



## **Elektrosetstroyproject JSC**

Elektrosetstroyproject JSC established in 1991 works in the market of power engineering and communication as Research and Development Company developing and implementing innovation solutions while construction and operation of overhead lines and fiber optic communication lines such as: development and manufacturing of spiral fitting for repair and suspension of overhead line wires, fiber optic communication line cables; development of recommendations on overhead line protection from influence of wind vibrations; rehabilitation of overhead line with increase of capacity and reliability without replacement of available supports, as well as other developments, which are successfully used in the sphere of power engineering.

Now Elektrosetstroyproject JSC is a single company in Russia and CIS countries implementing manufacturing of all types of linear spiral fitting for suspension and repair of wires, lightning protection cables, as well as fiber optic communication line cables.

Our success is based on high proficiency of employees, our funds are their knowledge and professionalism. Power engineers, physicists, servicemen and engineers, over 20 % of which have academic degrees particularly international ones, work in our company. Nowadays staff of Elektrosetstroyproject JSC numbers over three hundreds of employees.

### **Activity Spheres of Elektrosetstroyproject JSC:**

#### **I. Industrial Products**

- Spiral fitting and means of oscillation suppression for overhead line wires.

About 60 % of electric network facilities of the Russian Federation are constructed using spiral fitting of Elektrosetstroyproject JSC, operating time of wires is increased up to 50 years.

Spiral fitting made by Elektrosetstroyproject JSC is highly reliable, its use is possible on any wires and cables, at any tangential tensions on overhead lines 0.4–750 kV.

Many designs developed and patented by Elektrosetstroyproject JSC have not analogs in the world.

- Assembly equipment for construction and exploitation works on overhead lines 35–500 kV.

#### **II. Construction and Assembly Works on Overhead Lines**

One of the most important activity spheres of Elektrosetstroyproject JSC is designing and construction of linear structures of power engineering and communication.

- Construction of overhead line 110–220 kV;
- wiring of overhead lines 110–220 kV;
- wiring of linear communication systems on overhead line and communication centres.

All works are performed by the project developed by own forces of Elektrosetstroyproject JSC.

### **III. Execution of Research and Development**

Since its establishment and to the present day Elektrosetstroyproject JSC execute active scientific work by forces of its own department on research.

Research and development are performed in the area of fittings for overhead line, vibration dampening means, designs of wires with improved characteristics. The system of monitoring for state of wires and cables for overhead line with any classes of voltages, any length in any geographic zone is developed. All required tests shall be performed in the own laboratory having certificate of Rostest.

### **IV. Foreign Activity**

In the Republic of Algeria joint venture is established for construction of overhead lines. Tenders are won and works on construction of overhead line 220 kV with total length 220 km are performed.

### **V. Designing and Construction of Basic Cellular Communication Stations**

Since middle of 2001 Elektrosetstroyproject JSC is actively engaged in designing, construction, modification and operation and maintenance of basic stations of cellular communication operators.

Speciality of Elektrosetstroyproject JSC is construction of basic station using compact supports with height from 9 to 27 meters based on own patented developments within the locations, where standard basic stations can't be arranged including federal routes, airports, complex urban districts.

As of today Elektrosetstroyproject JSC is a contractor on designing and construction of basic station in Moscow and Moscow Region for capital subsidiaries of Megafon JSC, Mobile TeleSystems JSC, VimpelCom JSC, Moscow Cellular Communications JSC, Skartel LLC (operator of Yota network).

Negotiations are carried on with Rostelekom JSC, which plans to start construction of basic station using supports of various types since 2013.

Elektrosetstroyproject JSC performs the full complex of design, construction and assembly and commissioning works:

- search of sites, preparation and signing of contracts regulating arrangement of basic station with lessors;

- pre-design inspections, surveys;
- drawing up technical assignments, development of design and estimate documentation.
- receiving of technical conditions, agreements, experts' reports, permits (Mossvet, Federal Highway Administration, Gormost, local administrations, Administrative Technical Inspection, Foreign Power Engineering, GosPozhNadzor, Rospotrebnadzor, Mosgorgeotrest, Federal Protection Service of the Russian Federation, State Road Traffic Safety Inspection and other);
- execution of design and detailed documentation, sanitary certificates;
- designing of radio-relay path;
- designing and construction of fiber-optic communication line for basic station by suspension on supports of outside lighting;
- construction and assembly works (installation of block containers, construction of control rooms, installation of outdoor equipment on frames, installation of supports with height from 9m to 27m, power supply organization and other);
- assembly of process equipment for basic station, antenna feeder system, systems of power supply, air conditioning, fire alarm, assembly of communication equipment and radio-relay station, commissioning works;
- execution of as-built documentation and facility transference to the Customer turn-key;
- operation and technical support for constructed basic station.

The following is performed by forces of Elektrosetstroyproject JSC by now:

- modification rehabilitation of operating basic stations – over 1000;
- designing and construction of new basic stations using supports of various types including supports 27 m with double purpose – over 600.

## **VI. List of Facilities for Designing and Construction Performed by Own Forces of Elektrosetstroyproject JSC**

### *Section 1. Designing*

<i>No.</i>	<i>Title</i>	<i>Characteristic</i>	<i>Customer</i>
<i>1.</i>	<i>Fiber-optic communication line "Substation Chapayevka – Substation Sovetsko-Sosninskaya". Crossing of overhead lines via the Ob river</i>	<b>Length – 2.15 km, 2008</b>	<i>Subsidiary of Federal Grid Company JSC – Tomsk PMES</i>
<i>2.</i>	<i>Fiber-optic communication line "Muravlenovskaya – Tarko-Sale". Laying of fiber optic channel along Substation Kholmogorskaya, Substation Muravlenovskaya, Sub-</i>	<b>Length – 110.135 km, 2008</b>	<i>Noyabrskyelektrostroy JSC, Centre of Engineering and Construction Management of the Western Siberia</i>

