ENGINEERING
CONSTRUCTION
FOR THE POWER SERVICES INDUSTRY

In Middle East Joint Partner & Representative

GLOBAL ENERGY SYSTEMS L.L.C.
Energostroyinvest Holding
Group Of Companies

DESIGN, CONSTRUCTION AND MAINTENANCE OF POWER GENERATION,
TRANSMISSION AND INFRASTRUCTURE FACILITIES

Major business lines:

• Design and construction of thermal power plants with unit capacity of 100 to 800 MW

• Design and construction of electricity transmission networks and high and super-high voltage substations – 110-750 kV

• Design and construction of fiber-optic networks
History

Energostroyinvest Holding was formed in 2002, integrating Russia’s major energy construction organizations, SevzapelectroSetStroy and SpetsSetStroy, with over 60-years’ industry experience, as its flagship companies. It is these companies that were part of the postwar reconstruction effort to bring back on line the power stations built under the GOELRO Plan (USSR’s first national power engineering plan) and that are now pursuing ambitious construction and upgrade projects launched in the Russian power industry under the GOELRO-2 Plan.

Since 2004, drawing on its experience in power construction industry and skilled human resources, Energostroyinvest Holding has been building up its energy construction engineering capabilities. Today, it brings together market leaders such as “Energo” Engineering Center, “EMK Engineering” Company, and New Engineering Company.

The engineering design business has been a development priority for the Group. It brought on board UralTEP Design and Engineering Centre in 2007, and Urals Energy Engineering Centre and North-West Science and Technology Centre in 2008.

Thanks to the unique experience and competence of about 9,500 professionals employed by the Group, it has been able to put into operation over 2,000 MW of thermal generation capacity, over 7,000 MVA of substation capacity, and more than 13,000 km of high voltage transmission lines in the past three years alone.
• An integrated asset chain supporting turnkey projects of any complexity
• Effective project portfolio management
Executive Board

N.Belykh
Chairman, CEO
Energostroyinvest-Holding

A.Muratkin
Executive Director
Energostroyinvest Holding

A.Superfin
Deputy CEO, Power Generation
Energostroyinvest Holding

V.Mayorov
Director, Production
Resource Management
Energostroyinvest Holding

D.Laptev
Managing Director,
Energo Engineering Centre

M.Krasheninnikov
Managing Director
EMK Engineering Company

V.Zhidkov
Managing Director
New Engineering Company
100% of design work and 30% of its construction workload are supported by the Group’s own manpower resources:

Total workforce of 9,500 includes:
• 4,800 construction and installation personnel
• 3,000 design professionals
• 1,300 project management professionals
• 100 experienced procurement and logistics staff
Engineering: Power Transmission

SUBSTATION AND TRANSMISSION PROJECTS

Commissioned more than 7,000 MVA of substation power capacity (110 kV–750 kV) Built over 13,000 km of power and communication lines (110 kV–750 kV)

Full range of transmission facilities

- Power substations (s/s)
- Overhead and cable transmission lines
- Distribution facilities of power stations
- Fiber-optics data links

MANAGING PROJECTS OF ANY COMPLEXITY ACROSS RUSSIA

- 14 project divisions across the Russian Federation
- Over 60 construction management groups
- More than 1,000 professionals
- Leading specialists have industry experience from 15–40 years
Engineering: Power Transmission

• MAJOR PROJECTS
• UNIQUE TECHNOLOGIES
• WORKING IN EXTREME ENVIRONMENTS

• 750 kV HVL Kalinin NPP – Cherepovets with the 750kV Cherepovetskaya SS (2003–2004)
The largest power grid system in Russia’s recent history, with a total installed capacity of
1,668 MVA and a 270 km long 750 kV line.

• 500 kV HVL Bureiskaya HPP – Khabarovsk (2003–2005) More than 400 km long, 500 kV
HVL Bureiskaya HPP – Khabarovsk was built in difficult geographic and climatic conditions,
long distance from motor roads.

• 330 kV Knyazhegubskaya SS (2004–2007) The first new 330 kV electric substation built
above the Arctic Circle over the last 20 years

• Construction of large crossings over Amur River and the Amur channel (2002–2003) 500 kV
HVL Primorskaya GRES – Khabarovskaya SS, state of the art project. Five crossing towers up
to 200 m high and 500 tons each erected at the point where the 500 kV Primorskaya GRES
– Khabarovskaya HVL crosses Amur River; using the method of extending tubular structures.
The towers at the Amur crossing are spaced at intervals of 1,621 and 1,177 m and over the
Amur channel at 1,650 m intervals

the last 20 years

Shakhty with the 500 kV Rostovskaya SS. A complex of 1,000 MW power delivery facilities
at the Balakovskaya NPP
Engineering: Power Generation

**GENERATION ASSETS**
Commissioned over 2,000 MW of thermal power capacity Upgraded power plants with full-scale SCADA systems

Full range of thermal generation services and solutions

- Project engineering
- Turnkey arrangements
- SCADA, metering, and communication systems
- Operation and maintenance

