

BLACK SEA ENERGY TRANSMISSION GROUP





BLACK SEA ENERGY TRANSMISSION GROUP

Taking into consideration the experience of the undersigned parties in the field of overhead transmission lines and substations, a group of Romanian companies decided, by mutual agreement, to create a Consortium named

BLACK SEA ENERGY TRANSMISSION GROUP - BSETG

having as main purpose the participation, on competitive basis, in all tenders having as scope the rehabilitation, manufacturer and erection of new overhead transmission lines and substations, organized in Middle East Region.

The founding commercial companies of **BSETG Consortium** are:

❑ **BLACK SEA TECHNOCHIM CO. S.R.L.**

- is the leader of **BSETG** and member of "BLACK SEA GROUP"

❑ **INSTITUTE OF POWER STUDIES AND DESIGN S.A.- ISPE**

- member of **BSETG** as the designer for all types of towers and substations and is one of the world leaders in the power engineering.

❑ **CELPI S.A.**

- is member of **BSETG** as manufacturer of all types of towers and substations and provider for testing facilities. The CELPI S.A. having an activity of more than 50 years, is a traditional manufacturer of equipment for power transport, distribution and telecommunication.

❑ **ELM CLUJ S.A.**

- is member of **BSETG** and can assure services as:

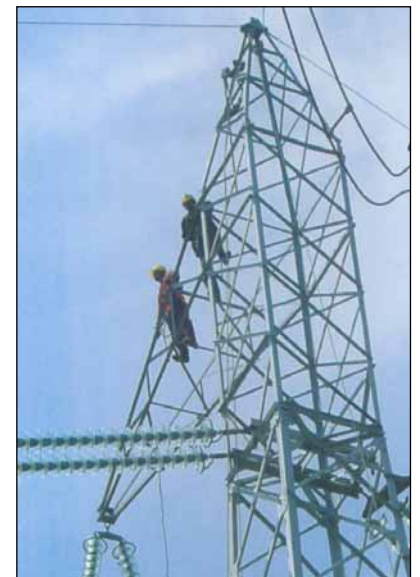
- foundations for overhead transmission lines of 110-750 KV, simple and double circuit
- assembly of towers and concrete poles for overhead transmission lines of 110-750 KV
- mounting of active and protection conductors for overhead transmission lines of 110-750KV, simple, double or multiple circuit.
- mounting of earthwire with optical fibers for overhead transmission lines of 110-400 kV

❑ **ELECTROMONTAJ S.A.**

- is our partner in the field of electric power and offers turn-key projects and manufacturing of galvanized steel towers for overhead electric lines of any voltage, equipment and transformer substations, clamps and fittings.

The Consortium Agreement was signed by:

Mr. **Maki Majeed Habib** - General Manager of BST
Mr. **Ioan Dan Gheorghiu** - General Manager of ISPE
Mr. **Ioan Dohot** - General Manager of CELPI
Mr. **Cornel Suci** - General Manager of ELM





BLACK SEA ENERGY TRANSMISSION GROUP

LEADER OF BSETG: **BLACK SEA TECHNOCHIM CO S.R.L.**

BLACK SEA TECHNOCHIM CO S.R.L., having its head office in Bucharest, Romania, registered at the Register of Commerce under no. J40/18522/1994 with C.U.I. no. 6286263 and the fiscal attribute R, is member of **BLACK SEA GROUP** stand in with **BLACK SEA ENERGY GENERATING EQUIPMENT TRADING (L.L.C.)** having its head office in Dubai, U.A.E.

The main markets for our activities are in the Middle East and Africa countries.

Since its formation, as an international trade company, BST has been dealing in the field of power generation, representing and collaborating with famous Romanian companies, for supplying of equipments and spare parts and performing of overhaul for all types of steam power stations with power up to 330MW and boilers with capacity up to 1035t/h.

Now we have decided to extend our field of activity in power transmission and distribution and we have created a powerful consortium with Romanian companies having a long and successful experience in this field.

Our consortium is able to offer:

- design of overhead transmission lines and substations up to 750KV;
- foundation for overhead transmission lines;
- manufacturing and testing of all types of towers;
- assembly of towers and substations;
- mounting of conductors;

Due to an extensive experience, we offer to our clients high-quality products, short time delivery, competitive prices and a good collaboration.

Highly-qualified personnel work hard so that all the products, works and services to be completed according to our clients requirements.

Quality Management

Black Sea Technochim Co. is certified by **TÜV Thüringen e.V.** for the implementation and the application of the quality system according to DIN EN ISO 9001:2000.



