



ROSATOM

STATE ATOMIC ENERGY CORPORATION "ROSATOM"

On a progress of NPP construction in Russia and abroad

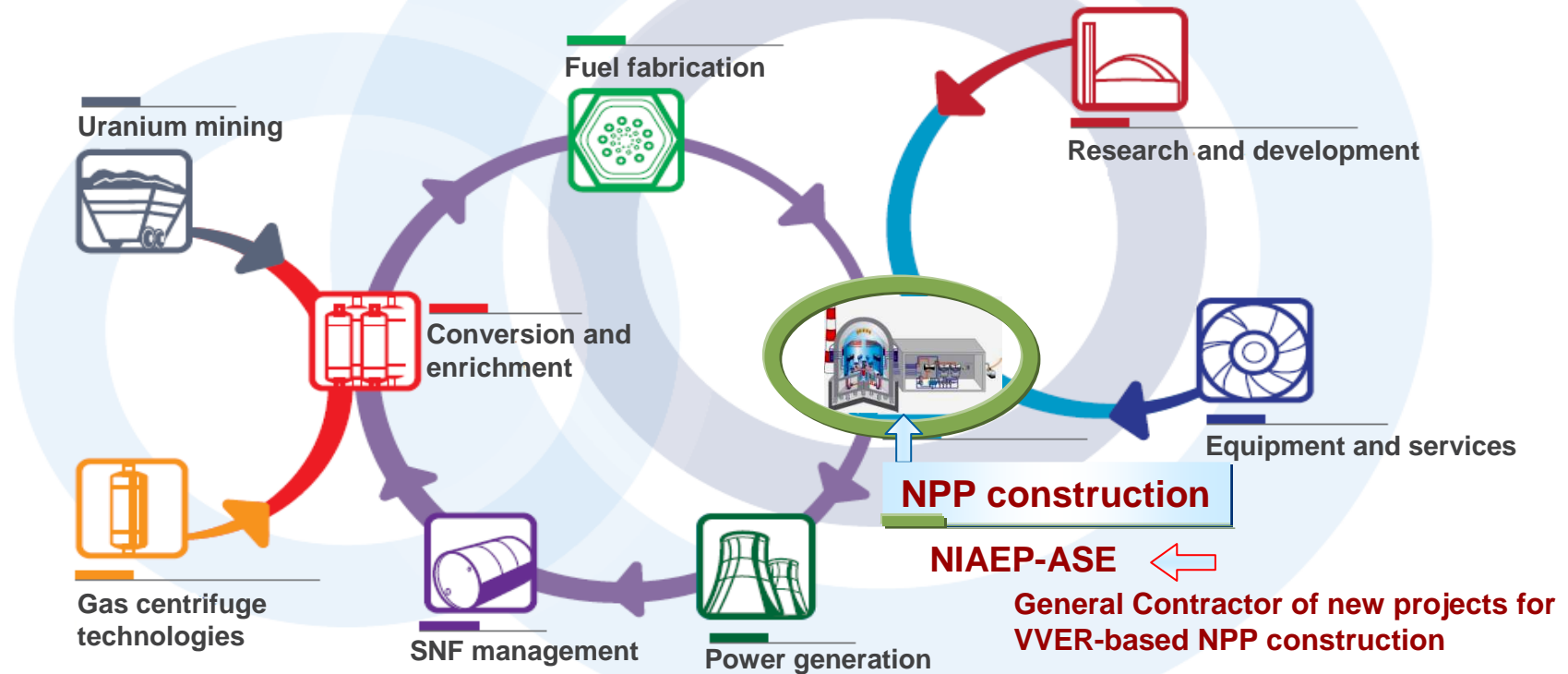
"Atomex-Europe 2013" Forum

G. O. Tepkyan
Vice-president-director for prospective projects
NIAEP JSC

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Place and Role of NIAEP – ASE within SC ROSATOM System

NIAEP JSC and ATOMSTROYEXPORT JSC – Leading Engineering Companies within Rosatom State Atomic Energy Corporation





Facilities in Russia under construction and development:

- Rostov NPP, Units NN 3, 4
- Baltic NPP, Units NN 1, 2
- Kursk NPP - 2, Units NN 1, 2
- Nizhny NPP, Units NN 1, 2
- Design of RAW reprocessing and storage facilities at Andreev Bay entity
- Establishment of RAW management facility for FSUE “PO Mayak”
- Supply of goods, implementation of works and services for SNF and RAW storages construction

