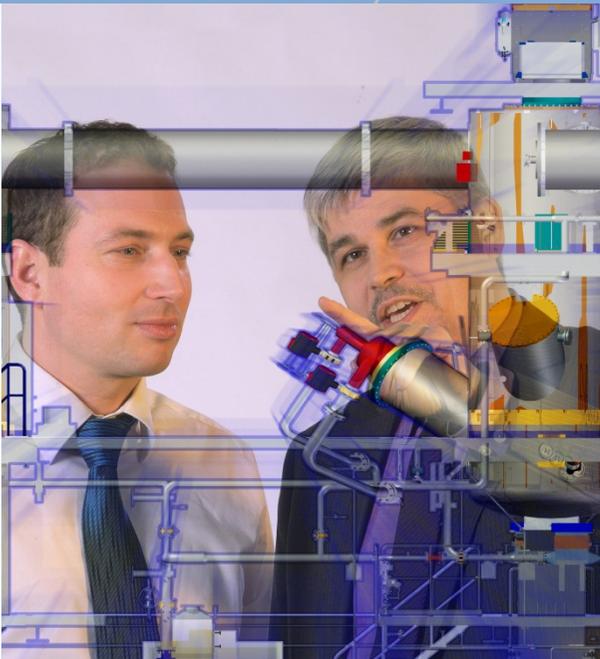


# NUKEM Technologies

Your Partner for Nuclear Engineering Solutions



## More than 50 Years in Nuclear



1960

- NUKEM founded

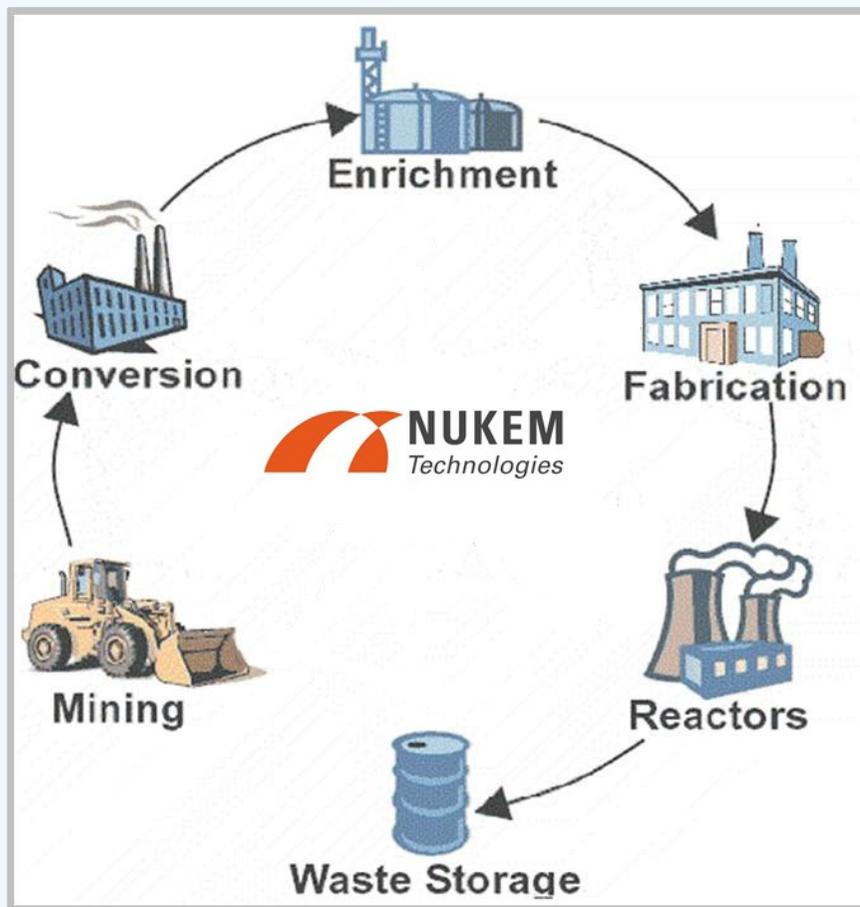
2006

- NUKEM Technologies formed

Today

- 270 Employees
- € 262 m Order backlog
- ROSATOM shareholder

# Outstanding Experience Based on Long History



- From the very beginning of the nuclear industry, NUKEM has been involved in
  - own fuel element production facilities, plant design, workshops
  - comprehensive, valuable R&D work
  - complete spectrum of engineering/supplier services for customers for new build, operation, refurbishment, decommissioning
- Waste Management since 50 years
  - Research Facilities, Power Reactors, Reprocessing
  - other Fuel Cycle Industries