	<i>station Tarko-Sale</i>		
3.	<i>Rehabilitation of overhead line 220 kV for "Substation Afipskaya – Substation Krymskaya"</i>	Length – 212 km, 2008	<i>Subsidiary of Centre of Engineering and Construction Management of Unified Energy System JSC – Centre of Engineering and Construction Management of South</i>
4.	<i>Cable line infrastructure of fiber-optic communication line "Overhead Line 500 kV Severnaya – Bogoslovsk Aluminium Smelter with expansion of Substation 500 kV Bogoslovsk Aluminium Smelter"</i>	Length – 474.35 km, laying along the area of substation – 4.164 km, 2008	<i>Ural Power Engineering Construction Company, Centre of Engineering and Construction Management of Ural</i>
5.	<i>Fiber-optic communication line "Sredneuralskaya GRES – Kalininskaya", "Sredneuralskaya GRES – Yuzhnaya"</i>	Length – 86.5 km, 2009	<i>Rusengineering LLC, Centre of Engineering and Construction Management of Ural</i>
6.	<i>Fiber-optic communication line "Creation of Gas Petrochemical Complex. Feed Gas Pipeline"</i>	Length – 30.0 km, 2009	<i>GasEnergoSvyaz LLC</i>
7.	<i>Fiber-optic communication line "Overhead Line 220 kV Krasnoarmeyskaya – Golovnaya – Tomylovskaya" (Samara). 2010</i>	Length – 64.659 km, 2010	<i>ECC SOYUZ-Grid JSC, Electrical Main Network of Volga</i>
8.	<i>Fiber-optic communication line of overhead line 220 kV for "Tobolskaya TPS – Irtysh 1, 2"</i>	Length – 10.559 km, 2010	<i>Promstroj LLC, Centre of Engineering and Construction Management of the Western Siberia</i>
9.	<i>Rehabilitation of overhead line 220 kV for "Tsimlyanskaya HPP – Substation Shakhta 30"</i>	Replacement of insulators with multi-chamber insulator-arrester – 19,908 pcs. 2010	<i>Scientific and Production Association Streamer LLC, Electrical Main Network of South</i>
10.	<i>Fiber-optic communication line of overhead line 220 kV "Borskaya – Semyonovskaya"</i>	Length – 64 km, 2010	<i>Volga Power Engineering Centre JSC</i>
11.	<i>Fiber-optic communication line of overhead</i>	Length – 88 km, 2011	<i>ECC SOYUZ-Grid JSC, Electrical Main</i>

	<i>line 220 kV "Tsentralnaya – Shepsi"</i>		<i>Network of South</i>
12.	<i>Detailed documentation for cable line infrastructure and digital transmission systems of fiber-optic communication line of overhead line 220 kV "Ilkovaya – Khora and overhead line 220 kV Khora – Novaya"</i>	<b>Length – 163 km, 2011</b>	<i>Promstroi LLC, Centre of Engineering and Construction Management of the Western Siberia</i>
13.	<i>Sites for arrangement of equipment for lightning direction-finding system</i>	<b>4 Sites</b>	<i>National Agency on Environment Monitoring JSC (NAMOS)</i>
14.	<i>Fiber-optic communication line of substation 220 kV "Razdolinskaya – Nazarovskaya GRES"</i>	<b>Area of Substation Abalakovskaya – GOK, Length – 65 km, 2011</b>	<i>Centre of Engineering and Construction Management of Unified Energy System JSC – Centre of Engineering and Construction Management of Siberia</i>
		<b>Area of Substation Sharypovskaya – BUR, Length – 18 km, 2011</b>	
		<b>Area of Substation Uzhur – Krasnaya Sopka, Length – 51.754 km, 2011</b>	
15.	<i>Rehabilitation of overhead line 220 (500) kV Tarko – Sale-Urengoy</i>	<b>Length – 204 km, 2012</b>	<i>FNK Engineering LLC, Centre of Engineering and Construction Management of the Western Siberia</i>
16.	<i>Overhead line 110 kV Izhevsk – Mashzavod 1, 2 circuit. Rehabilitation with replacement of section and expansion of crosscut</i>	<b>Length – 17.5 km, 2012</b>	<i>Streamer Msk LLC</i>
17.	<i>Complex rehabilitation of overhead line 220 kV Cherpet – Orbita – Sputnik – Kaluzhskaya entering Cherpetskaya GRES</i>	<b>Length – 37 km, 2014</b>	<i>Power Engineering Construction Company Energomost LLC, Electrical Main Network of Centre</i>
18.	<i>Overhead Line 220 kV Nyaganskaya GRES – Kartopya</i>	<b>Length – 157 km, 2014</b>	<i>Promstroi LLC, Electrical Main Network of Western Siberia</i>

### *Section 2. Construction*

<i>No.</i>	<i>Title, Year</i>	<i>Customer</i>	<i>Cable</i>	<i>Length of Fiber-Optic Communication Line, km</i>	<i>Type of Optical Cable Suspension</i>
------------	--------------------	-----------------	--------------	---	---

1.	<i>Fiber-optic communication line "Autodrom Moscow", 2007–2008</i>	Setstroyservice LLC	<i>Self-supporting cable made by Farn LLC Voronezh, ground wire made by Saranskabel-Optika LLC</i>	643.822	<i>On supports of overhead line 110 kV, 220 kV, 500 kV</i>
2.	<i>Fiber-optic communication line "Substation Kholmogorskaya – Substation Muravlenkovskaya" 2008</i>	Setstroyservice LLC	<i>Ground wire made by Saranskabel-Optika LLC</i>	107.366	<i>On supports of overhead line 500 kV</i>
3.	<i>Fiber-optic communication line of Ust-Kut-Talanskoye Field. OPS-8, 2008</i>	Ural Power Engineering Construction Company JSC	<i>Ground wire made by Saranskabel-Optika LLC</i>	127.160	<i>On supports of overhead line 110 kV (in limiting dimensions 220 kV)</i>
4.	<i>Fiber-optic communication line "Substation Chapayevka – Substation Sovetsko-Sosninskaya". Transference of overhead lines via the Ob river, 2008</i>	Subsidiary of Federal Grid Company of Unified energy System – Tomsk PMES	<i>Cable C-300 (22.5-Г-1-ОЖ-Н-1670(170)) Ukraine</i>	2.150	<i>On supports of overhead line 220kV</i>
5.	<i>Fiber-optic communication line "Somkinskaya – Kirpichnikovo". 2008. Laying of fiber-optic channel along power engineering facilities, 2008</i>	Energopromstroy LLC, Centre of Engineering and Construction Management of the Western Siberia	<i>Ground wire made by Saranskabel-Optika LLC</i>	63.361	<i>On supports of overhead line 500 kV</i>
6.	<i>Fiber-optic communication line Muravlenovskaya-Tarko-Sale, 2008. Laying of fiber optic channel along Substation Kholmogorskaya, Substation Muravlenovskaya, Substation Tarko-Sale 2008</i>	Noyabrskel-ektrostroy JSC, Centre of Engineering and Construction Management of the Western Siberia	<i>Ground wire made by Saranskabel-Optika LLC, self-supporting cable made by Transvok JSC, in-house cable made by Farn LLC, Voronezh</i>	110,135	<i>On supports of overhead line 500 kV</i>
7.	<i>Rehabilitation of overhead line 220 kV for "Substation Afipskaya – Substation Krymskaya" (Krasnodar), 2008–2009</i>	Subsidiary of Centre of Engineering and Construction Management of Unified Energy System JSC – Centre of Engi-	<i>Wire made by Kanematsu Corporation</i>	212,000	<i>On supports of overhead line 220 kV</i>

