Alstom in RUSSIA

References and Ongoing Projects

Alstom’s Presence

Saint-Petersbourg
- Regional Grid office
- JV Alstom-KER DC Engineering Center
- Alstom Power Turbomachines (Thermal transverse technology)
- JV Alstom-Atomenergomash (nuclear)
- JV TramRus

Moscow
- Alstom Russia Headquarters : Alstom Ltd
- Alstom Grid Russia Headquarters
- Automation Engineering & Service
- Alstom Power Stavast (Steam / ECS)
- Alstom Power Uniturbo within Alstom Ltd (Gas)
- Thermal Power (Gas, Service, PAC) within Alstom Ltd
- Renewable Power (Hydro) within Alstom Ltd
- Alstom Transport within Alstom Ltd

Novocherkassk
- JV TRTrans
- JV RailComp

Ufa
- JV Alstom RusHydro Energy

Yekaterinburg
- JV Alstom Grid-Rusal

Volgodonsk :
- JV Alstom-Atomenergomash manufacturing site (nuclear)

Irkutsk
- Regional Grid Office

Surgut
- Regional Grid Office

Novosibirsk
- JV Alstom-Atomenergomash manufacturing site (nuclear)

Rostov/Don
- Regional Grid Office

Ufa
- JV Alstom RusHydro Energy

Vladivostok
- Regional Grid Office

Corporate HQ
Power
Transport
Grid
Key Data

- **Near 800** employees all over Russia;
- **17** locations: Moscow, Saint-Petersburg, Rostov/Don, Novocherkassk, Volgodonsk, Ufa, Yekaterinburg, Surgut, Irkutsk, Vladivostok
- **9** engineering centers:
  - **Power:**
    - Moscow: Alstom Power Uniturbo,
    - Saint-Petersburg: Alstom Power Turbomachines
    - JV Alstom-Atomenergomash
    - JV Alstom RusHydro Energy
  - **Transport:**
    - Novocherkassk: JV Alstom-TMH “TRTrans”
    - Saint. Petersburg: JV Alstom-TMH “TramRus”
  - **Grid:**
    - Moscow: Automation Engineering & Service
    - St. Petersburg: JV Alstom-KER
    - Yekaterinburg: JV Alstom Grid-Rusal

History

1975: Sales office opened in Moscow

1992: Creation of the engineering centre “Alstom Turbomachines”

1993: Creation of the engineering centre “Alstom Power Uniturbo”

1999: ABB Stavan Closed Joint-Stock Company became ALSTOM Power Stavan CJSC specializing on environment control systems

2006: Creation of the JV Alstom Grid – Rusal Electro-engineering system projects and power electronics

2007: Creation of the JV “Alstom-Atomenergomash”

2010: Areva’s transmission business acquired and transformed into Alstom’s third sector, Alstom Grid.

2010: Creation of the JV “TRTrans”

2011: Creation of the JV “Alstom RusHydro Energy”

2012: Creation of the JV “RailComp”

2012: Creation of the JV “TramRus”

2013: Creation of the JV “Alstom-KER”
Alstom’s strategy in Russia is to develop locally engineering and industrial activities in all fields of activity and to create long-term and reliable partnerships with local companies.

**Alstom and KER: in 2011**
JV for engineering and project execution in the High Voltage Direct Current (HVDC) sector: a direct current Engineering Centre in Saint Petersburg.

**Alstom and Promelektronika: in 2011**
A JV held by Alstom for 51% to cover all the needs in the field of rail signalling with both on-board and trackside equipment, is underway.

**Alstom and Renova Group: in 2011**
Cooperation agreement to create and localise state-of-the-art power generation equipment for applications in thermal power plants.

**Alstom and RusHydro: in 2011**
A 50/50 JV in Ufa (Bashkortostan) for the production of hydrogenating equipment for small hydropower plants of up to 25 MW capacity, as well equipment for OP ACS and integrated security systems.

**Alstom and Skolkovo Foundation: in 2011**
Partnership agreement to build key infrastructure for the Russian “silicon valley”, including urban transport, power generation, and electricity management services and to develop R&D activities such areas as railway signalling and information systems, energy efficiency for power plants, and smart grids.

**Alstom and Soyuz Corporation: in 2011**
A JV for the local manufacture and commercialisation of Alstom Grid high voltage switchgear products in Mozhaisk (near Moscow) is underway.

**Alstom and Federal Grid Company UES: in 2010**
A multi-vectorial cooperation for the modernization of the Russian electrical grid through improved local production of electrical equipment and the introduction of advanced “Smart Grid” technologies.

