UJV Rez, a. s.

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Profile

The company is primarily engaged in the field of applied research as well as engineering and design material conditions, conceptual and detail designs, radioactive and non-radioactive waste management and specializes in the development and production of radiopharmaceuticals. The company is also a recognized and respected member of three tenths of international organizations and associations and involved in a number of technology platforms within transnational structures.

UJV Rez, a. s. is the 100% owner of the companies grouped into the UJV Group, which is composed of the Ustav aplikovane mechaniky Brno, s.r.o. (www.uam.cz), Vyzkumny a zkusebni ustav Plzen s.r.o. (www.vzuplzen.cz), EGP INVEST, spol. s r.o. (www.egpi.cz), Centrum vyzkumu Rez, s.r.o. (www.cvrez.cz).

Keywords

engineering and design, nuclear energy, nuclear reactors, VVER/PWR, nuclear power plant operation, nuclear safety and reliability, material testing and structural analyses, LTO, radioactive waste, decommissioning, PET and SPECT radiopharmaceuticals, PET/CT, fluordeoxyglucosa

Specialization 1

Nuclear safety and reliability

CONTACT PERSON

Division Nuclear safety
and reliability
Phone: +420 266 172 457
EMAIL: safety@ujv.cz

Number of relevant employees, out of which involved in R&D

81/65

Main Projects

Thermohydraulic analyses.
Severe accident phenomenology research.
Radiation safety (spread and deposition modeling, radiation situation forecasts)
Modeling and visualisation - 3D models of NPP systems and components.
Reliability and risk analyses, PSA.

Research solutions put into practice

Apart from performing analyses and developing methodologies we develop software tools for neutron-physics calculations, core monitoring systems and complex frameworks for core reshuffling.
ANDREA - core physics code for neutron-physical calculations for nuclear reactor cores.
SCORPIO - core monitoring system for VVER-440 reactors.
QUADRIGA - graphical user interface for automating data library generation.
OPTIMAL – automated reshuffling optimization tool.
ADÉLA - Graphical tool for reshuffling optimization and ANDREA workflow automation.
KIRKÉ - tool for automated conversion of vector (CAD) drawings into HELIOS geometry inputs.

Specialization 2

R&D activities for nuclear reactors in operation and for nuclear reactors of new generation and small nuclear reactors.

CONTACT PERSON

Division Nuclear safety
and reliability
Phone: +420 266 172 457
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Number of relevant employees, out of which involved in R&D

81/65

Main Projects

Research of small nuclear reactors and the possibilities of their use in the energy sector of the Czech Republic.
ALLEGRO fast gas-cooled reactor project and the analysis of the application of generation IV reactors in the Czech Republic.
Applied research and experimental development in the field of support for fuel cycle back end.

Research solutions put into practice

Preparatory for demonstrator of high-temperature fast helium-cooled reactor.
Processes and technologies for liquid radioactive waste solidification (fixation) into different matrices.
High-temperature technologies (cold crucible, molten salt oxidation).
Separation and absorption processes for radionuclides.
Radioactive waste disposal – methods for evaluating migration properties and study of stability / degradation of engineering barriers over time and in mutual interaction with the environment.
Spent fuel reprocessing technologies for generation III and IV reactors.

Specialization 3

Integrity assessment and technical engineering for the needs of improving the safety and lifetime of nuclear power plants.

CONTACT PERSON

Division Integrity and Technical Engineering
Phone: +420 266 173 670
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Number of relevant employees, out of which involved in R&D

171/60

Main Projects

Strategy for the safe long-term operation management for Ukrainian nuclear power plants.
Evaluation of the technical conditions and lifetime extension of reactor and NPP equipment qualification for aggressive environment for NAEK company (Ukrainian NPP operator).
Evaluation of mechanical properties of radioactive materials and NPP components (Czech Republic, Great Britain, Korea, IAEA, Finland).
NPP facilities qualification to the external environment and seismicity (for IAEA, NUGEQ, EQDB, NAEK Energoatom).

Research solutions put into practice

Materials for nuclear reactors:

- Implementation of experiments under surveillance programs of NPP – testing of mechanical properties of irradiated materials, including determination of the impact of interaction with the environment (e.g. autoclave testing);
- Testing of mechanical properties of advanced materials for generation IV reactors (e.g. ODS steels, Ni alloys);

Testing of the impact of the environment, irradiation, and different types of load on material life;
Ageing simulation of weld joint materials and evaluation of related changes of mechanical properties.

Specialization 4

Hydrogen technologies in the energy sector and transportation.

CONTACT PERSON

Division Nuclear safety and reliability
Phone: +420 266 172 457
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Number of relevant employees, out of which involved in R&D

81/65

Main Projects

Development of water alkali electrolysis for utilisation to accumulate energy from renewable sources;
Systems for sustainable hydrogen production.
Expertise in the field of hydrogen storage and distribution.

Research solutions put into practice

The triple hybrid hydrogen bus (TriHyBus).- first bus driven by the hydrogen fuel element in the new states of the European Union. Under the company's management the consortium developed and presently operates this bus in the Czech Republic and provides data from its operation.

CONTACT PERSON

Division
Radiopharmaceuticals
Phone: +420 266 172 178
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Specialization 5

Research and development of radiopharmaceuticals based on radionuclides produced by reactors and cyclotrons.

Number of relevant employees, out of which involved in R&D

45/6

Main Projects

Technologies, preparations and methods based on work with antibodies.
Biological tests on laboratory rodents (mice and rats) as part of the development of new radiopharmaceutical preparations.
Investigational medicinal products.

Research solutions put into practice

Radiopharmaceutical Fluordeoxyglucosa inj. Registration No.: 88/666/95-C distributed to many nuclear medicine facilities both in the Czech Republic and abroad.
New R&D PET (Positron Emission Tomography) Centre Rez (2013) awarded for the Prize for the Highest Innovation Potential.

Turnover

Total yearly turnover (CZK)

1531,4 mil

Part of the total turnover coming from foreign resources (%)

37%

Expectations

Requires

Strategic partners who can support the wider utilization of our capacity and experience outside the nuclear field. Partners with a focus on the implementation of clinical studies in the field of nuclear medicine.

Offers

We possess unique technological equipment, production and scientific capacities. Our workplaces and laboratories are certified both at the national and international levels. We employ up to 64% persons with the university education.