TEPINGENEERING Group of Companies

ZAO Firma TEPINGENEERING was established in 1993 and is focused on design of power plant projects including gas turbine technologies. The company has been involved in more than 100 design projects for construction, renovation and overhauls of power units. Nowadays the company is focused on up-to-date gas turbine and steam turbine design projects.

ZAO TEPINGENEERING was established in 2002 and is focused on design of energy components of electric grid facilities. The company’s main activity covers design of power plants, outdoor and enclosed-type high-voltage power substations and infrastructure facilities, including 220kV cable lines.

The companies employ approximately 360 people.

The companies offer a comprehensive range of pre-design (concept) and design works and provide field supervision services in accordance with current regulation requirements applicable in the Russian Federation and Moscow; the ones run a feasibility study of construction and investments, prepare conceptual design solutions, elaborate a tender documentation and evaluate bids.

As the active market players the Companies aim to expand their market share in design and engineering of large power generating plants both all over the Russian Federation and abroad

ZAO Firma TEPINGENEERING

Completed projects

**Thermal Power Plant Siddirganch 200 MW**, Bangladesh, was put into operation in November 2004.

**CCGT-Thermal Power Plant Strogino 260 MW**, Moscow - design of steam-gas turbine power plant with an electric power output of 260MW consisting of two steam-gas turbine units CCGT-130, each of them includes two Siemens gas turbines SGT-800 (GTX100), two HRSGs (manufactured by ZIO, Podolsk) and one Siemens steam condensing turbine. The whole plant was put into operation in the year of 2013.

**CCGT-400 of Yajvinskaya power plant** – design of steam-gas turbine power unit, electric power output 400MW, consisting of Siemens gas turbine SGT5-4000F, electric power output 291MW, Siemens steam turbine SST5-3000, electric power output 135,4MW, HRSG (manufactured by CMI, Belgium). The power plant was put into operation in the year of 2011.

**CCGT-450 of Urengoy power plant** – design of steam-gas turbine power unit, electric power output 450MW, consisting of two gas turbines ГГЭ-160, steam condensing turbine K-160-7,5 manufactured by JSC Power Machines and two horizontal-oriented HRSGs of E 229/51,8-7,85/0.59-507/227 model, manufactured by the JSC Machine Building Plant ZiO-Podolsk. The power unit was put into operation in the year of 2012.

**Construction of the Gas turbine power plant Scherbinka (375 MW/433 Gcal/hr, 1st starting unit), Moscow** - design of the hot water boiler plant with a capacity of 43 Gcal/h located on the power plant construction site. Five hot water boilers manufactured by the Viessmann Company had been installed; the boiler plant was put into operation in May, 2012
**Gas turbine power plant Vnukovo (90 MW/260 Gcal/hr)** - design of gas turbine power plant, electric power output 90MW and heat output 260 Gcal/hr. The following equipment has been installed within the scope of this project: two Siemens gas turbines SGT-800 (GTX100), two hot water heat recovery boilers (manufactured by ZIO) and two peak load hot water boilers KB-Г-81,4-150 H (manufactured by ZIO). The GTPP was put into operation in the year of 2013.

**3xCCGT-410 of Nyaganskaya power plant** – includes design of combined cycle steam-gas turbine power plant consisting of three power units with a capacity of 410MW each. This power plant consists of SGT5-4000F gas turbine, steam condensing turbine SST 5-3000, manufactured by Siemens and the steam HRSG of En-270/316/46-12,5/3,06/0,46-560/560/237 supplied by the EM Alliance OJSC. The first and second power units were put into operation on the year of 2013.

Design of gas turbine power plants GTPP-12 consisting of two gas turbines ГТД-6РМ (manufactured by NPO Saturn, Rybinsk) and two hot water heat recovery generators (manufactured by ZIO). Electric power output of each GTPP is 12MW, heat output - 24 Gcal/hr. The following GTPPs-12 designed by ZAO Firma TEPINGENEERING for Moscow region heating stations have been constructed and are being successfully operated: Kuryanovo, Penyagino, Zelenograd-3 and Peredelkino.

**On-going projects**

**Construction of CCGT-800 MWt of Permskaya power plant.** The prepared design has been approved by Glavgosexpertisa. Detailed design documentation is being elaborated.

The power unit is being put into operation in the year of 2015.

**3xCCGT-410 of Nyaganskaya power plant** – includes design of combined cycle steam-gas turbine power plant consisting of three power units with a capacity of 410MW each. This power plant consists of SGT5-4000F gas turbine, steam condensing turbine SST 5-3000, manufactured by Siemens and the steam HRSG of En-270/316/46-12,5/3,06/0,46-560/560/237 supplied by the EM Alliance OJSC. Commissioning of third power unit is in process, the unit is being put into operation in the year of 2014.

**Gas turbine power plant at the regional heating station-4 in the city of Zelenograd (72 MW/144 Gcal/hr)** - design of gas turbine power plant, electric power output 72 MW and heat output 144 Gcal/hr. The following equipment has been installed within the scope of this project: six updated gas turbines GTG-12 (manufactured by Mashproject, Nikolaev), hot water heat recovery generators (ZIO). Start-up and commissioning works are in progress.