**PROJECT MANAGEMENT IN REGIONS WITH DEVELOPING ENERGY INDUSTRY**

- Four project management divisions (Urals, North-West, Centre, and Siberia)
- Project management experience in the CIS area
- 300 professionals
Project Management:
Power Generation

FIRST TURNKEY PROJECTS IN RECENT RUSSIAN HISTORY. ADVANCED TECHNOLOGY. ON SCHEDULE AND ON BUDGET

• 800 MW power unit No.2 at Nizhnevartovsk GRES (2000–2004) The first new 800 MW power unit built in Russia over the last 15 years. Equipped with unique electric generator with improved base frame similar to 1000 MW units used in nuclear power industry

• 220 MW Combined Cycle Unit at Tyumen CHPP-1 (1998–2004) The second largest CC unit in Russia after the Northwest CHPP in St. Petersburg

• 24 MW gas turbine power plant at Igolso-Talovye oil field operated by OAO Tomskneft (2003–2004) Main power supply source for oil production and associated petroleum gas recovery Facilities. Construction completed within a record period of 15 months

• 800 MW power unit No.1 at Talimarjan TPP in the Republic of Uzbekistan (1998–2004) The biggest power unit in the region the company currently provides operation and maintenance services

• SCADA for 800 MW power units at Surgut GRES-2, Nizhnevartovsk GRES, 200 MW power units at Surgut GRES-1, 220 MW CCGT unit at Tyumen CHPP-1 (2004–2007) Development and deployment of full-scale control systems

• Pervomaiskaya CHPP-14, two 180 MW CCGT units (2007–2010) Power supply source for the south-western part of St. Petersburg, Northern Shipyard and Kirov Plant
Project Management: A Single System

Corporate common planning and project performance tracking system:

- Centralised project management information system
- Single planning methodology
- Single work and resource classifier
- Weekly project status updates

WE DELIVER QUALITY ON TIME AND ON BUDGET
Divisions: Construction and Installation

CONSTRUCTION AND INSTALLATION DIVISIONS

Own resources by key activity in principal regions:
• Six regional divisions (Centre, North-West, South, Siberia, and Far East)
• 4,800 construction professionals
• Fully equipped production facilities

Production Resources by Business Line

- Generation: 400
- Transmission: 4,400
- Installation and startup: 600
- Specialist activities: 4,200

Production Resources by Region

- Center: 1,150
- North-West: 2,250
- Siberia: 500
- South: 400
- Far East: 500
Procurement

Timely equipment supply:
• Single procurement function supplying materials and equipment
• Strategic partnership with equipment suppliers
• Direct contracts with manufacturers

TRANSMISSION

GENERATION
Design

Full range of competencies in power facility design:

• Design of fossil fuel power stations, boiler-rooms, and small hydroelectric plants
• Design of transmission facilities
• Heat supply planning
• Comprehensive engineering surveys
• Environmental impact and industrial safety assessment
• Comprehensive power audits for companies and grids

Design Staff Headcount

Facility design experience in regions with an emerging power industry:

• Successful completion of power facility designs for the Urals, North-West, Center, South, and Siberia
• Three design centers
• A staff of over 3000 fully covers internal design needs
Design: Generation Projects

Timely equipment supply:
- Single procurement function supplying materials and equipment
- Strategic partnership with equipment suppliers
- Direct contracts with manufacturers

Coal
- Detailed design
- Khabarovsk Combined Heat & Power Plant (CHPP) 3, Unit 4 (180 MW)
- Feasibility study
- Troitsk Power Plant (PP)
- Serov PP
- Reftinsky PP
- Sredneuralsk PP
- Cherepovets PP

Gas
- Upgrade of a power unit at the Kirishshkaya PP using a 800 MW CCGT
- Upgrade of Surgut PP I
- North-West CHPP
- Magadan CHPP
- Pravoberezhnaya CHPP 5
- South-West CHPP (heating main design)
- Power unit No.2 (180 MW, at Chelyabinsk CHPPP-3)
Major Projects:
Power Lines and Substations

- 500 kV s/s Beskudnikovo
- 330 kV s/s Grozny
- 500 kV s/s Zapadnaya
- 330 kV s/s Rzhevskaya
- 500 kV Bureyskaya HES to s/s Khabarovskaya OHL
- 750 kV OHL from Kalinin NPP to Cherepovets with 750 kV s/s Cherepovetskaya
- Integrated power facilities to support Khakassky Aluminium Factory
- 330 kV s/s Mashuk
Nizhnevartovsk GRES, 800 MW power unit No.2

Startup: 2003

Client: OAO Tyumenenergo

Basic fuel type: gas

Work was performed at the facility to complete the construction of 800 MW Power Unit No.2, including: equipment installation, startup, integrated testing, and commissioning, plus the required mode-adjustment and warranty testing on turnkey terms.

The construction and commissioning of 800 MW Power Unit No.2 at Nizhnevartovsk power plant showed that efficiently managed design, construction, installation and startup make it possible to overcome difficulties of protracted construction projects and give a new lease of life to most complex power facilities in a new economic environment. The Client received a 800 MW power unit that incorporates latter-day operating expertise and makes maximum use of Russian-made equipment that is as good as similar foreign items.
**Pervomaiskaya CHPP-14 upgrade, construction of two CCGT power units**, each with 180 MW installed capacity and 160 Gcal per hr.