		<b>neering and Construction Management of South</b>			
8.	<i>Fiber-optic communication line "Overhead Line 500 kV Severnaya - Bogoslovsk Aluminium Smelter with expansion of Substation 500 kV Bogoslovsk Aluminium Smelter" (Perm), 2009</i>	<b>Ural Power Engineering Construction Company, Centre of Engineering and Construction Management of Ural</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	99,630	<i>On supports of overhead line 500 kV</i>
9	<i>Fiber-optic communication line "Overhead Line 220 kV Krasnoarmeyskaya – Golovnaya – Tomyl'skaya" (Samara), 2010</i>	<b>ECC SOYUZ-Grid JSC, Electrical Main Network of Volga</b>	<i>Self-supporting cable made by Samar Optical Cable Company</i>	64,659	<i>On supports of overhead line 220 kV</i>
10	<i>Fiber-optic communication line "Overhead Line 500 kV Severnaya – Bogoslovsk Aluminium Smelter with expansion of Substation 500 kV Bogoslovsk Aluminium Smelter" (Perm,) 2009–2010</i>	<b>ECC SOYUZ-Grid JSC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	589,967	<i>On supports of overhead line 500 kV</i>
11	<i>Fiber-optic communication line "Overhead Line 220 kV Yuzhnaya Sredneuralskaya GRES- Substation 220 kV Kalininskaya (with branch to substation 220 kV Svarochnaya)", 2010</i>	<b>Rusengineering LLC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	79,463	<i>On supports of overhead line 220 kV</i>
12	<i>Fiber-optic communication line "Overhead Line 220 kV Tobolskaya TPS – Irtysh I, II circuits", 2010</i>	<b>Promstroy LLC</b>	<i>Self-supporting cable made by Samar Optical Cable Company</i>	10,559	<i>On supports of overhead line 220 kV</i>
13	<i>Fiber-optic communication line "Overhead Line 220 kV Uzlovaya – Complex of Refinery and Petrochem-</i>	<b>Energostroyoptik JSC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	53,944	<i>On supports of overhead line 220 kV</i>



	<i>ical Plant”, 2010</i>				
14	<i>Fiber-optic communication line – overhead line 220 kV "Nagornaya-Borskaya" from support No. 2A to support No. 5 with crossing the Volga River and Voloksha River entering substation 220 kV Borskaya (existing) 2010–2011</i>	<b>El-ektrotekhsetstroy JSC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	22,385	<i>On supports of overhead line 220 kV</i>
15	<i>Modification of facility Overhead Line 220 kV Tsimlyanskaya HPP – Substation Shakhta 30 (Insulator installation), 2011</i>	<b>Scientific and Production Association Streamer LLC</b>	<i>Quantity, 4354 pcs.</i>		<i>On supports of overhead line 220 kV</i>
16	<i>Fiber-optic communication line of overhead line 220 kV Ilkovo-Khora, overhead line 220 kV Khora – Novaya, + entering into overhead line 500 kV Ilkovo-Lugovaya at outdoor switchgear 500kV of Nyaganskoy GRES, 2011</i>	<b>Promstroy LLC</b>	<i>Self-supporting cable made by Samar Optical Cable Company</i>	163,000	<i>On supports of overhead line 220 kV</i>
17	<i>Fiber-optic communication line of overhead line within the following areas: (Izhevsk-Balezino) support 219 – support 411, support 411 – Substation Komso-molskaya, support 409 – Substation Igra; (Falenki-Zvyozdnaya) support 279 – support 249, support 174 – support 147, support 17 – Substation</i>	<b>ENERGOPROM-STROY LLC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	57,090	<i>On supports of overhead line 220 kV</i>

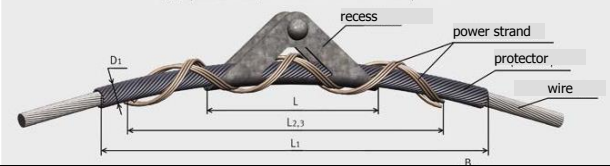
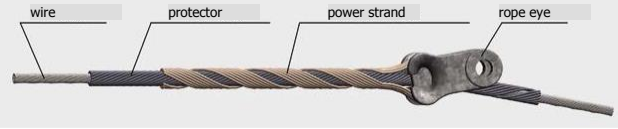
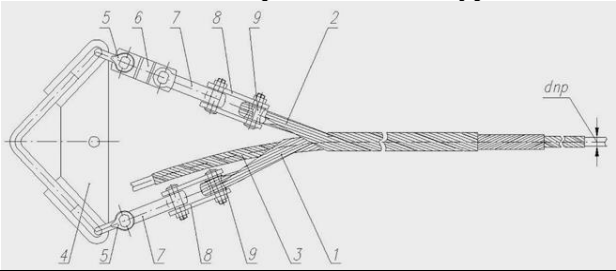
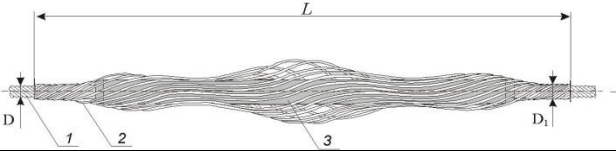
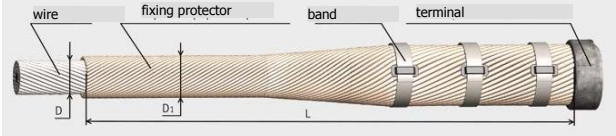
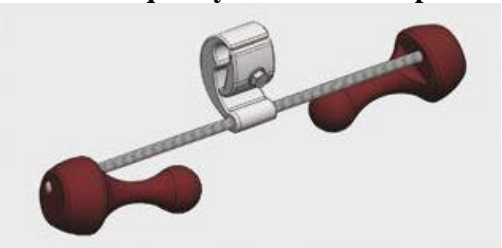
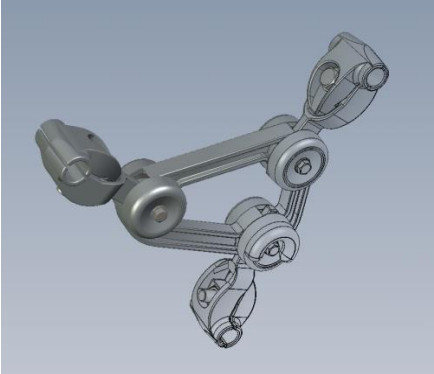
	<i>Zvyozdnaya, 2011</i>				
18	<i>Mounting of sites for arrangement of equipment for lightning direction-finding system, 2011</i>	<b>National Agency on Environment Monitoring JSC</b>	<i>Sites, 4 pcs</i>		
19	<i>Overhead line 220 kV Tsimlyanskaya HPP – Substation Shakhta 30 Electrical Main Network of South, 2011</i>	<b>Scientific and Production Association Streamer LLC</b>	<i>Light current sensors 99 pcs.</i>		<i>On supports of overhead line 220 kV</i>
20	<i>Fiber-optic communication line Surgutskaya GRES-1 – substation 220 kV "Surgut", 2011</i>	<b>Promstroy LLC</b>	<i>Self-supporting cable made by Samar Optical Cable Company</i>	5,750	<i>On supports of overhead line 220 kV</i>
21	<i>Fiber-optic communication line-overhead line entering substation "Bolshaya Elovaya", 2011</i>	<b>Promstroy LLC</b>	<i>Self-supporting cable made by Samar Optical Cable Company Ground wire made by Saranskabel-Optika LLC</i>	5,575	<i>On supports of overhead line 220 kV</i>
22	<i>Cable line infrastructure of fiber-optic communication line on overhead line 220 kV "Tsentralnaya - Shepsi", 2011</i>	<b>ECC SOYUZ-Grid JSC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	87,984	<i>On supports of overhead line 220 kV</i>
23	<i>Fiber-optic communication line of substation 220 kV "Razdolinskaya – Nazarovskaya GRES", 2011</i>	<b>Centre of Engineering and Construction Management of Unified Energy System JSC – Centre of Engineering and Construction Management of Siberia</b>	<i>Self-supporting cable made by Samar Optical Cable Company Ground wire made by Saranskabel-Optika LLC</i>	139,000	<i>On supports of overhead line 220 kV</i>
24	<i>Fiber-optic communication line-overhead line 220 kV Entering into Substation Buzhora</i>	<b>Rostovenergoavto-trans JSC</b>	<i>Ground wire made by Saranskabel-Optika LLC</i>	16,710	<i>On supports of overhead line 220 kV</i>

