# ONGOING PROJECTS

## Dismantling Biological Shield KNK and Hot Cells – KTE (former WAK)

### KNK Teststand

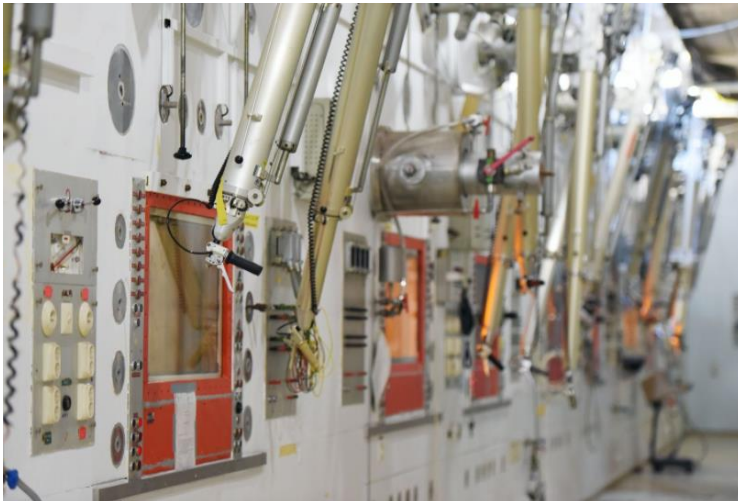
- Test der Maschinen und Werkzeuge
- Ausbildung der Fernhantierer
- Nachweis der Machbarkeit gegenüber dem Gutachter

Tecnubel



# ONGOING PROJECTS

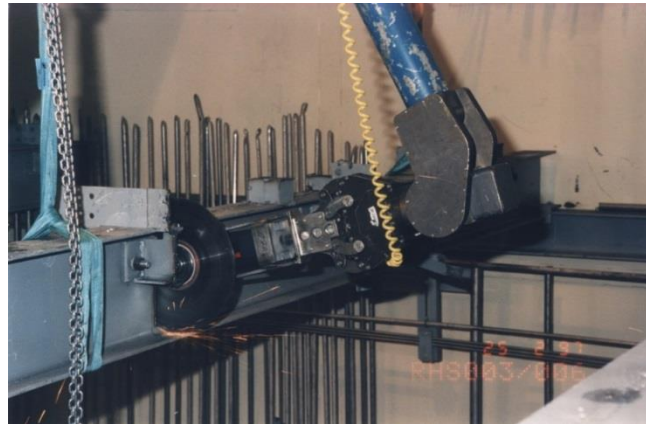
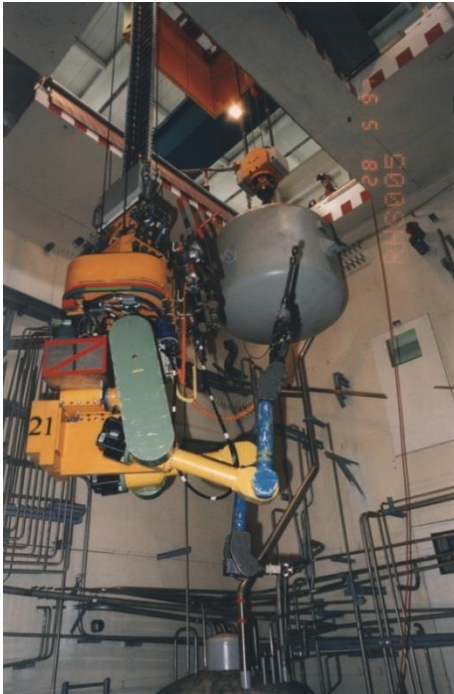
## Heißen Zellen - KTE





# PROJECTS

Remote controlled dismantling of the pilot reprocessing plant  
StiWAK with electro master slave manipulator – Karlsruher  
Institut für Technologie (KIT)