## NUKEM Technologies Today



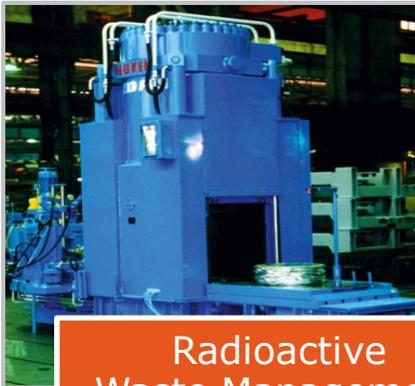
NUKEM Technologies  
GmbH

- Turn-Key-Business

NUKEM Technologies  
Engineering Services  
GmbH

- Design and delivery of  
technological solutions

## Our Key Business Sectors



Radioactive  
Waste Management



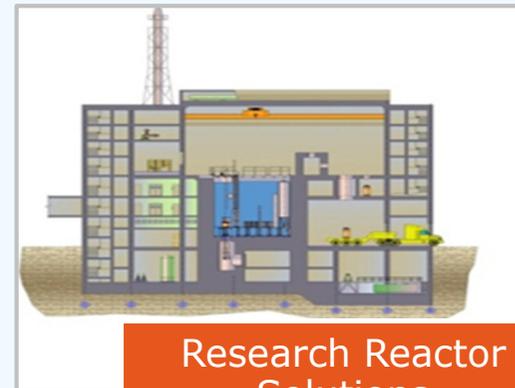
Spent Nuclear Fuel  
Solutions



Decommissioning

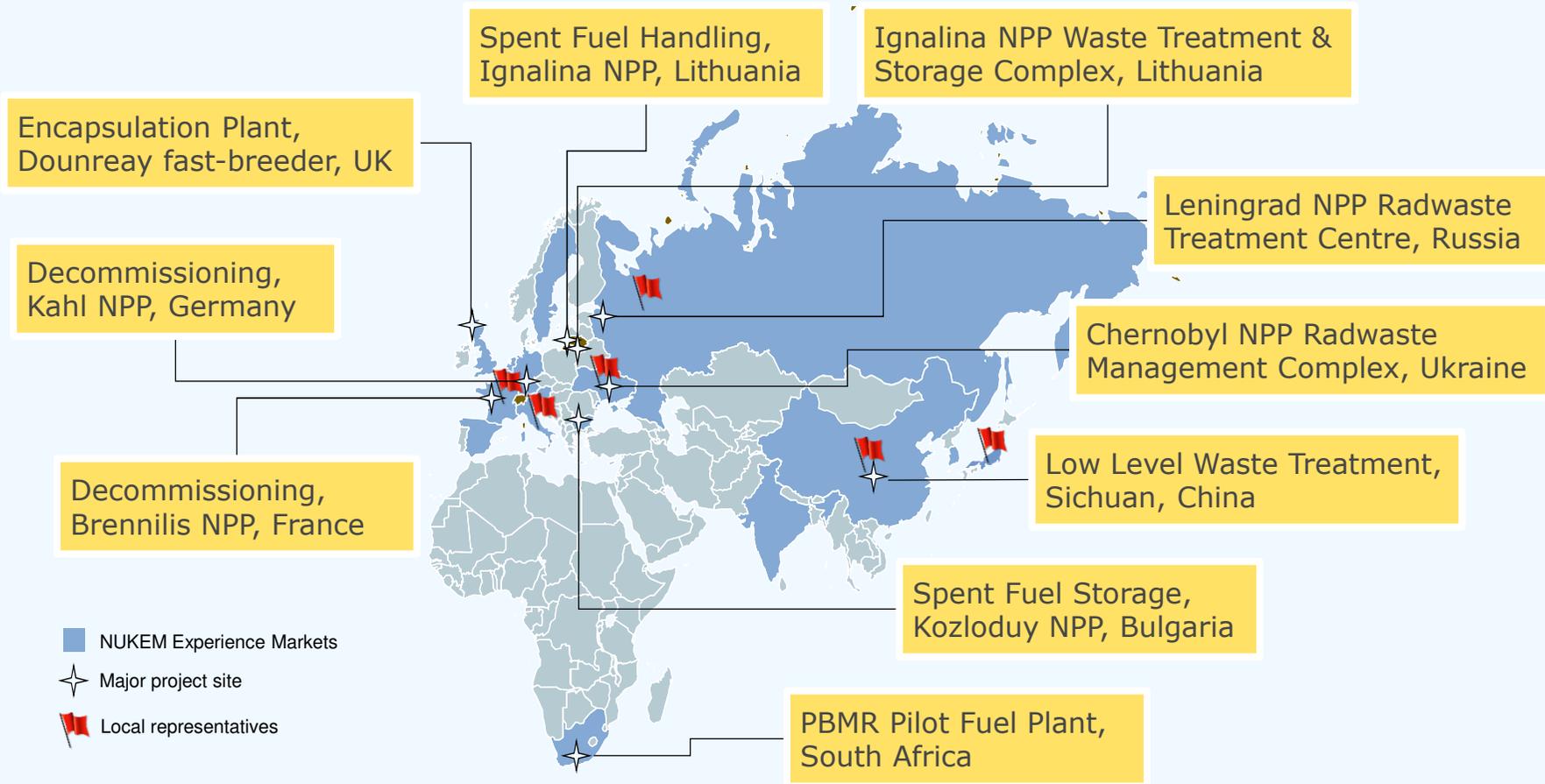


Operational Support  
& Consulting



Research Reactor  
Solutions

# A Proven Track Record of Large and Complex International Projects



## Radioactive Waste Management



- From Concept Development to Turn-key Construction, including overall Waste Management and Classification
- Radioactive Waste Treatment Technologies and Facilities for all types of waste generated in nuclear installations
- Modularised Waste Treatment Centre to satisfy client (& Regulator) requirements for all wastes arising
- Our Engineers are experts on all types of civil and research reactors generated waste types and can advise on best International practices for clients