25	<i>Construction of overhead line (220 kV) for power generation of Adler TPP</i>	<b>Centre of Engineering and Construction Management of Unified Energy System JSC – Centre of Engineering and Construction Management of South</b>	<i>Overhead Line</i>	8,500	<i>Overhead line 220 kV</i>
26	<i>Overhead line 110 kV (in limiting dimensions 220 kV) Gas Turbine Power Plant-OPS-1 of Vankorskoye Field</i>	<b>Interspetsystroy JSC</b>	<i>Suspension of fibre-optic communication line</i>	33,2	<i>On supports of overhead line</i>
27	<i>Substation 220 kV Buzhora with entering into overhead line 220 kV, 2012</i>	<b>Rostov Power Engineering Automobile Operating Company JSC</b>	<i>Suspension of fibre-optic communication line</i>	66,6	<i>On supports of overhead line 220 kV</i>
28	<i>Fiber-optic communication line - overhead cable line 220 kV Dorokhovo-Sloboda</i>	<b>Energostroyoptik LLC</b>	<i>Suspension of fibre-optic communication line</i>	21,35	<i>On supports of overhead line 220 kV</i>
29	<i>Rehabilitation of overhead Line 220 kV Tyumen – Tobolskaya TPS-2 I, 2 circuits, 2012</i>	<b>Promstroy LLC</b>	<i>Suspension of fibre-optic communication line</i>	29,3	<i>On supports of overhead line 220 kV</i>
30	<i>Construction and assembly works, commissioning with delivery of equipment on improvement of lightning-surge proofness of overhead line 220 kV – Amurskaya-Blagoveshchenskaya No. 2, 2013</i>	<b>Electrical Main Network of East</b>	<i>658 pcs. Valve-type linear lightning arrester</i>		<i>On supports of overhead line 220 kV</i>
31	<i>Overhead line 220 kV Tynda-Khorogochi</i>	<b>Electrical Main Network of East</b>	<i>331 pcs. Valve-type linear lightning arrester</i>		<i>On supports of overhead line 220 kV</i>
32	<i>Overhead line 220 kV Khorogochi-Lopcha</i>	<b>Electrical Main Network of East</b>	<i>297 pcs. Valve-type linear lightning arrester</i>		<i>On supports of overhead line 220 kV</i>
33	<i>Overhead line 220 kV Prizeyskaya-Tungala, 2013</i>	<b>Electrical Main Network of East</b>	<i>235 pcs. Valve-type linear lightning arrester</i>		<i>On supports of overhead line 220 kV</i>
34	<i>Double-circuit overhead line</i>	<b>ECC SOYUZ-Grid JSC</b>	<i>Suspension of fibre-optic</i>	70	<i>On supports of overhead</i>

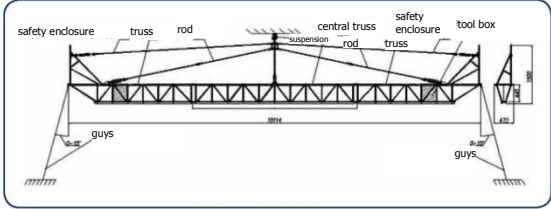
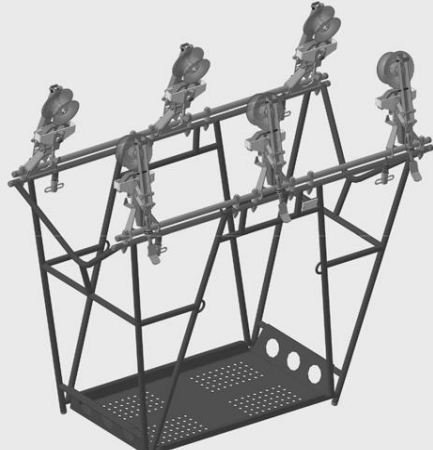
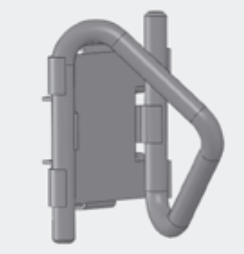

