GRS – Company Profile

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Tasks, Objectives and Competence of GRS

Central technical and scientific expert company for nuclear safety and waste management in Germany

**Task**
Assess and improve the safety of technical facilities

**Objective**
Protect man and the environment from the hazards of technology

**Competence**
- Interdisciplinary knowledge
- Advanced methods
- Qualified data
Mission and Vision of the GRS

**MISSION**
Bereitstellung und Weiterentwicklung wissenschaftlicher Erkenntnisse und Methoden für den Schutz von Mensch und Umwelt vor Gefahren und Risiken technischer Anlagen

**VISION**
Führende wissenschaftliche technische Fachorganisation in Europa auf dem Gebiet der nuklearen Sicherheit und des Umweltschutzes

**ZIELE**
- Weiterentwicklung des Sicherheitsniveaus kerntechnischer Anlagen
- Reduzierung von Risiken bei der Endlagerung
- Beiträge zur Erreichung von Umweltschutzzielen
- Erwerb und Weiterentwicklung wissenschaftlicher Fachkompetenz
- Sicherstellung der Wirtschaftlichkeit

**STRATEGIEN**
- Mitgestaltung des Standes von Wissenschaft und Technik
- Mitgestaltung der nuklearen Sicherheitsforschung
- Mitgestaltung von Sicherheitsanforderungen und Regelwerken
- Mitwirkung bei den Arbeitsprogrammen der Kunden/Auftraggeber
- Nutzung von Synergieeffekten
- Anwendung von Wissen und Methoden auf ausgewählte Umweltaufgaben
- Etablierung europäischer Kompetenznetzwerke
- Ausbau des Wissensmanagements
- Stärkung des wissenschaftlichen Renommées
- Vorausschauende Personalentwicklung
- Effizenter Einsatz der Ressourcen
- Verbesserung des Auslastungsmanagements
- Einhaltung der Projektplanung
- Erfüllung des Wirtschaftsplanes
Volume of Contracts, Customers and Staff

In 2003, turnover was approx. € 50m. The scientific and technical work was performed by about 400 staff members, about 300 of them being highly qualified engineers or scientists specialising in:

- various fields of engineering
- physics
- chemistry
- geochemistry
- geophysics
- mathematics
- informatics
- biology
- law and
- meteorology
In 2003, GRS and ISTec had around 440 staff, of which about 330 were highly qualified scientists and engineers of such disciplines as:

- various fields of engineering,
- physics,
- chemistry,
- geochemistry,
- geophysics,
- mathematics,
- informatics,
- biology,
- law and
- meteorology.
Solution of Complex Tasks

Statements on safety issues

- Engineering disciplines
- Physics
- Geo-chemistry
- Mathematics
- Geology
- Chemistry
- Biology
- Meteorology
- International co-operation
- Evaluation of operating experience
- Research and Development
- Safety analyses
- Jurisprudence
Major Activities
Research and Development

- Development and verification of scientific software for the simulation of nuclear power plant behaviour under accident conditions
- Development of advanced methods for probabilistic risk assessment
- Development of simulators for investigations into the behaviour of complex technical systems and their man-machine interfaces
- Methods for the early diagnosis of mechanical failures (e.g. vibration analysis, loose-part monitoring)
- Development of methods for the assessment of the uncertainties of computer predictions
- Methods to assure and assess the quality of safety-relevant software
- Computer models for the performance assessment of final repositories
- Experiments concerning geological and geo-technical influences final repository safety
- Development of advanced safety concepts
- Development of information and documentation systems
Major Activities
Analyses, Assessments and Expert Opinions

- Safety analyses and assessments of nuclear facilities (e.g. nuclear power plants, waste repositories)
- Probabilistic risk analyses of complex technical systems
- Analyses and assessments of transport safety
- Safety analyses of facilities for the disposal of chemotoxic waste
- Analyses and assessments of specific technical safety issues (e.g. incident control, reactor physics, material issues, fire protection, safety of digital I&C, software reliability)
- Analyses and assessments of nature conservation issues (e.g. impact of mining-related radioactive contamination, restoration of contaminated industrial sites, questions regarding occupational radiation exposure)
- Monitoring and evaluation of national and international operating experience from nuclear and other technical facilities (e.g. common-mode effects, human factor analyses, precursor studies)
## Organisation Chart

### Technical Divisions

<table>
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<tr>
<th>Thermal Hydraulics</th>
<th>Operating Experience</th>
<th>Waste Management</th>
<th>Final Repository Safety Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containment</td>
<td>PWR Systems</td>
<td>Nuclear Fuel Cycle</td>
<td>Long Term Safety Analyses</td>
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<tr>
<td>Cooling Circuit</td>
<td>BWR Systems</td>
<td>Radiological and Environmental Protection</td>
<td>Geochemistry</td>
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<tr>
<td>Incident Analyses</td>
<td>Operational Safety</td>
<td>Final Storage</td>
<td>Geotechnics</td>
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<tr>
<td>Reactor Dynamics</td>
<td>Component Integrity</td>
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<tr>
<td>Simulation Technology</td>
<td>Probabilistics</td>
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<td>Special Issues</td>
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### Central Divisions

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<tr>
<th>Projects and International Programmes</th>
<th>Administration</th>
<th>Research Management</th>
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<tr>
<td>Analyses Project Controlling</td>
<td>Finances and Controlling</td>
<td>Programmes and Facilities</td>
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<tr>
<td>Research Project Controlling</td>
<td>Personnel and Legal Matters</td>
<td>Incidents and Components</td>
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<tr>
<td>International Programmes</td>
<td>Administration</td>
<td>Central Activities</td>
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<tr>
<td>Communication</td>
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### Technical Offices