**Gas turbine power plant Novokuznetskaya. Construction of power units no. 14 (first stage of the GTU) and no. 15 (second stage of the GTU) on the Kuznetskaya CHP site** – design of gas turbine power plant with electrical power output of 298 MW (peak-load mode). Two gas turbines GTU-145 manufactured by the Power Machines OJSC have been installed within the scope of this project. Elaboration of the detailed design documentation has been completed. Start-up and commissioning works are now in progress, the plant is being put into operation in the year of 2014.
Renovation of Thermal Power Plant Izhevskaya by means of SGT unit installation – design of steam-gas unit with an electrical power output of 230 MW and heat power of 145 Gcal/hr, including ГТЭ-160 gas turbine manufactured by the Power Machines OJSC, steam cogeneration turbine T-63/76-8,8 manufactured by the CJSC UTZ and HRSG of E-236/40,5-9,3/1,5-520/299-22,2 вв manufactured by the EM Alliance OJSC. The comprehensive tests was performed in April of 2014. The power plant is being put into operation in May, 2014.

Renovation of TPP-2 Vladimirskaya, SGT-230 unit installation - design of steam-gas unit with an electrical power output of 230 MW and heat power of 145 Gcal/hr, including ГТЭ-160 gas turbine manufactured by the Power Machines OJSC, steam cogeneration turbine T-63/76-8,8 manufactured by the CJSC UTZ and HRSG of E-236/40,5-9,3/1,5-520/299-22,2 вв manufactured by the EM Alliance OJSC. Start-up and commissioning works are now in progress, the plant is being put into operation in the year of 2014.

Renovation of the electrical substation 110/10/6 kV in Fili district of Moscow, including upgrade of electrical power output from 3x63 MVA to 2x80 MVA plus 2x63 MVA. Renovation works are performed without interruption of operation and without restriction for consumers. The project will be submitted for approval by the Moscow city Expert Evaluation Department in the year of 2014. The substation is being put into operation with a rated capacity of 2x80 MVA + 2x63 MVA in the year of 2016.

Renovation of the electrical substation 110/10/6 kV in Ramenskoye, Moscow Region, including upgrade of electrical power output from 2x25 MVA to 4x40 MVA. Renovation works are performed without interruption of operation and without restriction for consumers. The project will be submitted for approval by the Moscow city Expert Evaluation Department in the year of 2014. The substation is being put into operation with a rated capacity of 4x40 MVA in the year of 2019.

Renovation of the existing cable power line 110 kV in Troparevo-Teplyi Stan 1,2 district of Moscow. The project will be submitted for approval by the Moscow city Expert Evaluation Department on April, 2014. The line is being put into operation in the year of 2015.

Preparation of detailed design documentation:

GTPP Scherbinka (375 MW, 433 Gcal/hour), Moscow (II, III and IV starting units) – design of steam gas power plant consisting of three power units with a capacity of 125MW of electrical power and 70 Gcal/hr of heating power each. The power plant includes two gas turbines of SGT-800 model, one Siemens steam cogeneration turbine of SST-400 model and two HRSGs КУ(II) manufactured by the JSC Machine Building Plant ZiO-Podolsk. The design was approved by the Glavgosexpertisa.

Preparation of design documentation

GTPP Scherbinka (375 MW, 433 Gcal/hour), Moscow (V starting units) – the design includes three hot water boilers of ПТВМ-60Э model operating in a peak-load mode with a heat power output of 60 Gcal/hr each and installed in the integrated auxiliary building.
Construction of TPP Novobogoslovskaya (230 MW/345 Gcal/hour) – design of steam gas power plant with an electrical power output of 230 MW and the total heat power output of 310 Gcal/hr with ГТЭ-160 gas turbine manufactured by the Power Machines OJSC, steam cogeneration turbine Т-63/76-8,8 manufactured by the CJSC UTZ and HRSG of Е-236/40,5-9,3/1,5-520/299-22,2 вв manufactured by the EM Alliance OJSC as well as two peak-load hot water boilers of KB-ГМ-116,3-150 model.

The design was approved by the Glavgosexpertisa

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**Completed projects:**

The GTPP Kolomenskoye (135 MW/171 Gcal/h), Moscow – the design of gas turbine power plant with electrical power output of 135 MW and a heat power of 171 Gcal/h. The design includes three SGT-800 gas turbines by the Siemens and HRSGs of КУВ-57 model manufactured by the JSC Machine Building Plant ZiO-Podolsk. The power plant was put into operation in June, 2009.

Design of HV substation Pervomayskaya 220/20/10 kV with power grid connection lines and a power output of 3x100 MVA, Moscow. The substation is put into operation in 2011.

Design of HV substation Krasnoselskaya 220/20 kV, power output is 3x100 MVA, Moscow. The substation is put into operation in the year of 2012.

Design of electric power plant of enclosed-type Yashino 220/20 kV with power grid connections - Cable lines 220kV and electric power output 2x100 MVA, Moscow. The substation was put into operation in 2008.

Design of electric power plant of enclosed-type Nikulino 220/20 kV, with electric power output of 4x100 MVA, Moscow. The first starting unit of the substation (2x100 MVA) was put into operation in 2008.