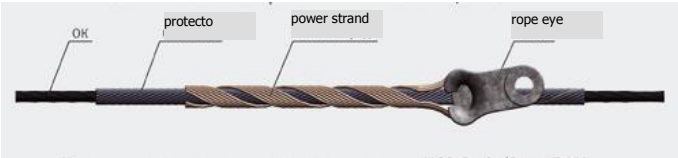
	<i>(110 kV) from sub-station Shepsi to substation Dagomys</i>		<i>communication line</i>		<i>line 220 kV</i>
35	<i>Overhead line 500 kV Nizhnevar-tovskaya GRES-Belozyornaya No. 2, 2013</i>	<b>Promstroy LLC</b>	<i>Suspension of fibre-optic communication line</i>	43,6	<i>On supports of overhead line 500 kV</i>
36	<i>Complex rehabilitation of overhead line 220 kV Cherpet – Orbita – Sputnik – Kaluzhskaya entering Cherpetskaya GRES, 2013</i>	<b>Power Engineering Construction Company Energomost LLC</b>	<i>Wire – 201.14 BOKC-OKTT-OKCH-37.534; cable M3-33.81</i>	37	<i>On supports of overhead line 220 kV</i>
37	<i>Rehabilitation of overhead line 220 kV Pangody-Nadym, double-circuit overhead line 220 kV Pangody – Nadym at Substation Pravokhettinskaya, overhead line 220 kV Pangody – Nadym crossing the Nadym River. Improvement of lightning-surge proofness, 2013</i>	<b>Polimer Apparat JSC</b>	<i>480 pcs. surge suppressor</i>		<i>On supports of overhead line 220 kV</i>
38	<i>Improvement of lightning-surge proofness for overhead line 220 kV for Krivoporozhskaya HPP – Kostomukshsky GOK (I-219 and I-220), 2014</i>	<b>Polimer Apparat JSC</b>	<i>1545 pcs. Valve-type linear lightning arrester; and 48054 m of horizontal grounding</i>	48,054	<i>On supports of overhead line 220 kV</i>
39	<i>Overhead Line 220 kV Nyagan-skaya GRES-Kartopya</i>	<b>Energopromstroy LLC</b>	<i>Fiber optic channel-OPGC</i>	157	<i>On supports of overhead line 220 kV</i>


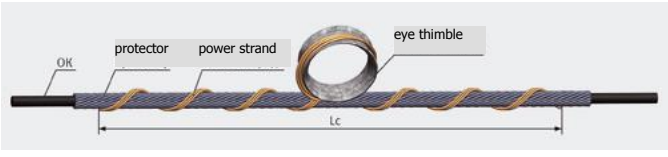


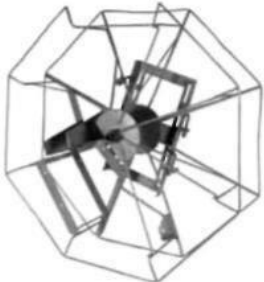
## VII. Patents of Elektrosetstroyproject JSC

No.	Title	GENERAL CHARACTERISTIC (TYPE)	DATA ABOUT PATENT
<b>Fitting for Suspension of Wires and Lightning Protection Cables on Overhead Line</b>			

1	<p style="text-align: center;"><b>Spiral supporting clamp</b></p> 	<p style="text-align: center;">ПC-DnpII-XX</p>	<p style="text-align: center;">Patent for Invention No. 2231188.</p>
2	<p style="text-align: center;"><b>Spiral terminal clamp</b></p> 	<p style="text-align: center;">HC-Dnp-XX HC-DnpII-XX</p>	<p style="text-align: center;">Patent for Invention No. 2272346.</p>
3	<p style="text-align: center;"><b>Tension suspension of HII type</b></p> 	<p style="text-align: center;">Tension suspension of HII type</p>	<p style="text-align: center;">Patent for Invention No. 2315408.</p>
4	<p style="text-align: center;"><b>Spiral protectors</b></p> 	<p style="text-align: center;">П3C-Dnp-XX</p>	<p style="text-align: center;">Patent for Invention No. 2166825.</p>
5	<p style="text-align: center;"><b>Protector of П3C-Dnp-43 type installed on hollow conductor of IIA grade</b></p> 	<p style="text-align: center;">П3C-Dnp-43</p>	<p style="text-align: center;">Patent for Invention No. 2189682.</p>
6	<p style="text-align: center;"><b>Multifrequency vibration dampers</b></p> 	<p style="text-align: center;">ГВ-XXXX-02, ГВ-XXXX-02M</p>	<p style="text-align: center;">Patent for Invention No. 2180765.</p>
7	<p style="text-align: center;"><b>Suppressing braces</b></p> 	<p style="text-align: center;">PД-XXXX-XX</p>	<p style="text-align: center;">Useful Model Patent No. 89779.</p>

**Assembly Devices and Appliances**

<p align="center"><b>8</b></p>	<p align="center"><b>Mounting ladder</b></p> 	<p align="center">TPM-10</p>	<p align="center">Patent for Invention No. 2400889.</p>
<p align="center"><b>9</b></p>	<p align="center"><b>Mounting Trolley</b></p> 	<p align="center">Model 13242.10.00.000</p>	<p align="center">Patent for Invention No. 2316095.</p>
<p align="center"><b>10</b></p>	<p align="center"><b>Tension attachment fitting YK-H-01M</b></p> 	<p align="center">Tension attachment fitting YK-H-01M</p>	<p align="center">Useful Model Patent No. 60274.</p>
<p align="center"><b>11</b></p>	<p align="center"><b>Supporting attachment fitting YK-II-02M</b></p> 	<p align="center">Supporting attachment fitting YK-II-02M</p>	<p align="center">Useful Model Patent No. 60274.</p>
<p align="center"><b>Fastening Elements for Optical Cable</b></p>			
<p align="center"><b>12</b></p>	<p align="center"><b>Spiral terminal clamp</b></p> 	<p align="center">Type HCO-Dmin DmaxII-01 (P3) HCO-Dmin DmaxII-21 (P3)</p>	<p align="center">Patent for Invention No. 2272346.</p>

13	<p style="text-align: center;"><b>Spiral supporting clamp</b></p> 	<p style="text-align: center;">Type ПСО- Dmin/DmaxП-31</p> <p style="text-align: center;">ПСО-Dmin/DmaxП-41</p>	<p style="text-align: center;">Patent for Invention No. 2231188.</p>
14	<p style="text-align: center;"><b>Spiral supporting clamps</b></p> 	<p style="text-align: center;">Type ПСО- Dmin/DmaxП-11</p>	<p style="text-align: center;">Useful Model Pa- tent No. 108229</p> <p style="text-align: center;">Patent for Invention No. 2392715.</p>
15	<p style="text-align: center;"><b>Spiral supporting clamps</b></p> 	<p style="text-align: center;">Type ПСО- Dmin/DmaxП-13</p>	<p style="text-align: center;">Patent for Invention No. 2231188.</p>
16	<p style="text-align: center;"><b>Spiral supporting clamps</b></p> 	<p style="text-align: center;">Type ПСО- Dmin/DmaxП-17</p>	<p style="text-align: center;">Useful Model Pa- tent No.108229</p> <p style="text-align: center;">Patent for Invention No. 2392715.</p>
17	<p style="text-align: center;"><b>Drums for arrangement of glands and optical cable</b></p> 	<p style="text-align: center;">Type БШ-1-x</p> <p style="text-align: center;">БШ-2-x</p> <p style="text-align: center;">БШ-3-x</p>	<p style="text-align: center;">Patent for Invention No. 2400897.</p>

### VIII. List of Published Articles

1. M. I. Strelyuk, I. I. Sergey, A. A. Vinogradov, V. A. Krasnov. Dynamic Loads on Braces While Subspan Oscillation of Wires of Supervoltage Overhead Lines. Power Engineering Construction, 1986, No. 1, p. 68–71.
2. V. I. Vanko, M. G. Yakovenko, A. A. Vinogradov. Linear Viscoelastic Model of Wire Oscillation in Subspans of Bundled Phase. News of Higher Educational Institutions, Power Engineering Series, 1989, No. 10, p. 16–21.
3. A. A. Vinogradov, A. V. Tishchenko. Spiral Fitting for Fiber-Optic Communication Lines Installed on Overhead Line Supports. Power Engineering Construction, 1994, No.3, p. 58–60.