- Yuzhnouralsk SDPP* -2, Units NN 1, 2



* SDPP - State District Power Plant (Thermal Power Plant)

Rostov NPP, Russia



POWER UNITS NN 3,4

Reactor type: VVER-1000

RP V - 320

- **Gross Electrical Capacity for two power units: $2 \times 1100 = 2200$ MW, (Design Net Capacity : $2 \times 1011 = 2022$ MW)**
- **Planned Physical Startup of Unit 3 - 2014**

The global supply chain, used in this NIAEP-ASE project, includes supply of equipment from European, in particular from Czech companies



Facilities abroad under construction and development:

- Tianwan NPS (China), Units NN 3, 4
- Fujian Sanmin NPP-DFR (China)
- Akkuyu NPP (Turkey), Units NN 1, 2, 3, 4
- Belarusian NPP (Belarus), Units NN 1, 2
- Kudankulam NPP (India), Units NN 1, 2
- Ninh Thuan NPP-1 (Vietnam), Units NN 1, 2
- Bangladesh NPP, Units NN 1, 2
- Works at Mochovce NPP (Slovakia),
Units NN 3,4 construction



- *NPP construction projects in Armenia and Ukraine*
- *Participation in bids for NPP construction in Czechia and Jordan*
- *Hanhikivi NPP project in Finland*

BUSHEHR NPP, Iran



POWER UNIT N 1

Reactor type: VVER-1000

RP V-446 (developed on the basis of RP V-392, specifically to work with KWU equipment)

Gross Electrical Capacity: 1000 MW
(Design Net Capacity - 915 MW)

Physical startup: May 08, 2011

Energetic startup: September 03, 2011

Bringing to 100% power level: August 30, 2012

- September 23, 2013 – provisional acceptance
- Guarantee operation (2 years)
- Final acceptance and handover for commercial operation - 2015

“Turnkey” construction

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KUDANKULAM NPP, India



POWER UNITS NN 1,2

Reactor: VVER-1000

RP V -412 (developed on the basis of RP V-392, commissioned by India, designed for seismic effects specific to Kudankulam NPP site)

Gross Electrical Capacity for two power units: $2 \times 1000 = 2000$ MW
(Design Net Capacity : $2 \times 917 = 1834$ MW)

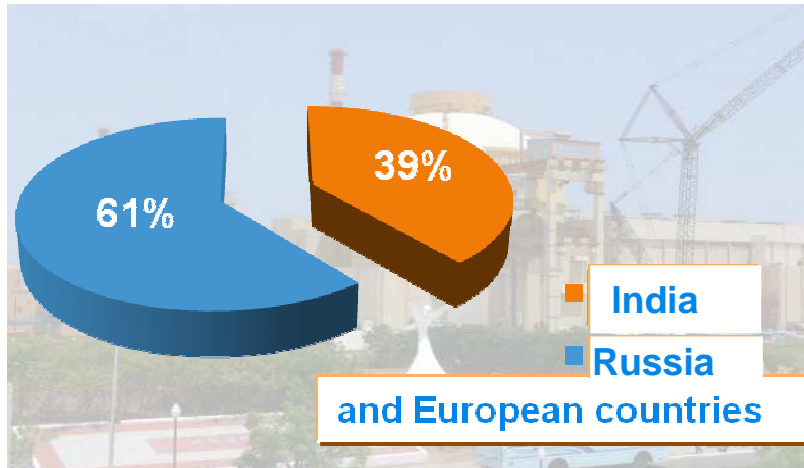
Physical startup:

2013* (Unit 1)

2014 (Unit 2)

* - July 13, 2013 – first criticality

KUDANKULAM NPP, India



Breakdown of supplies

European countries:

- MSA a.s., MAPOL s.r.o., ARAKO spol. s.r.o.
 - 3500 valve items
- SIGMA GROUP a.s., P.K.INVEST s.r.o.
 - 50 pump items
- KABELOVNA KABEX a.s.
 - 2500 km of different purpose cables

The Russian Federation renders technical assistance to India in construction of two Kudankulam NPP power units of 1000 MW each (AES-92 design).

The Nuclear Power Corporation of India Limited performs works on designing of buildings and infrastructure, civil and erection works, including installation of mechanical, electrical equipment and instrumentation systems, putting NPP into operation etc.