**Alstom and Mosenergo: in 2010**
Cooperation agreement to develop combined cycle power technologies, supply integrated power island solutions for thermal plants and modernise and repower Mosenergo’s fleet.

**Alstom and Rostechnologii: in 2010**
Cooperation agreement to supply coal-fired power plants with Alstom’s market-leading steam plant technology and Rostechnologii’s Boiler Circulating Pumps (BCP).

**Alstom and Transmashholding: in 2010.**
Acquisition by Alstom of 25% (+1 share) of the capital of TMH holding company. Two 50/50 joint-ventures have been created (TRTrans and Railcomp)

**Alstom and Inter RAO UES: in 2010**
MoU to develop cooperation in order to jointly provide industrial products and services for Russia’s power industry, including the installation of new instrumentation and control systems as well as site security systems in projects.

**Alstom and Republic of Tatarstan: in 2009**
MoU with the Tatarstan’s Ministry of Industry and Trade to develop projects in the field of energy efficiency.

**Alstom and Atomenergomash: in 2007**
JV to produce conventional islands for nuclear power plants based on the ARABELLE™ half speed turbine technology and steam turbines for coal fired units. In 2012, it was decided to retain the Volgodonsk site (Rostov oblast), a branch of AEM-teknologii CJSC (Atomenergomash), as the Alstom-Atomenergomash manufacturing site.

**Alstom and RUSAL: in 2006**
JV producing rectifiers for the new and existing RUSAL’s smelters.
References and Ongoing Projects

Power

Alstom is acting on the Russian power market in the following segments: EPC, PAC, we are supplying equipment (gas/steam turbines, generators, boilers) and since the clean power is one of Alstom’s highest priorities, we are also offering air quality control systems to our Russian customers.

Our Achievements:

- **First ever foreign EPC-contractor** in the Russian Power sector to build a power plant (unit 8 on the Moscow’s TPP-26).
- Unit 8 on the Moscow’s TPP-26 built by Alstom is currently the most efficient combined cycle power plant in Russia.
- **First international company** in Russia awarded a long term service contract for a very large scope of works: all maintenance for the unit 8 on the Moscow’s TPP-26 for the period of 14 years.
- Alstom’s environment control systems acquired the biggest market share on the Russian and CIS market and has been first supply a fabric filter and integrated dry flue gas desulphurization system with electrostatic precipitators to this market.

References:

- Environment Control & Carbon Capture Systems. More than 200 successfully completed projects in Russia and CIS: procurement of equipment and service and projects for Industry (Aluminium, Pulp&Paper, Iron&Steel, Cement). Reference list includes two quite unique projects for Russian & CIS power market: supply of the first ever in CIS fabric filter to Refinskaya GRES, 300 MW coal-fired power plant, one of the largest in the country; and the first ever integrated dry flue gas desulphurization system with electrostatic precipitators for two units at Cheremetskaya GRES. Many of the components for this project have been manufactured locally and the project execution has been also handled by the local staff.
- Alstom is in technology transfer process of these two new for the CIS market products.

Thermal Service projects:

- C1-Inspection/Field Service/ GT13E2 in Minsk (Belarus) – 2013;
- Inspections of generators and rotors at Tengiz & Karachaganak Oil fields (Kazakhstan) - 2013
- Onsite machining ST, Kirovo-Chepetsk Chemical Works, - 2013
- Onsite machining ST, Kemerovo OAO AZOT – 2013
- Replacement of retaining ring at 40MW motor, Severstal -2013
- Extended Combustion Chamber Inspections at GE GTU-s (FS) at Vankor Oil Fields, Rosneft – 2012 / 2013
- A1 and B1-Inspections of the GT26 and unit #8 (TPP-26, Moscow) – 2012;
- Rewind of the 160 MW generator (Krasnoyarsk GRES) – 2012;
- Supply of the retaining rings for 500 MW generator Refinskaya GRES (Sverdlovsk region) – 2012;
- Inspections of the gas turbines at the Vankor oil-field – 2012;
- Repair of the 40 MW motor-set at the Kirovo-Chepetsk plant - 2012;
- A2-Inspection GT13E2 in Minsk - 2012;
- B1-Inspection GT13E2 in Minsk - 2011;
- Design Project of Cabling system for modernization of Steam Turbine 103JT in Kemerovo – 2010;
- Machining the internal casing of the high-pressure cylinder in GTT-12 turbo-compressor in Kemerovo – 2010;
- A1-Inspection GT13E2 in Minsk - 2010;
References and Ongoing Projects