4. A. A. Vinogradov, S. V. Ryzhov, A. A. Shtelmakh. About Development of the Procedure for Calculation of Spiral Tension Clamps. *Power Engineering Construction*, 1994, No. 3, p. 60–61.
5. I. I. Sergey, Kh. K. Lee, A. A. Vinogradov, M. Ts. Shin. Researches of Supervoltage Wire Dynamics with Bundled Phase When Creating Suppressing braces. *Power Engineering Construction*, 1995, No. 5, p. 66–71.
6. A. A. Vinogradov, S. V. Ryzhov, A. V. Tishchenko. Development and Implementation of Commercial-Scale Production of Spiral Fitting for Wire Suspension. *Power Plants*, 1998, No. 1, p. 3–7.
7. S. V. Ryzhov. Procedure for Calculation of Output Parameters for Spiral Tension Clamps. *Power Plants*, 1998, No. 1, p. 8–11.
8. O. E. Afanasyeva, V. A. Feldshtein, I. V. Feldshtein, S. V. Ryzhov. Design Determination of Efficiency under Conditions of Geometry Vibration of Spiral Supporting Clamp. *Power Plants*, 1998, No. 1, p. 12–17.
9. B. M. Zhukov, N. I. Sotskov. Increase of Corrosion Resistance for Spiral and Special Fitting for Suspension of Optical Communication Cables and Wires. *Power Plants*, 1998, No. 1, p. 18–23.
10. O. V. Volkova, V. V. Godulyan, A. V. Koryavin, A. A. Vinogradov, O. E. Afanasyeva, V. Z. Trifonov. Tracking-Erosion Resistance of Self-Supporting Optical Cables. *Power Plants*, 1998, No. 1, p. 24–30.
11. A. E. Brazhnikov, A. A. Vinogradov, V. M. Plotnikov, V. A. Kvashin. Self-Contained Recorder of Wire and Cable Oscillations. *Power Plants*, 1998, No. 1, p. 30–36.
12. B. M. Zhukov. Calculation and Designing of Special Fitting for Suspension of Self-Supporting Communication Cables and Wires of Overhead Line. *Power Plants*, 1998, No. 1, p. 36–40.
13. I. I. Sergey, A. A. Vinogradov. Numerical Simulation of Operation Statistic and Dynamic Conditions of Overhead Line Wires and Cables. *Power Plants*, 1998, No. 1, p. 41–49.
14. A. A. Vinogradov, R. R. Sergey. Occurrence of Torsional Oscillations in Braces of Flexible Busbars of Substation with Double Conductors at Short Circuit. *Power Plants*, 1998, No. 1, p. 49–53.
15. B. M. Zhukov. Calculation of Supporting Spiral Clamps for Fastening of Cables and Wires with Intermediate Supports of Power Transmission Lines. *Problems in Machine Building and Automation*, 1998, No. 1, p. 58–62.
16. O. E. Afanasyeva, S. V. Ryzhov, V. A. Feldshtein, I. V. Feldshtein. Dynamic Models for Research of Oscillations in Wires of Power Transmission Lines of Overhead Communication Cables in Wind Current. *Problems of Machine Building and Automation*, 1998, No. 1, p. 50–57.
17. A. A. Vinogradov. Seminar “Modern Models of Dancing Suppression for Wires of Bundled Phase of Overhead Transmission Lines”. // *Power Plants*. – 1998, No. 9, p. 61–62.
18. O. E. Afanasyeva, A. A. Vinogradov. Development of Design for Vibration Suppressors, Efficiently Reducing Vibration Amplitudes. *Problems in Machine Building and Automation*, 1999, No. 3, p. 77–78.
19. A. A. Vinogradov, A. I. Zhukov, S. V. Ryzhov. Protection Circuit for Wires of Overhead Line and Self-Supporting Communication Cables from Vibrations Caused by Wind, Complex Methods of Protection. *Elektrosetstroyproject JSC, Moscow*, 22.08.00.
20. S. V. Ryzhov, A. V. Tishchenko, Yu. L. Tsvetkov. Effective Designs of Supporting Clamps Based on Spiral Fitting. (All-Russian Exhibition Center) *Elektrosetstroyproject JSC, Moscow*, 10.09.01.
21. A. I. Zhukov, I. A. Platonova. Development of Spiral Protectors for Protection of Driven Lowering and Their Putting into Pilot Production. (All-Russian Exhibition Center) *Elektrosetstroyproject JSC, Moscow*, 10.09.01.
22. A. A. Vinogradov, A. N. Danilin, I. A. Platonova. Spiral Protectors for Protection of Wires in Multiroller Suspensions on Large Crossings. (All-Russian Exhibition Center) *Elektrosetstroyproject JSC, Moscow*, 10.09.01.
23. A. I. Zhukov, S. V. Ryzhov. Repair of Wires for Overhead Power Transmission Line yuzhnaya – Chyornyy Yar Using Spira; Fitting. (All-Russian Exhibition Center) *Elektrosetstroyproject JSC, Moscow*, 10.09.01.
24. A. A. Vinogradov, Yu. L. Tsvetkov. Development and Testing of Dancing Suppressors of TDD Types for Overhead Lines 330, 500 and 1150 kV. (All-Russian Exhibition Center) *Elektrosetstroyproject JSC, Moscow*, 10.09.01.