Designs of mobile peak-load gas turbine power plants with GTU of MP-25 MOBILEPAC model by the Pratt and Whitney Company: Novosyurovo plant with an electrical power of 45 MW, Kirillovskaya plant with an electrical power of 45 MW and Ignatovo of 67,5 MW. They were put into operation in a period of 2007-2009.

Modernization of the district heating station Krasnaya Presnya, Moscow, the output power is risen to 720 Gcal/h. The first starting unit with two boilers ПТВМ-120Э with emission of NOx < 125 mg/m3 has been put into operation.

**On-going projects:**

Design of electrical substation Vagankovskaya 220/20kV with a power output of 3x160MVA, Moscow. Three phases of 220 kV shunt reactor have been installed within the framework of the project. The design was approved by the Glavgosexpertisa in May, 2013. The substation is being put into operation in 2015.

Design of electrical substation Kotlovka 220/20kV with a power output of 2x200MVA, Moscow. The
The project will be submitted for approval by the Moscow city Expert Evaluation Department in April, 2014. The substation is put into operation in 2016.

Design of electrical substation **Boldino (Novo-Kostino) 220/110/10kV** with power grid connections.

This design includes installation of two auto transformers 220/110/10 kV with a power of 125 MVA each, 220 kV and 110 kV open switchyards.

**Pre-design (conceptual design):**

Construction of the following HV substations for the Owner PJSC Energocomplex in Moscow: SS Grach, SS Marfino, SS Novo-Kuzminki, SS Vagankovskaya, SS Pererva, SS Novo-Orehtovo, SS Meshanskaya, SS Kurskaya, SS Zelenogradskaya, SS Zolotarevska and others.

Pre-design elaborations of 17 HV substation for the Owner PJSC Sintez-Group in Moscow region: Naumovo, Shilovo, Shekutino, Tokarevo, Shilkovo, Novlyanskaya, Tupolevo, Kotovo, Kulakovo, Krasnoznamensk, Kaymonovskaya and others.

**Legal status of the companies’ activities is based on the following permits:**

Certificate by the Non-commercial partnership Union of Architects and Designers (NPP GAP SRC, Moscow) on authorization for design works, which influence on safety of high-dangerous, complex and unique objects.

In January 15, 2010 the company ZAO Firma TEPINGENEERING was admitted as a member of the Association of Gas Turbine Technologies for Power Sector and Industry organization.

**The companies are certified in compliance with the following international standards:**

Quality management system ISO 9001;

Environmental management system ISO 14001;

OHS management system OHSAS 18001.

Certificate by the NPO VTI (All-Russian thermal engineering Institute) certification authority of the facultative certification system for compliance of works and services. The annual inspection audits confirm the appropriate operation of the management systems.

The companies apply the most up-to-date software including 3D design solutions P.D.M.S., PLANT 4D, AutoCAD Architecture 2008 and the other certified software.

Due to the Companies have the business units with a comprehensive expertise they are able to perform the whole cycle of design services, including approval stage, by their own resources. The Companies might cooperate with designated design entities for elaboration of detailed design documentation if necessary.

Design works are performed in close cooperation with the Russian and foreign partners: OJSC E4 Group, CJSC E4-SibKOTES, NP VTI, OJSC Kievskiy Scientific-Research and Design Engineering Institute
ENEGOPROJECT, OJSC Sibirskiy ENTS, Ural Power Engineering Center, VolgaGasproject, Vibram, CJSC INTER RAO ES, OJSC OGK-1, OJSC OGK-4, ENKA Insaat ve Sanayi A. S., OJSC EM-Alliance, OJSC Fortum, OJSC MOEK, the Group of companies NaftaSib, etc.; with manufacturers of major process equipment: LMZ, ELEKTROSILA, SIEMENS, General Electrics, CJSC REMKO, OJSC Machines manufacturing factory ZIO-Podolsk, OJSC Engineering company ZIOMAR, DOROGOBUZHKOTLOMASH, etc; and with equipment supplier – ELEKTROZAVOD Holding Company.

The companies advertise their activities for general public. Companies’ developments and projects have been mentioned by the following professional journals: Moskovskie torgi, Moya Moskva, Federalniy Spravochnik and presented at the number of exhibitions, namely: Russia Power, Fuel and energy in Russia, XXI century City Build, All-Russian forum-exhibition Goszakaz, Electro, IPNES, International festival Zodchestvo.

The ZAO Firma TEPINGENEERING Company is an award winner of the Contest The best completed project of the year in the area of investments and construction for the project of GTPP Kur'yanovo, CCGT-TPP Strogino (1 Starting Unit), also the company has validated fourth time the honorary title of Supplier of products, works, services for the city of Moscow in the year 2011.

The ZAO Firma TEPINGENEERING Company is an award winner of the Contest The best completed project of the year in the area of investments and construction for the project of GTPP Kolomenskoye. The Company has been awarded with the Silver Plaque for the Best Global Project in the Power & Industrial Sector - Yajvinskaya CCGT power plant with a power output of 410 MW by the ENKA Construction Company.

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