- Moscow Technical Office
- Kiev Technical Office

### Notes

*Jointly with IRSN / Riskaudit*
Joint R&D Activities of GRS within the German Reactor Safety Research Programme

<table>
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<tr>
<th>Universities</th>
<th>GRS</th>
<th>MPA, BAM, IzfP</th>
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<tbody>
<tr>
<td>R&amp;D contributions to resolve individual phenomena</td>
<td>Basic and application-oriented R&amp;D as a basis for sound scientific-technical safety statements</td>
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<td></td>
<td>Development and supply of codes and methods for safety evaluations of incidents and accidents</td>
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<td></td>
<td>Integral view and evaluation of R&amp;D results</td>
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<tr>
<th>Research Centres</th>
<th>Industry</th>
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<tbody>
<tr>
<td>Basic and developmental research for particular subjects, e.g. FZK: Severe Accidents, FZJ: Passive Safety Systems, FZR: Reactor Dynamics</td>
<td>Development and operation-oriented research for design and optimisation of components and systems of reactor plants</td>
</tr>
</tbody>
</table>
Subsidiaries of GRS

12%  GRS

100%  ISTec

50%  RISKAUDIT

50%  IRSN
International Co-Operation of GRS in the Area of Reactor Safety Research

Bilateral research projects with CEEC & NIS within the frame of STC of BMWi
- Russia,
- Ukraine,
- Czech Republic,
- Slowak Republic,
- Hungary,
- Bulgaria

Contracts for bilateral co-operation between
- France,
- Great Britain,
- USA,
- Japan,
- Republic of Korea

Bilateral contracts for usage of GRS-Codes
with a total of 19 countries in
- Europe,
- Asia,
- America,
- South Africa

Multilateral contracts related to R&D projects of the 4th EU framework programme
- 11 EU member countries

Multilateral scientific technical co-operation within the frame of OECD-NEA
- 26 member countries in
  - Europe,
  - North America,
  - Asia,
  - Australia
GRS and its Partners in Eastern Europe (1)

Russia
- Russian Research Centre Kurchatov Institute, Moscow
- Rosenergoatom (REA)
- Balakovskaya AES
- The Russian State Committee on Nuclear Safety and Radiation Protection
- Institute for Power Engineering NIKIET
- Experimental Design Bureau Gidropress (OKB GP), Podolsk
- Atomenergoproject AEP, Moscow
- Russian Academy of Sciences, Nuclear Safety Institute (IBRAE), Moscow
- Gosatomnadzor of Russia
- Scientific and Engineering Centre on Nuclear and Radiation Safety (SEC NRS, expert organisation of Gosatomnadzor of Russia)
GRS and its Partners in Eastern Europe (2)

Czech Republic
- State Office for Nuclear Safety (SONS)
- Nuclear Research Institute Rez (NRI)

Slovak Republic
- Nuclear Regulatory Authority of the Slovak Republic

Hungary
- Hungarian Atomic Energy Commission
- Atomic Energy Research Institute (AERI)

Bulgaria
- Committee on the Use of Atomic Energy for Peaceful Purposes
- Bulgarian Nuclear Safety Authority (BNSA)

Lithuania
- Lithuanian Nuclear Power Safety Inspectorate (VATESI)
- Lithuanian Energy Institute (LEI)
- Nuclear Regulatory Authority (NRAUI)

Ukraine
- State Scientific-Technical Centre (SSTC, expert organisation of the NRA Ukraine)

Armenia
- Ministry of Energy and Fuel, Department "Armatomenergo"
- Armenian Nuclear Regulatory Authority
GRS and its Partners in North and South America

USA
- Nuclear Regulatory Commission (USNRC), Washington DC
- Department of Energy (DOE), Germantown, Maryland
- Electric Power Research Institute (EPRI), Palo Alto, California

Brazil
- Comissao Nacional de Energia Nuclear (CNEN)

Argentina
- Autoridad Regulatoria Nuclear (ARN)
GRS and its Partners in Africa and Asia

China
- National Nuclear Safety Administration (NNSA)
- Nuclear Power Institute of China (NPIC)
- Shanghai Nuclear Engineering Research and Design Institute (SNERDI)

South Korea
- Korea Advanced Energy Research Institute (KAERI)
- Korea Institute of Nuclear Safety (KINS)

Japan
- Nuclear Power Engineering Corporation (NUPEC)

Indonesia
- Badan Tenaga Atom National (BATAN)

South Africa
- Council for Nuclear Safety (CNS)
Telecommunications Network: Voice, Fax, Data, E-Mail

- 2 Mbit/s dedicated line
- 64 kbit/s via satellite
- 2 Mbit/s dedicated line
- ≤ 2 Mbit/s Internet
- 128 kbit/s dedicated line

Diagram showing connections between various cities and institutions using different types of data transmission.
GRS Business Processes

Führungsprozesse

Sicherheitstechnische Analysen / Stellungnahmen / Gutachten

Beratung / Unterstützung

Forschung und Entwicklung

Programm-Koordination

Unterstützungsprozesse

Projektträgerschaft

Projektmanagement und -controlling

Personalentwicklung

Wissensmanagement

IT-Management

Beschaffung