Ongoing projects / Thermal:

Gas:
- Akademicheskaya TES, Ekaterinburg (client IES Holding): 1 GT13E2 gas turbine
- Nizhneturinskaya GRES, Ekaterinburg (client IES Holding): 2 GT13E2 gas turbines
- Novogorkovskaya TES, Nizhny Novgorod (client IES Holding): 2 GT13E2 gas turbines
- Chelyabinskaya GRES (client Fortum): 3 GT13E2 gas turbines

Nuclear:
- Units 1 and 2 of the Baltic nuclear power plant (Kaliningrad region) by JV Alstom-Atomenergomash (AAEM). The total value of the contract is around €875 million. Scope of supply includes Alstom steam turbines ARABELLE, generators, condensers, moisture separator reheaters and auxiliary equipment.

Service:
- 14-year service contract with JSC Mosenergo, including all maintenance (management of daily service activities & supply of spares) to be carried out for the 420 MW power generating unit #8 at the combined heat and power plant TPP-26 in Moscow. Equipment covered includes all Alstom equipment installed at the unit, consisting of one GT26 gas turbine, one steam turbine, two air-cooled generators and additionally one heat recovery steam generator (HRSG). The contract is valued at more than €100 million.
- 5-year contract worth near 25 million Euros for a complex maintenance of the gas turbines installed at the electric power plant of the Vankor oil and gas field. This is the first Alstom’s long-term contract in Russia to service thermal power equipment produced by other manufacturers.

Renewable:
Hydro:
Modernization of the Kubansky Cascade, South of Russia (client RusHydro):
- 8 HPPs and 1 pumped storage PP.
- Rehabilitation of electro and hydro mechanical equipment, installation of a new instrumentation & control system.

Transport

In the Transport Sector, Alstom is strengthening its presence thanks to the partnership with TMH, leading manufacturer of rolling stock in Russia. Partners are considering to develop any type of rolling stock (regional trains, tramways, metros, locomotives etc.), depending on the requirements of the market with the gauge 1520mm.

Our Achievements:
- Alstom’s "Allegro" trains take 3.5 hours to cover the 450 km between Helsinki and St.Petersburg (as opposed to the previous 5.5 hours) and travel at speeds of up to 220 kph.

References:
- Moscow Metro: between 2002 and 2006 Alstom delivered 40 ONIX propulsion systems.
- Pendolino "Allegro" high-speed trains for the Helsinki-St Petersburg line (operated since 2010): 4 Pendolino tilting trains delivered for «Karelian Trains Ltd»
- EP20 electric locomotive (client Russian Railways): a fifth generation electric locomotive, currently the fastest in Russia, with the speed capacity up to 200 kph. Developed by TRTrans; 200 locos ordered. The first EP20 was officially handed to RZD on 30 November 2012. Commercial service started in 2013. EP20s are currently running on the Moscow-Sochi "Olympic" line. The journey takes around 25 hours – trains driven by EP20 are able to operate under both alternating and continuous current which allows not to change the engine along the route.
References and Ongoing Projects

Ongoing projects:

Locomotives: Electric locomotives developed by Alstom-TMH are adjusted to the tough Russia’s and CIS’ climatic conditions and can be operated at temperatures from minus 50°C to plus 40°C.

- 2ESS electric freight locomotives (client Russian Railways): the most powerful loco in Russia, able to run at speeds of up to 120 km/h pulling freight convoys weighting more than 6000 t. Developed by TRTrans; 200 «double bobo” locos ordered. 2ESS is currently passing the certification tests.

- Electric locomotives for Kazakhstan (client Kazakh Railways): developed by the JV EKZ created by Alstom, TMH and the Kazakh Railways; 295 electric locomotives (200 freight & 95 passenger) ordered and will be manufactured at the EKZ plant inaugurated in December 2012 in Astana. In particular, the freight locomotive KZ8A, one of the most powerful in the world, is currently passing dynamic tests. It requires minimal maintenance and, thanks to its modular design, provides high reliability along with low life-cycle costs.

Urban transport:

A low-floor three-section tramway is developed for the countries with the track gauge 1524 mm, in accordance with GOST standards, and based on the Citadis™ platform by Alstom. The tram’s design ensures an optimal integration into existing transport infrastructure and can be operated at temperatures from -40 ° C to +40 ° C. Dynamic tests of the new tramway on the existing infrastructure in Moscow are close to be completed. Trams will be manufactured in St. Petersburg by the Alstom-TMH JV ”TramRus”.