- Design, Manufacture & Supply of bespoke Monitoring Systems, with ongoing customer support

## Radioactive Waste Management Reference Project: Ignalina NPP, Lithuania

- Scope of contract: Turn-key construction of a waste treatment center for solid radioactive waste
  - Retrieval and sorting / segregation facilities
  - Treatment facilities like cementation, high-force compaction, incineration
  - Storage facilities
- Contract Value: € 179 m
  - Ignalina International Support Fund (IIDSF); managed by EBRD
- Duration: 2005 - 2018

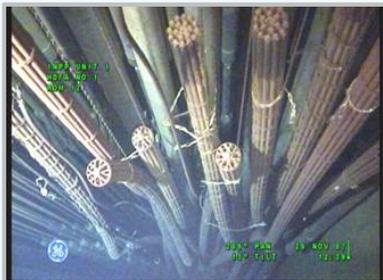


## Radioactive Waste Management Other References

- Improvement of Overall RadWaste Strategy in Ukraine, contracted by EC
- Low-Level Organic Waste treatment, China
- Eurex Saluggia fuel pool cleaning, Italy, contracted by Sogin
- RAW treatment facility, Rovno/Zaparozhe NPPs, Ukraine, contracted by EC
- RAW Monitoring system, Ispra, Italy, contracted by EC
- RAW Treatment Centre, China
- Turn-key design, delivery and commissioning of process facilities, Kursk, Russia