Contact

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BLACK SEA ENERGY TRANSMISSION GROUP

Member: 

Founded in 1949 the **Institute for Studies and Engineering** became, after several restructuring processes, a 100% private Romanian Company. National power engineering leader, ISPE developed, through its projects, practically all the National Power System - generation, transmission and distribution systems for heat and power.

Against the background of energy market liberalization and globalization facing Eastern and Central European countries, ISPE has succeeded, due to a balanced management policy, in keeping up its leading position. Our medium and long-term development goals follow closely the Romanian strategy for UE integration, adoption and application of UE acquis.

The transition to a sustainable energy future, in the Eastern and Central Europe, is reflected within ISPE' s strategy by implementing, through its projects, cleaner technologies and imposing the use of energy resources in an environmental friendly manner.

The company is certified by TÜV SÜDDEUTSCHLAND for the application of the quality system according to DIN EN ISO 9001.

ISPE is member of more than 25 national and international associations and societies, such as: WEC, OGRE, EUROHEAT & POWER, VGB, Balkan OPET, APER, SIER etc. Recently, a member of the executive board represents ISPE' s interests, as vice chairman of the Ad Hoc Group of experts for Coal and Power Plants, in Geneva at UNECE Sustainable Energy Division.

Fields of activity:

- Power transmission systems:
 - Medium and high voltage overhead transmission lines (20 /110kV);
 - Extreme high voltage overhead transmission lines (220/ 750kV);
 - Underground cabled transmission lines (20-400kV).
- Transmission system rehabilitation by means of OPGW equipped conductors on the existing overhead transmission lines.
- Aerials for telecommunications Concrete structures rehabilitation (poles, electrical substations frames etc).

Services and capabilities:

- Technical consulting and engineering;
- Project management;
- Testing documentation for poles prototype, insulators chains and foundations;
- Opportunity, pre-feasibility, feasibility studies, basic engineering and bid documents, detail engineering for new projects/rehabilitation/ modernization/ retrofitting operations;
- Technical and geological expert appraisals for OHTL;
- Technical offers for tenders in the OHTL field;
- Standards, norms and power prescriptions for OHTL performance and revision;
- Assets evaluation for OHTL electrical equipment;
- Documents for getting approvals;
- Implementation of rehabilitation and refurbishing programs;
- Technical assistance during erection and commissioning;
- Personnel training and specialization in the above fields.



BLACK SEA ENERGY TRANSMISSION GROUP

Member:



Recent projects, local and abroad:

In Romania:

- projects for more than 4400 km transmission lines of 400 kV, 3600 km transmission lines of 220 kV and 157 km transmission lines of 750 kV. -transmission system rehabilitation;
- replacement of the existing groundwire by OPGW and porcelain insulation replacement;
- assessment of the electrical equipment existing within Electrica patrimony (PRICE WATER HOUSE COOPER cooperation).

Abroad:

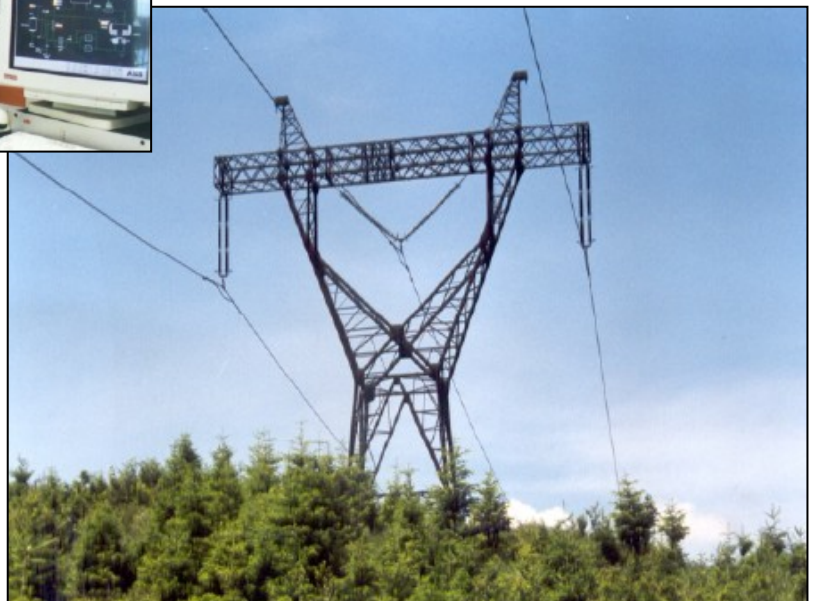
- designs and technical assistance for 7000 km overhead transmission lines (33 kV -400 kV) in Iran, Egypt, Jordan, Iraq, Peru, Algeria, Syria, Yemen, United Arab Emirates, Lebanon, Malaysia, Cyprus and Philippines;
- OHTL consulting in Syria and Iraq.

