State Corporation “Rosatom” Approach to Nuclear Personnel Training

Russian Nuclear Technologies & Solutions Seminar

Larissa Strutskaya, PhD
HR Director, Rusatom Overseas

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Why we are here: Rosatom offers HR solutions integrated with other areas

<table>
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<tr>
<th>Reason</th>
<th>Description</th>
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<tr>
<td>Labor market will develop</td>
<td>Labor market will develop as highly-qualified jobs will appear</td>
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<td>Interest of young people in nuclear engineering will grow</td>
<td>Interest of young people in nuclear engineering will grow as they will see</td>
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<td>clear employment prospects</td>
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<td>Local universities and research centres will get a new impulse to</td>
<td>Local universities and research centres will get a new impulse to develop</td>
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<td>develop nuclear education in partnership with universities of Russia</td>
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<td>Besides direct jobs a large number of indirect jobs will appear</td>
<td>Besides direct jobs a large number of indirect jobs will appear</td>
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<td>Russia has a number of experienced technical training providers that</td>
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<td>will transfer their expertise to local staff</td>
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<td>Russia is experiencing a “nuclear renaissance” and can support South</td>
<td>Russia is experiencing a “nuclear renaissance” and can support South Africa</td>
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<td>Africa in making the road map of HR development in similar circumstances</td>
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NPPs are not only strategic facilities but companies employing tens of thousands of people. Continuity and devotion underpinned by stability and high remuneration are the key guarantees of the sector’s development.

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<th>Total Human Resource Requirement Number for SA nuclear program (according to NIASA educational sub-committee report)</th>
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<td>Project Management</td>
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<tr>
<td>Security</td>
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<tr>
<td>Construction</td>
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<tr>
<td>Architect Engineering</td>
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<td>Utility Engineering</td>
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<tr>
<td>Operation</td>
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<tr>
<td><strong>Total</strong></td>
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We work for a variety of local organizations, involved in nuclear power development, to transfer our knowledge and expertise to local partners.

- Nuclear facilities including NPPs, Research Reactors, RadWaste Management, Spent Fuel Management
- NEPIO & Government Agencies (Ministries, etc.)
- Owners, Operating Organizations, Corporations (e.g. Headquarters)
- Regulators (including Nuclear)
- R&D organizations
- Emergency Response and Civil Defence organizations
- Electricity transmission and distribution organizations
- Finance institutions
- Technical support organizations
- Educational institutions
- Specialized training organizations
- Professional organizations (e.g. Nuclear Society, Junior Nuclear Professionals)
- Organizations involved in nuclear or rad activities (including transport, security, fire fighting)
- Construction Project Management Local Team, Equipment Vendors, Suppliers, Construction, Local Industry

We develop Human Resources for the entire Nuclear Power Programme and for new NPP builds.

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Key elements of Rosatom HR development product: programmes and services

- Development and implementation of HR management systems
- Educational programmes in Russia
- Consortium of nuclear universities
  - Bachelor and master degree
  - Development of local universities
- Maximising involvement of local staff
- Supply of competent personnel for NPP construction & operation
- Leadership and management competencies development
- Development of total rewards system to motivate high performance
- Technical skills development for all professional groups of personnel
- Development of project teams
  - Engineers
  - Operational workers
- Supply of all elements of NPP Training System including Training & Information Centre
- On-the job training and rotation programmes
- Supply of competent personnel for NPP construction & operation
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Education: National Research Nuclear University MEPhI

- Founded in 1942. Tens of thousands of highly qualified specialists graduated from MEPhI.
- Main directions of training:
  - Research & Development
  - Design & Engineering
  - Fundamental Sciences
  - Information Technologies
- 10 thousand students.
- 700 postgraduates and doctoral candidates.
- 1400 professors, lecturers, etc (majority of them with academic titles and degrees).
- Six Nobel Prize winners used to work at MEPhI.
- 25 educational-research buildings

Places have been reserved for South African students in Russian universities with a major in Nuclear Power Plants and Facilities to start in 2012.
Training and development. HR categories to be developed
An example of HR categories for a Russian NPP.