Civil and erection works are performed by the Indian company LARSEN&TOUBRO

KUDANKULAM NPP, INDIA



POWER UNITS NN 3,4

- **Preparatory works for construction of Kudankulam NPP Units 3&4**
- **Contract for first-priority design works is signed and implemented**

The Agreement of December 5, 2008 between the Government of the Russian Federation and the Government of the Republic of India on cooperation in construction of additional power units of the nuclear power plant on Kudankulam site, as well as in construction of nuclear power plants according to the Russian designs on new sites in the Republic of India.

TIANWAN NPP, PRC



POWER UNITS NN 3,4

Reactor type: VVER-1000

RP V-428 (developed on the basis of RP V-392, commissioned by PRC, designed for seismic effects specific to TIANWAN NPP site)

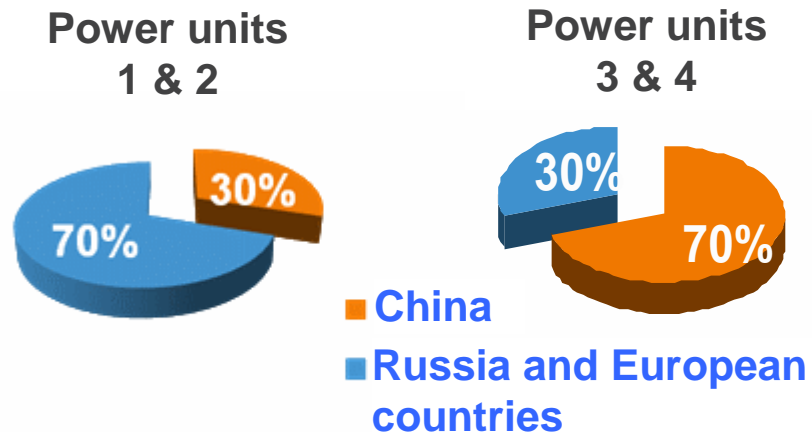
Gross Electrical Capacity for two power units: 2120 MW (2 x 1060 MW)

Key dates:	Unit 3	Unit 4
Physical startup	2017	2018
Energetic startup	2017	2018
Putting into commercial operation	February 2018	December 2018

TIANWAN NPP, PRC



Breakdown of supplies



Obligations of the Russian side:

- NPP designing
- Supply of equipment and materials
- Works at NI main objects
- Putting NPP into operation
- Training of Chinese personnel

Responsibility of the Chinese companies, including China Nuclear Industry Construction Corporation (CNI-23) :

- civil and erection works in reactor building,
- safety system building,
- steam cell and
- pump house for main consumers

Supply of equipment by EU companies:

- SIEMENS,
- ANSALDO,
- ALSTOM,
- and others

AKKUYU NPP, Turkey

First foreign project of SC Rosatom configured on BOO principles



Akkuyu site – Mersin Province, Turkey

Key parameters

- Construction period – 2011-2022
- Legislation basis – Intergovernmental Agreement of May 12, 2010
- Design – AES-2006 (VVER-1200)
- Capacity – 4 800 MW (4 power units)

- First NPP in Turkey
- Assistance and support in creation of normative base and personnel training
- Close cooperation with the Turkish partners, involvement of the Turkish suppliers in site civil works

BELARUSIAN NPP



POWER UNITS NN 1,2

- **Two Units of 1200 MW Capacity Each (The Target Date for Implementation of General Contract on NPP construction is 2018 ÷ 2020)**



- **Stage – pre-work**

AES-2006 — generation "3 +" project with improved technical and economic indicators. It is a development of the AES-91

On Involvement of Local Suppliers

- **The target of NIAEP-ASE Global Supply Chain is effective use of domestic suppliers and suppliers of third countries, including European Union**
- **NIAEP-ASE as a General Contractor involves subcontractors based on their qualifications and the quality of the equipment and services in each case**

During the development of relations between suppliers and customers, with each new nuclear power unit

- **the share of national participation,**
- **the level of competence and**
- **the degree of involvement of national staff**

is increasing for each of the next power unit



Thank You for Attention!

G. O. Tepkyan

Vice-president-director for prospective projects

NIAEP JSC

E-mail: g.tepkyan@atomstroyexport.ru

Phone: +7 495 737 90 37