Memberships:

- Electrical and I & C Installations Society of Romania (SIEAR);
- CIGRE Romanian National Committee;
- Under Voltage Work Romanian National Committee (CNR-LST).

Presence within recent international events:

- CIGRE 2000 session, Suceava-Romania and 2002, Paris-France;
- Under Voltage Work International Symposium -LST 2002, Sibiu-Romania;
- National Energy Conference -FOREN 2000 and 2002, Neptun-Romania.





BLACK SEA ENERGY TRANSMISSION GROUP

Member: 

References in Romania

Since its foundation, ISPE developed projects for nearly the entire National Power System:

Power and Heat Generation

- Fossil Thermal Power Plants/TPP and Cogeneration Heat and Power Plants/CHPP summing more than 15 000 MW installed capacity, out of about 19 000 MW of the National Power System;
- Nuclear Power Plant Cernavoda (5 x 700 MW)

Distribution Systems

- 150 high voltage electrical substations (110-750kV), with an installed power of 70000 MVA;
- about 22 000 km of over head transmission lines (110-750 kV);

District Heating Systems

- 258 district heating systems provided with 16500 km of heat transmission and distribution network.

References abroad

Power and Heat Generation

Thermal Power Plants summing up about 800 MW installed, in:

- China - Pucheng TPP (2 x 330MW, pit coal), commissioned in 1994
- Syria - Baniyas CHPP (4 x 12MW, 4 x 120 t/h fuel oil), commissioned in 1980
- India - Singareni TPP (3 x 6 MW, 3 x 25 t/h coal and fuel oil), commissioned in 1963
- Turkey - Anatolia CHPP (2 x 12MW, 4 x 120 t/h fuel oil), commissioned in 1986
- Egypt - Hamrawein and El-Mex-Alexandria TPP (3 x 4MW, 3 x 25 t/h fuel oil + 2x7,2MW, 4 x 50 t/h fuel oil), commissioned in 1972 and 1984

Power Transmission and Distribution Systems

- 22 medium voltage electrical substations in Morocco, Turkey, Egypt, Bangladesh, Nigeria, Pakistan, Croatia, Syria, Iraq, India, commissioned between 1972 and 1993;
- 7000 km of over head transmission lines (150, 220, 400 kV) in Egypt, Iran, Jordan, Cyprus, Yemen, Peru, Algeria, Malaysia, Syria, Lebanon, Iraq, Philippine, commissioned between 1975 and 1988;

District Heating Systems

- DHS in cities from Germany (1900 Gcal/h),
- Pakistan Karachi TP (1 x 50 t/h + 1 x 64 t/h fuel oil), commissioned 1983
- Water Treatment Plants in Germany and Czech Republic





BLACK SEA ENERGY TRANSMISSION GROUP

Member:



CELPI S.A. company was founded 50 years ago at a time when the first projects of updating the Romanian industry after the War were being designed, when first national electrification program was being worked out.

The need for energy transport lines, for their adjoining equipment, fittings and parts led, naturally to the establishing of a specialized enterprise in this very new field of activity.

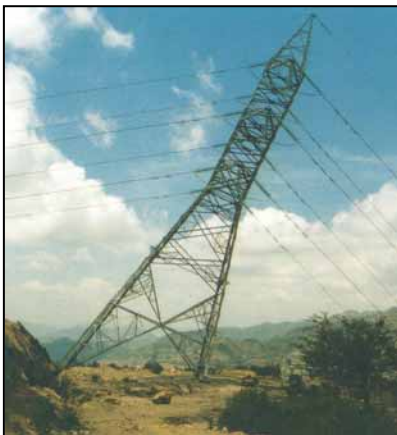
CELPI is the only Romanian company to produce metal towers and concrete poles. All along its 50 years of activity our company has gathered a vast professional experience and abilities, a highly regarded prestige, succeeding to turn the CELPI logo into a famous name.

Our products have been tested, guaranteed and certified by famous consulting companies, specialized offices, by companies from first-ranking countries in this field like Great Britain, Switzerland, France, Sweden, Japan and the United States. This is how Romania and the CELPI products were introduced by Romanian or local companies on building sites for overhead electric lines in Bulgaria, China, Cyprus, Cuba, Egypt, the Philippines, Greece, Iran, Iraq, India, Jordan, Lebanon, Malaysia, Pakistan, the former Soviet Union and Turkey, 30 years ago. Mention should be made that all along the years CELPI S.A. company answered all the requests from its partners and produced the whole range of pillars for overhead networks and all prefabs for transforming stations from 33KV to 750KV included.