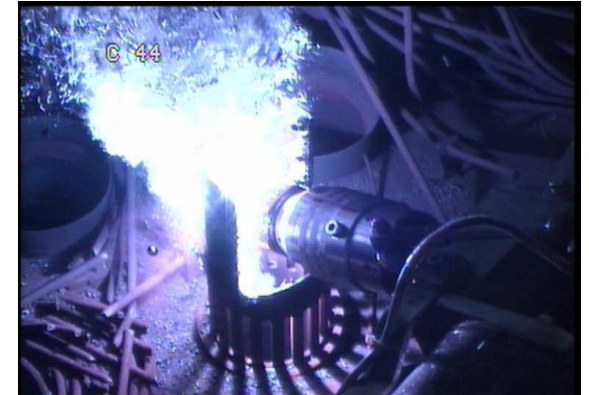
# PROJECTS

Remote controlled dismantling with Top-Tec Bagger – Kahl NPP



# PROJECTS

Operators for remote controlled dismantling – Karlsruher Institut für Technologie (KIT)





# PROJECTS

## Treatment of radioactive waste – Gösgen NPP





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## Treatment of radioactive waste – Gösgen NPP



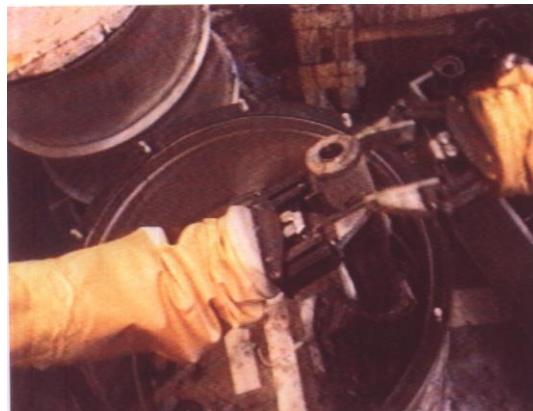
# PROJECTS

Remote controlled sorting and size reduction of high radioactive waste – Tihange NPP



# PROJECTS

Remote controlled dismantling, repackaging and size reduction of Pall filter units – Unterweser NPP





# PROJECTS

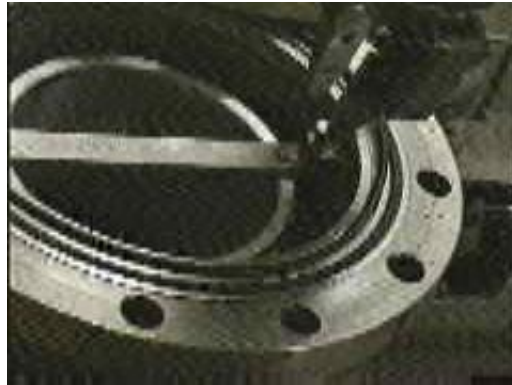
## Dismantling Biological Shield KNK and Hot Cells – KTE (former WAK)