**Client:** OAO TGR-1  
**Startup:** 2010  
**Basic fuel type:** gas

Following its upgrade, Pervomaiskaya CHPP-14 will become one of the more advanced cogeneration facilities in the Russian Federation.

This project involves a challenging task of building two power unit facilities in limited space, allowing for the installation of a third unit in the future, with the station to remain operational during the upgrades. The capacities to be installed will be supported by state-of-the-art equipment and SCADA systems and will be well up to world standards in terms of reliability, efficiency, and environmental safety.
GENERA TION FACILITIES
Talimardzhan TPP

800 MW power unit at the Talimanjan thermal power plant, Uzbekistan

Client: Talimandzhan Thermal Power Plant, a unitary entity, and Uzbekenergo State Joint-Stock Company

Startup: 2004

Basic fuel type: gas

This is the biggest power unit in the region. Energostroyinvest divisions are now providing operating and maintenance services to this facility.

This project was long on the list of uncompleted construction in the Soviet era. The decision to build a 800 MW power unit at the Talimandzhan thermal power plant was first made in the 1980s, but the project was put on hold following the breakup of the Soviet Union, and construction and installation did not resume till the 1990s. Energostroyinvest divisions have performed work to complete the construction of Power Unit No.1, including delivery and installation of missing equipment; oversight of construction and installation as per design requirements, startup and checkout; integrated system testing by assembly; and power unit commissioning; and Client personnel training and instruction.
Construction of a 220 MW CCGT at Tyumen CHPP-1

Client: OAO Tyumenenergo
Startup: 2004
Basic fuel type: gas

The construction of a combined-cycle plant with a total capacity of 220 MW was performed as part of a Tyumen CHPP-1 upgrade and further development project, as its key equipment (the first stage) was past its design life, obsolete and worn out. The startup of a new power unit made it possible to reduce the fuel input required for heat and electricity generation. The Tyumen CHPP-1 220 MW combined-cycle plant is now the second biggest unit of its kind in Russia after the North-Western CHPP in St. Petersburg.

A scope of work was performed at Tyumen CHPP-1 to build Power Unit No.1, including equipment design, procurement, delivery, installation, startup and checkout, integrated system testing, and commissioning, plus performance of the required mode-setting and warranty tests under a turnkey arrangement. The Client received a 220MW power unit using state-of-the-art combined-cycle processes and Russian-made equipment where possible.
Strogino District Thermal Station upgrade, including installation of two combined cycle/thermal power units with installed capacity 130 MW each and an electricity output of 2,123 million kW-hrs.

**Client:** OAO Glavmosstroy Company  
**Startup:** December 2008  
**Basic fuel type:** Gas

Construction was performed in a very spacelimited environment, compounded by soil hydrogeological characteristics. The Strogino upgrade project, in terms of its costperformance ratio and environmental safety, sets a good standard for both new and upgrade projects in power generation.
Completion of the construction of 180/220 MW Power Unit 2 at Chelyabinsk CHPP-3.

Client: OAO TGK-10
Startup: 2006
Basic fuel type: gas

CHPP-3 is Russia’s youngest power station and an important supplier of heat and electricity for the city of Chelyabinsk and the surrounding region. With the second power unit on line, its annual heat and electricity output adds up to about 2.4 million Gcal of heat and 4.3 billion kW-hrs of electricity, respectively.

The Chelyabinsk CHPP-3 180/220MW Power Unit No.2 project, first started in 1996 and halted in 1998, fell into the category of longunfinished projects in 2006. In 2006, the stalled project was put in the hands the Energostroyinvest group of companies, which proceeded to complete the construction, installation and startup portion of the work on Power Unit No.2 at Chelyabinsk CHPP-3, making it possible to put it in operation within the shortest time on record for such projects.
Igolsko-Talovoye Oilfield TPS Project

Client: OAO Tomskneft VNK
Startup: 2004
Basic fuel type: gas

The Client now enjoys its own source of electricity for oilfield facilities and has reduced its grid power costs. In addition, the facility utilizes some of the petroleum gas which was previously flared, so environmental fines went down considerably.

A feasibility study, surveying work, power station design and construction, development of an automatic control philosophy, development of a SCADA system, Client personnel training, management of all startup and checkout activities, including the setting-up of process equipment and SCADA, facility commissioning and operation during five months.
Energostroyinvest-Holding

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ENGINEERING CENTERS

Energo Engineering Centre
EMK Engineering Company
New Engineering Company
Energo Design Centre

DESIGN CENTRES

UralTEP Design and Engineering Centre
Urals Energy Engineering Centre
North-West Science and Technology Centre

CONSTRUCTION

SevZapelectroSetStroy
SpetsSetStroy
Energomontazh-Invest
DalenergoSetStroy
Trest PrikaspiyElectrosetStroy
Surgutenergomontazh
PROCUREMENT
SetStroyInvest

PROCUREMENT