## Spent Nuclear Fuel Handling



- Comprehensive range of solutions, from concept studies to design and delivery of complete storage facilities
- Experienced in all kinds of storage technologies, eg Casks, Vaults and Underground facilities
- In-house capability for Technologies for characterization of spent fuel elements, incl:
  - Fuel assembly monitoring systems, and
  - Defect classification systems
- Systems for handling and preparation for storage of defective and heavily damaged spent fuel elements
- Implemented complex SNF projects for a number of clients around the world

## Spent Nuclear Fuel Handling Reference Project: Kozloduy NPP, Bulgaria

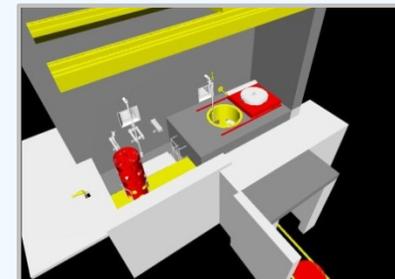
- Scope of contract:
  - Turn-key construction of storage building for preparation, control, storage and monitoring of spent fuel elements
  - Delivery of 34 CONSTOR® casks for 84 VVER-440 spent fuel assemblies each
  - Contract amendment for storage extension
- Contract value: € 70.8 m
  - Consortium with GNS, led by NUKEM
  - Financed by the Kozloduy International Support Decommissioning Fund; managed by the EBRD
- Duration: 2004 – 2011



(The facility was opened by the Bulgarian Prime Minister in May 2011. The acceptance certificate was issued in October 2013.)

## Spent Nuclear Fuel Solutions Other References

- Interim Spent Fuel Storage Facility including Heavily Damaged Spent Fuel Retrieval and Encapsulation and Defect Fuel Classification System for Ignalina NPP, Lithuania
- Spent Fuel Storage Facility for Dukovany NPP, Czech Republic
- Compact Spent Fuel Racks for Obrigheim NPP, Germany
- Spent Fuel Burn up Meters (FAMOS) for
  - Reprocessing Plant Karlsruhe, Germany
  - Interim Spent Fuel Storage CLAB, Sweden
  - Kola NPP, Russia
  - German NPPs Phillipsburg, Isar II and Stade



## Decommissioning



- From 'Design for Decommissioning' concept development to overall implementation Contractor
- Baseline Decommissioning planning, as well as Environmental and Safety Reports, a key feature of our D&D Projects
- Waste Inventory Assessment as well as Decommissioning Database services available depending upon client requirements
- Complete package of additional services, including Facility Upgrading, Decontamination, Site Characterization and Remediation
- Advice on waste containers, size, design and transport is available from our in-house experts

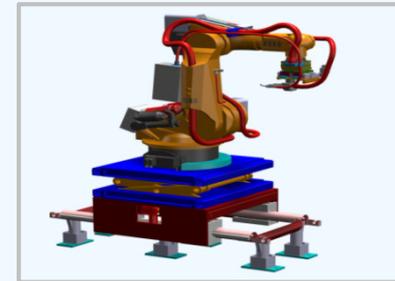
## Decommissioning Reference Project: Kahl NPP, Germany

- Scope of contract: Total responsibility for the decommissioning of Germany's first nuclear power plant
  - Removal of the inner and outer reactor building concrete structure
  - Dismantling of contaminated systems
  - Removal of the steel-made reactor containment and free release
  - Dismantling of controlled area buildings of the plant
- Contract value: € 58.4 m
- Duration: 2001 - 2008