Specific nature of the industry implies high requirements for the personnel qualifications

An example of HR categorization (Russian NPPs)

Professional personnel structure

- Top managers: 62.0%
- Middle managers: 31.6%
- Specialists: 6.0%
- Workers: 0.4%

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Training and development. Identifying competencies of HR categories to be developed

**SHL Competency Map**

*The use of the Map is authorized by SHL Russia*
Training Centre as a core of NPP Personnel Training System

- **Infrastructure of Training Centre**
  - Training Programs (all categories of personnel)
  - Training tools:
    - Full-Scope Simulator (1 FSS per 2 power units)
    - Simulator for study on transients and emergencies
    - Part-task simulators
    - Mock-ups for maintenance and other personnel
    - Computer base training, eLearning...

- **TC as a Competency & Knowledge Centre**
  - Knowledge maintain regarding VVER technology
  - Simplification and optimization of NPP personnel training
  - National Centre of nuclear technology knowledge
  - Integration with an *Information Centre*
  - Information Centre is an up-to-date high-tech cinema theater equipped by panorama 3-D projection, computer graphics and animation, stereo sound and interactive consoles
Technical skills and competencies development. An example of using a full scope simulator

- **Scope of training:** > 700 persons for on site
- **Categories of plant personnel:**
  - Operating
  - Maintenance
  - Managers
  - Surveillance and testing
- **Training venue:**
  - Customer’s Site
  - Vendor’ site (reference unit)
  - Mixed approach (preferable)
- **Support of the training:**
  - Training tools (FSS, eLearning, training programmes, mock-ups

Full Scope Simulator Training at Tianwan NPP Operations Training Centre (Sept 2010)
Vendor: Rosatom
Full-scope simulators for Foreign Customers built by Rosatom

- Tianwain NPP (China) - Full-Scope Simulator (2006)
- Kudankulam NPP (India) - Full-Scope Simulator (2007)
Training personnel of foreign partners in Rosatom International Training Centre, Moscow

Typical arrangements

Theoretical course

Practical experience: FSS, TC of Balakovo NPP

Technical Tour: manufacturing plant
Growing Nuclear Leaders: Management and Leadership development programmes for nuclear industry by Rosatom Corporate Academy

• Development and organisation of assessment procedures aimed at identifying the current level of management/leadership competencies:
  ✓ Assessment centres for top and middle management positions in nuclear industry
  ✓ Online psychometric assessment procedures
  ✓ 360° and 180° assessment

• Design, development and delivery of training programmes,
  ✓ Interactive training sessions, seminars, business games and learning projects for managers in nuclear industry
  ✓ Individual leadership development programmes for top and middle managers as well as for talented young employees with high potential
  ✓ Individual coaching programmes for nuclear managers

• Training programmes for in-house trainers at NPPs
  ✓ “Train-The-Trainers” modular programmes (development of trainer’s skills, teaching contemporary training and facilitation techniques, certification of in-house trainers)
  ✓ Handing over training programmes and training materials to in-house NPP trainers, follow-up activities

• Management and organisational consulting
Understanding nuclear business: development of key business competencies

• Design, development and delivery of specific training programmes aimed at developing the understanding of nuclear business and underpinning skills in the following areas:
  ✓ Economics and finance in nuclear industry,
  ✓ Implementation of contemporary IT-systems in nuclear industry
  ✓ Integrated management systems
  ✓ Supply chain management
  ✓ Human resource management
  ✓ Legal issues
  ✓ Project management
  ✓ Public relations and communications
  ✓ Global and regional electricity markets

• Organisation of international seminars, master-classes and round-tables with world-known experts, consultants and business practitioners in nuclear field

• Development of competency profiles for professional competencies, assessment of professional competencies in nuclear industry

• Business simulation “Effective management of a NPP” (launch in September 2012)
Summary: your benefits in terms of HR localization

- Partnership with local universities in creation of Nuclear Centres of Excellence
- Huge amount of new jobs for local personnel
- Transfer of expertise through creating nuclear training system
- TC construction and training of local instructors
Thank You for Your Attention!

Larissa Strutskaya  
HR Director, Head of Human Resource Development  
JSC “Rusatom Overseas”

E-mail: LaMStrutskaya@rosatom.ru  
Phone: +7 (495) 730-08-73