Grid

Alstom is actively working in the Russian market, serving the clients in utilities and Industrial segments. Close cooperation with the Federal Grid Company (FSK) has the strong focus on implementing of Smart Grid solutions, targeting the modernisation of the Russian electrical grid. Improvement of the energy supply of different industrial sectors like aluminium, mines & metals, automotive.

Achievements:

- Alstom Grid has successfully introduced electrolysis technologies in Russia within the scope of Khakass Smelter, Taishet and Boguchany projects for key client RUSAL.
- Alstom Grid is the one of the main suppliers for FSK project "Moscow Ring” 500 kV. S/S "Chagino” and S/S"Zapadnaya”, both equipped with Alstom most modern equipment including GIS 500 kV.

References:

- 110 kV Gas-Insulated Switchgear Akademicheskaya TPP (KES Holding) – 2012
- 110 kV Gas-Insulated Switchgear HAP, HPP-1, HPP-2, HPP-3, HPP-4 of Kubanskih HPP cascade (RusHydro) - 2012
- 110 kV Gas-Insulated Switchgear Egorylykskaya of Kubanskih HPP cascade (RusHydro) – 2012
- 110 kV Gas-Insulated Switchgear Svistuhinskaya of Kubanskih HPP cascade (RusHydro) – 2012
- 220 kV Gas-Insulated Switchgear Novogorkovskaya TPP (KES Holding) – 2012
- 220 kV Gas-Insulated Switchgear Serovskaya GRES (Gazprom, OGK-2) – 2012
- 220 kV Gas-Insulated Switchgear Cherepovetskaya GRES (Gazprom, OGK-2) – 2012
- 220 kV Gas-Insulated Switchgear S/S “Kozhev nicheskaya” (MOESK) – 2012
- 220 kV Gas-Insulated Switchgear S/S "Belorusskaya” (MOESK) – 2012
- 220 kV Gas-Insulated Switchgear S/S "Centralnaya” (MOESK) – 2012
- 330 kV Gas-Insulated Switchgear HPP-2, HPP-3 of Kubanskih HPP cascade (RusHydro) - 2012

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Ekaterina DOBROGORSKAYA: +7 916 982 45 17 / elaterina.dobrogorskaiaecn.alstom.com
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References and Ongoing Projects

- 220 kV Gas-Insulated Switchgear, 35 kV Air Insulated Switchgear, 220 kV cables, automation for “RusVinil” – 2010
- 220 kV, 550 kV Gas-Insulated Switchgear S/S “Kaskadnaya” for Federal Grid Company of UES, MES Centre – 2010
- Protections system of Kalininskaya NPP - 4 auxiliaries and 10 kV substation “Vostok” DCS, Kalininskaya NPP – 2010
- SCADA system for more than 300 oil pumping stations for TRANSNEFT - 2010
- Khakas smelter: outdoor switchgear equipment 220 kV and rectifiers for one pot line, 350 000 t/year of aluminium (5 rectifiers 85 kA-1570 Vdc). At present this is the most advanced RUSAL smelter.
- 750 kV, 330 kV, 110 kV AIS S/S «Leningradskaya» for Federal Grid Company of UES, MES North-West
- 500 kV, 220 kV, 110 kV AIS S/S «Demyanskaya» for Federal Grid Company of UES, MES West Siberia
- Generator circuit-breakers Volzhskaya HPP, Cymlyanskaya HPP, Permskaya GRES, Tyumenskaya TPP-1

Ongoing projects:

- 220 kV, 110 kV Gas-Insulated Switchgear Izhevskaya TPP, Vladimirskaya TPP-2, IES Holding (TGK-6)
- 330 kV Gas-Insulated Switchgear S/S “Tikhoretskaya” for Federal Grid Company of UES
- 220 kV Gas-Insulated Switchgear S/S “Kozhevnicheskaya” (MOESK)
- 220 kV Gas-Insulated Switchgear S/S “Belorusskaya” (MOESK)
- 220 kV Gas-Insulated Switchgear S/S “Centralnaya” (MOESK)
- 330 kV Gas-Insulated Switchgear HPP-2, HPP-4 of Kubanskih HPP cascade (RusHydro)
- 110 kV Gas-Insulated Switchgear HPP, HPP-1, HPP-2, HPP-3, HPP-4 of Kubanskih HPP cascade (RusHydro)
- 500 kV S/S «Noginsk»: protection control and DCS systems for Federal Grid Company of UES, MES Centre
- 500 kV S/S “Svyatogor” protection control and DCS systems for Federal Grid Company of UES, MES West Siberia