## Decommissioning Other References

- Hanau Fuel Element Production Facility clean-up, Germany
- Decommissioning and dismantling of Buildings B9.0/ B9-2, Ignalina NPP, Lithuania
- BWR Steam Dryer segmentation, Würgassen NPP, Germany
- MZFR Reactor Vessel Dismantling, Karlsruhe, Germany
- Design for remote reactor dismantling, Brennilis NPP, France, contracted by EDF



## International Project Management



- From our base in Germany, NUKEM Technologies is an internationally experienced company in nuclear turn-key construction projects
- Project Management is a key factor in our overall success, and is therefore a cornerstone of NUKEM Technologies' offer to our clients
- NUKEM Technologies applies effective project management skills to meet the highest customer quality needs, schedule compliance and safety
- As part of Rosatom NNB projects, NUKEM Technologies' scope to be delivered using up-to-date 'Multi-D' program management tools.

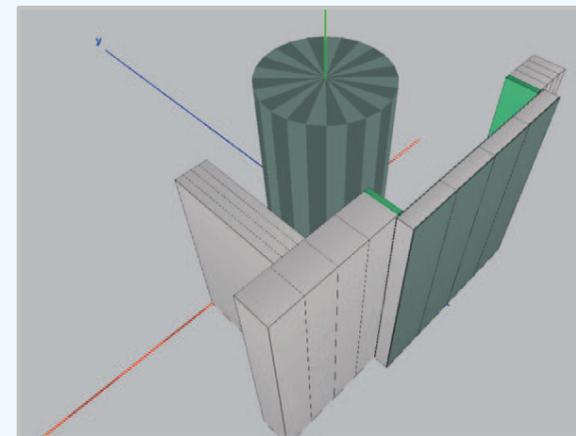
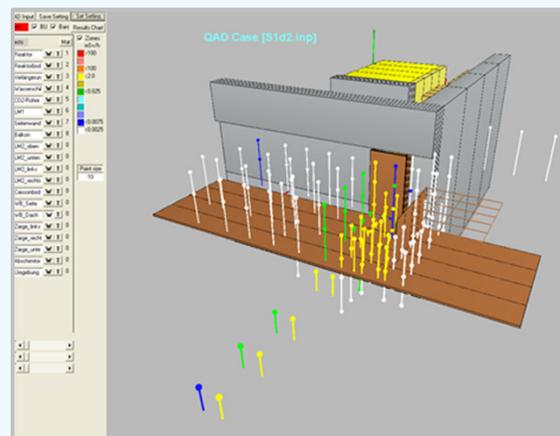
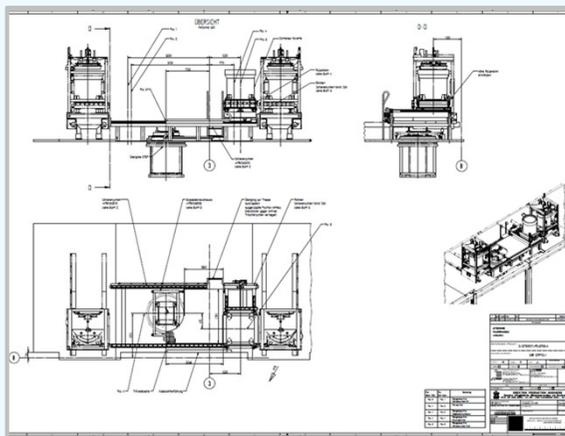
## Engineering & Consulting



- Process & Mechanical Design Solutions
- Waste Flow & Facility Optimization
- Radiation & Fire Protection
- Safety Assessment
- Instrumentation & Automatisations
- Radiation Measurement Systems
- Technical Documentations
- Project Management Services

## Engineering & Consulting Examples Projects

- Hardware and software retrofit of the container measuring station at AXPO's Beznau NPP, Switzerland
- Preparation of a safety report for storage facilities at AXPO's Beznau NPP, Switzerland
- Design Review of a waste treatment center for the Atucha II NPP, Argentina



# International Brand & Track Record

## Proof of Quality Engineering



## NUKEM Technologies is Supplier to





**Thanks for your attention!**