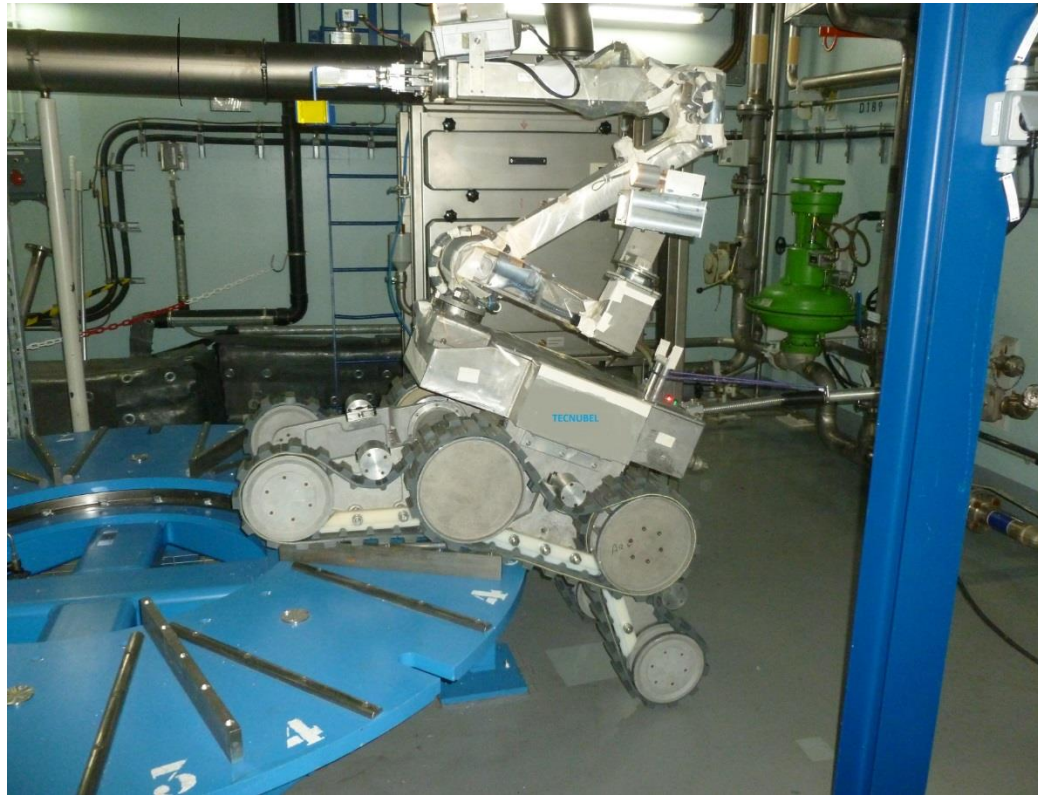
# PROJECTS

Remote controlled salvage of a radiation source –  
Unterweser NPP



# PROJECTS

## Intervention of the Andros robot – Tihange NPP



# References

**Firefighters Nuclear**

**Remote Controlled Welding on Primary Components**

**Remote Controlled Inspection of High Active Waste Drums**

**Remote Controlled Salvage of Radiation Sources**

**Examination Study of Manipulators for the Decommissioning of the Pilot Reprocessing Plant Karlsruhe**

**Personal for Remote Controlled Work at PHEBUS-Test facility**

**Remote Controlled Welding**

**Delivery of Remote Handling Equipment for StiWAK Test facility (KSNV)**

**Remote Controlled Sorting, Inspection and Size Reduction of Radioactive Waste**

**Remote Controlled Salvage of Radiation Sources up to 50 Sv/h**

**Remote Controlled Dismantling, Repackaging and Size Reduction of Pall Filter Units**

**KHG Karlsruhe**

**EDF**

**Unterweser NPP**

- Hoechst
- Nuclear Research Centre Rossendorf
- COGEMA/Marcoule
- Unterweser NPP

**Karlsruher Institut für Technologie (KIT)**

**CEA Cadarache**

**EDF/UTO**

**Karlsruher Institut für Technologie (KIT)**

**Tihange NPP  
& Doel NPP**

**VKTA Rossendorf**

**Gösgen NPP**



# References

From 02/08 till 12/08	Schulung der WAK-Fernhantierer, Einsatz des Fernhantier-Personals,...	WAK
10/10 till 11/10	Conditioning remote handling highly radioactive waste	E.ON Kernkraft - KKU
01/11 till 12/11	Fernhantierungsarbeiten/-leistungen - Jahresbeauftragung	WAK
01/12 till 12/12	Waste treatment	E.ON Kernkraft – KKG
01/13 till 12/13	Fernhantierungsarbeiten/-leistungen	WAK
09/14 till 12/14	Überlassung Mitarbeiter M.Escames & D.Scheck Fernhant. Exp.	WAK
09/15 till 03/16	Remote Rad. Waste Handling	ENGIE-Electrabel Tihange NPP
ongoing 2016	Personalgestellung – Experten in Fernhantierung	KHG
ongoing > 2020	Rückbau KNK (Biologische Schild) und Heiße Zellen	EWN KTE (WAK)
ongoing > 2020	Wartung & Erhaltung sämtlicher Fernhantierung Geräte	JRC Karlsruhe