25. A. A. Vinogradov. Use of Suppressing Braces for Protection of Overhead Line with Bundled Phases from Oscillations. (All-Russian Exhibition Center) Elektrossetstroyproject JSC, Moscow, 10.09.01.
26. A. A. Vinogradov. An Industrial Approach to the Control of Conductors Subspan Vibration and Galloping in Transmission Lines. In Proc. of 4-th Intl Symp. on Cable Dynamics, Montreal, 2001. – p. 251–263.
27. A. A. Vinogradov, I. A. Platonova, S. V. Ryzhov. Protection of Loops for Driven Lowering Using Spiral Fitting. Power Plants, 2001, No. 4, p. 38–42.
28. I. I. Sergey, P. I. Klimkovich, Yu. L. Tsvetkov. Numerical Simulation of Dancing for Single Wires of Overhead Power Transmission Line. Энергетика – News of Higher Educational Institutions and Power Engineering Associations of CIS, 2002, No. 3, p. 3–8.
29. A. I. Zhukov, S. V. Ryzhov. The Range of Vibration Dampers Developed by Elektrossetstroyproject for Protection of Wires of Overhead Line and Optical Cables. Elektrossetstroyproject JSC, Moscow, 09.12.02.
30. A. A. Vinogradov. Suppressing Braces for Protection of Double Conductors of Overhead Line 330-500-750 kV from Oscillations. Selection of Brace Layouts. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
31. A. A. Vinogradov, R. V. Ryzhov, G. I. Shmelin. Development and Implementation of Complex of Measures on Improvement of Overhead Power Transmission Line Reliability under Conditions of the Far North. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
32. A. I. Zhukov, I. A. Platonova, S. V. Ryzhov. Special Protectors for Large Crossings. Development of Designs, Tests. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
33. A. I. Zhukov, I. A. Platonova, S. V. Ryzhov. Improvement of Fatigue Endurance for Hollow Conductor in Terminals. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
34. I. A. Platonova, Yu. L. Tsvetkov. Development of User’s Program EOL-1 for Selection and Check of Vibration Damper Arrangement in Overhead Line Spans. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
35. S. V. Ryzhov, Yu. L. Tsvetkov. Spiral Fitting for Overhead Line Wires: Connection, Repair, Loop Clamps. New Development. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
36. S. V. Ryzhov, I. I. Sergey, Yu. L. Tsvetkov. Influence on Wire and Fitting Occurring While Dancing. Standards for Tests. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
37. S. V. Ryzhov, Yu. L. Tsvetkov. Spiral Protectors as Means for Vibration Resistance Increase of Overhead Line Wires. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
38. I. I. Sergey. Mathematic Simulation of Dancing for Single and Double Conductors of Overhead Line. Calculations While Absence and Availability of Dampers of Various Types. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
39. V. A. Feldshtein. Mathematic Simulation of vibration for Overhead Line Wires Caused by Wind upon Availability of Spiral Fitting. Simulation of Vibration Dampers. Materials of Scientific-Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and

- Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, January 20<sup>th</sup> – 24<sup>th</sup>, 2003.
40. I. A. Platonova, S. V. Ryzhov, V. G. Kolosov. Experience in Development of electronic Versions of Methodological Guidelines on Protection of Overhead Line Wires from Vibrations (EOL-1, EOL-2 Programs). Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003.
41. A. A. Vinogradov, A. I. Zhukov, S. V. Ryzhov, G. I. Shemelin. Experience in Complex Approach to the Problem of Reliability Improvement for Overhead Power Transmission Line under Conditions of Far North (by the example of Tyumenenergo JSC). Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
42. Yu. L. Tsvetkov, S. V. Ryzhov, A. A. Vinogradov, I. I. Sergey. For Accounting of Dynamic Influence on Wires and Fitting of Overhead Lines While Dancing. Calculation Results Compared with Experiment. Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
43. A. A. Vinogradov, A. I. Zhukov, I. A. Platonova. Results of Measurements for Wire Vibration on Crossing of Overhead Line 500 kV through the Volga River. Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
44. Yu. L. Tsvetkov, S. V. Ryzhov, V. G. Kolosov. Increase in Resource Resistance of Wires for Overhead Line While Vibration by Installing Spiral Protectors in Recesses of Supporting Clamps. Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
45. Yu. L. Tsvetkov, S. V. Ryzhov. Efficient Designs of Supporting Clamps for Wires of Overhead Lines and Optical Communication Cables. Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
46. S. V. Ryzhov, I. A. Platonova, A. I. Zhukov, A. V. Vasilyev, N. G. Tsaranov. Special Spiral Protectors for Protection of Hollow Conductors of Substations and Wires in Multi-Roller Suspensions of Large Crossings. Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
47. S. V. Ryzhov, Yu. L. Tsvetkov. Spiral Fitting for Wires of Overhead Line. Elektroselstroyproject JSC, Moscow, 24.06.03.
48. A. A. Vinogradov, Yu. L. Lilen. New Design of Dancing Suppressor of Wires for Overhead Line 500 kV. (Joint Work of Elektroselstroyproject JSC and University of Liege). Information Materials of International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup> – 31<sup>st</sup>, 2003
49. S. V. Ryzhov, Yu. L. Tsvetkov. Use of Spiral Fitting for Suspension and Repair of Wires for Overhead Line. International Scientific and Technical Seminar: “Modern Methods for Evaluation of Technical State and Methods for Improvement of Reliability for Overhead Lines and Equipment of Substations”, Moscow, October 27<sup>th</sup>-31<sup>st</sup>, 2003
50. S.V. Ryzhov, Yu.L. Tsvetkov. Selection of Layouts for Installation of Vibration Dampers Considering Use of Spiral Fittings. Part 1 – Development of the Procedure and Algorithms of Calculation. Information Materials of International Scientific and Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, February 16<sup>th</sup> – 20<sup>th</sup>, 2004.
51. A. A. Vinogradov, V. G. Kolosov. Selection of Layouts for Installation of Vibration Dampers Considering Use of Spiral Fittings. Part 2 – Calculation Results, Comparative Analysis. Information Materials of International Scientific and Technical Seminar: “Problems of Mechanics

- of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, February 16<sup>th</sup> – 20<sup>th</sup>, 2004.
52. A. A. Vinogradov, I. I. Sergey. About Hazard of Double Conductor Bundle twisting in Overhead Line Span at Short Circuit. Information Materials of International Scientific and Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, February 16<sup>th</sup> – 20<sup>th</sup>, 2004.
53. A. A. Vinogradov, I. I. Sergey. Determination of Forces Influencing on Braces of Bundled Phase of Supervoltage Overhead Lines at Short Circuit. Information Materials of International Scientific and Technical Seminar: “Problems of Mechanics of Overhead Line, Climatic Conditions, Loads and Influences, Wire Oscillations and Methods of Their Limitation”, Moscow, February 16<sup>th</sup> – 20<sup>th</sup>, 2004.
54. A. A. Vinogradov, S. V. Ryzhov, Yu. L. Tsvetkov, N. G. Tsaranov. Problems of Wear of Overhead Line Wires on Large Crossing and Protection Methods. // ELECTRO, 2004, No. 3, p. 33–36.
55. S. V. Ryzhov, Yu. L. Tsvetkov, N. G. Tsaranov. Repair of Wires on Overhead Line 500 kV of Balakovskaya NPP – Substation Trubnaya. // ELECTRO. – 2004, No. 5, p. 28–29.
56. S. V. Ryzhov, Yu. L. Tsvetkov, E. M. Degteryov. New Wire of CA-59/95 Grade with Improved Resistance to External Mechanical Effects. // ELECTRO, 2004, No. 6, p. 29–31.
57. A. I. Zhukov, I. A. Platonova, S. V. Ryzhov, Yu. L. Tsvetkov. New Designs of Spiral fitting for Non-Insulated Wires. Elektrotsetstroyproject JSC, Moscow, 28.04.04.
58. Yu. L. Tsvetkov. Selection of Optimum Circuits of Protection from Vibrations Using Methods of Mathematical Simulation. Elektrotsetstroyproject JSC, Moscow, 28.04.04.
59. A. A. Vinogradov, S. V. Ryzhov, Yu. L. Tsvetkov. Problems of Wear of Overhead Line Wires on Large Crossing and Protection Methods. // ELECTRO, 2004, No. 3.
60. A. A. Vinogradov, I. I. Sergey, Yu. E. Loshakov, G. I. Shemelin. Problem of Reliability Improvement for Overhead Power Transmission Line under Conditions of Far North: Experience in Complex Approach. Elektrotsetstroyproject JSC, Moscow, 05.09.04.
61. Jean-Louis Lilien, Dmitri SNEGOVSKI. LIMITING WINDSTORM EFFECTS ON TOWER BY A «LOW DRAG» CONDUCTOR. UNIVERSITY OF LIEGE (Belgium). 09.10.04.
62. Yu. L. Tsvetkov. Use of Spiral Fitting While Designing and Rescue and Recovery Works in order to Improve Reliability and Increase Service Life of Overhead Line Wires. Information Materials of International Scientific and Technical Seminar: “Monitoring for State of Overhead Power Transmission Line: Methods for Service Life Forecasting, Their Reliability Improvement”, Moscow, February 14<sup>th</sup> – 18<sup>th</sup>, 2005.
63. A. N. Danilin, S. V. Ryzhov, Yu. L. Tsvetkov, V. I. Shalashilin. Model of Wire for Overhead Power Transmission Line. XI International Symposium: “Dynamic and Process Problems of Mechanics in Designs and Continuous Media”, Yaropolets, February 14<sup>th</sup> – 18<sup>th</sup>, 2005.
64. A. A. Vinogradov. Suppressing Braces for Protection of Double Conductors for Overhead Line 330-500-750 kV from Oscillations. Selection of Layouts for Brace Arrangement. Elektrotsetstroyproject JSC, Moscow.
65. Yu. L. Tsvetkov. Experience in Use of Spiral Fittings in Overhead Power Transmission Line. Scientific and Production Magazine “Power Engineering” (the Kyrgyz Republic), No. 1 (2), Bishkek, June, 2005, p. 44–47.
66. D. B. Volkov-Bolgorodsky. Approach to Tasks about Interaction of Acoustic and Elastic Media by Multipole Modular Method. Materials of XI International Symposium: “Dynamic and Process Problems of Mechanics in Designs and Continuous Media”, Yaropolets, February 14<sup>th</sup> – 18<sup>th</sup>, 2005.
67. D. V. Snegovsky. Use of Dynamic Reduction While Analysis of Subspan Oscillation in Overhead Power Transmission Lines. Materials of XI International Symposium: “Dynamic and Process Problems of Mechanics in Designs and Continuous Media”, Yaropolets, February 14<sup>th</sup> – 18<sup>th</sup>, 2005.
68. V. G. Kolosov, S. V. Ryzhov, Yu. L. Tsvetkov. Increase of Resource Resistance of Overhead Line Wires While Vibration by Installing Spiral Protectors. // ELECTRO, 2005, No. 6.
69. A. V. Tishchenko, Yu. L. Tsvetkov, V. A. Kravchenko. Replacement of Lightning Protection Cable with OPGC on Metal Supports of Overhead Line 110-750 kV without Voltage Release. // ELECTRO, 2006, No. 6.

70. O. E. Afanasyeva. Dynamics and Means of Protection from Vibration for Power Transmission Line Wires and Self-Supporting Communication Cables. Synopsis of Thesis for Procuring of Academic Degree of Candidate of Science. Speciality 01.02.06 – Dynamics, Strength of Machines, Devices and Equipment.
71. “Experience in Use of Spiral Fitting in Overhead Power Transmission Line” Ryzhov R. V. et al. *Electrical Networks and Systems* 2008, No. 2.
72. I. A. Boblyeva. Experience in Use of Linear Spiral Fitting in Krymskaya Power Plant of NPS Ukrenergo. *Electrical Networks and Systems*, 2008, No. 6, p. 39.
73. I. A. Boblyeva. Experience in Use of Spiral Fitting in Overhead Power Transmission Line in Severnaya Substation. *Electrical Networks and Systems*, 2008, No. 5, p. 20.
74. I. A. Boblyeva. Experience in Use of Spiral Fitting in Overhead Power Transmission Line in Power Systems of the Ukraine. *Electrical Networks and Systems*, 2008, No. 4, p. 12.
75. I. A. Boblyeva, A. V. Roshchin, I. A. Platonova, R. V. Zhigulin. Use of Wires with AERO-Z Grade and Spiral Fitting While Rehabilitation of Existing Power Transmission Lines. *Electrical Networks and Systems*, 2008, No. 3, p. 24.
76. “Tension Spiral Clamp with Strength of Wire Termination over 200 kN” Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 63–66.
77. “Features of Loop Operation in Overhead Power Transmission Line, Proposals on Improvement of Their Reliability” A. A. Vinogradov, Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 67–72.
78. “Modern State of Issues on Operation, Designing and Construction of Overhead Lines” A. A. Vinogradov Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 94–95.
79. “Spiral Dancing Suppressors” Kolosov R. V., Ryzhov R. V., Feldshtein V. A. Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 96–103.
80. “Modern Approaches to Wire Dancing Suppression in Overhead Power Transmission Line with Single and Bundled Phases. Types of Dancing Suppressors, Their Comparative Efficiency and Operatign Reliability” Vinogradov A. A. Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 104–119.
81. “Model of Dancing for Wires of Overhead Line and Calculation of Protection Means” Feldshtein V. A., Kolosov R. V., Ryzhov R. V. Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 145–156.
82. “Inceas in Capacity of Overhead Lines: Analysis of Technical Solutions” Kolosov R. V., Ryzhov R. V. Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 345–355.
83. “Research of Corrosion for Lightning Protection Cables of Overhead Lines and Forecasting of Their Service Life” Zhukov B. M., Sotskov N. I. Materials of Fourth International Electrical and Power Engineering Seminar “Modern State of Issues on Operation, Designing and Construction of Overhead Line”, March 23<sup>rd</sup> – 27<sup>th</sup>, 2009, p. 535–542.