The technical performance achieved on domestic operations which mapped out the Romanian energy system, their success and unanimous acknowledgement recommended the CELPI products for export.

Here is a list of most important products:

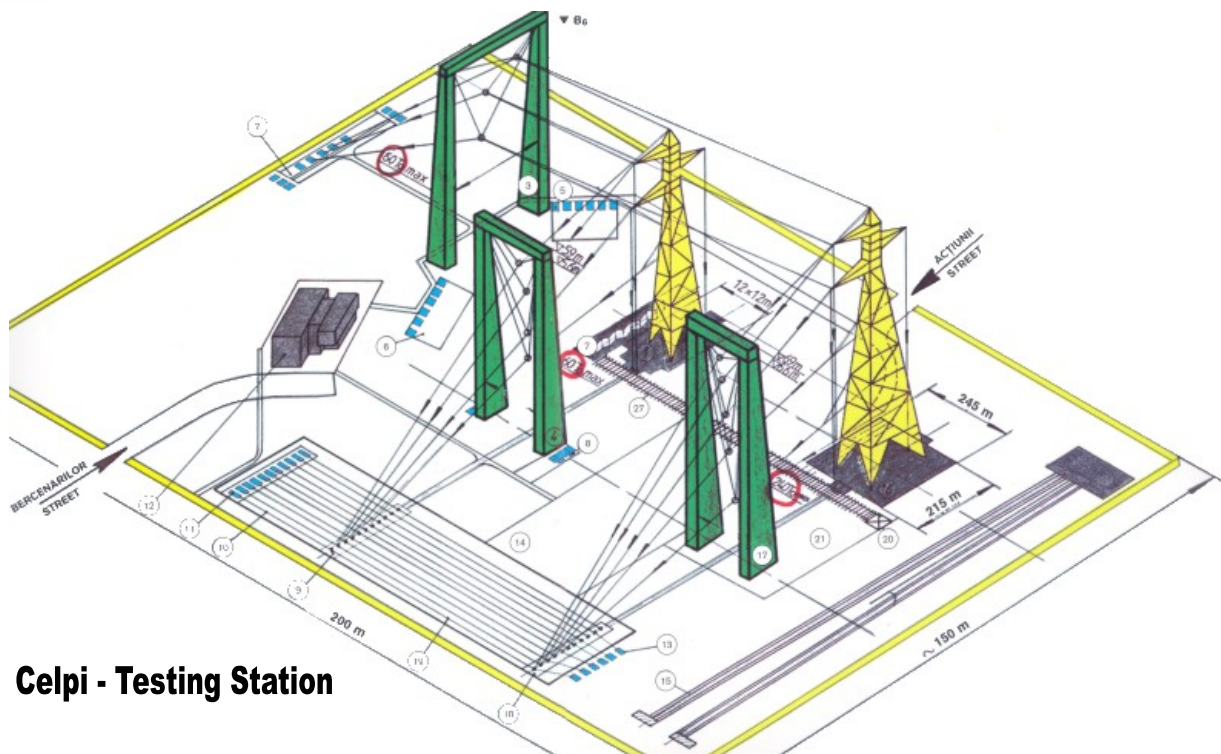
- bolted and welded hot dip galvanized lattice structures for power and industrial facilities;
- steel towers for various mobile telecommunication systems;
- line hardware, clamps and fittings for power lines and substations;
- concrete centrifugal poles and prefabricated elements;
- cells for transformers substations;
- services of hot galvanized in our facility fitted with biggest baths in Romania;
- performance of metallographic and chemical analyses, mechanical test on various materials;
- full scale and destructions tests for OHTL towers.





BLACK SEA ENERGY TRANSMISSION GROUP

Member: 



Celpi - Testing Station

The towers testing plant is one of the most important in Europe.

Here are few characteristics worth remembering of the CELPI testing station:

- 49 points of action with adequate facilities for measurement and permanent monitoring;
- the peak force torque applied in one point -500KN;
- the maximum height of the tested tower -66 meters (200 feet);
- hauling devices in the station: one MTA 125 crane (5KN -50m) and a P&H crane (5KN -70m);
- 50 electric and band-operated winches provided with power multiplier pulley tackles;
- a wide range of dynamometers from 10 to 500KN with an accuracy error of +/-2%.

The CELPI station is equipped with a number of powerful electric stations, electronically monitored from a control panel. They are connected by steel cables to the drawing point marked by the designer, placed at different marks on the tower turned into the subject of the mechanical testing.

The power of the engines of the winches make up for the torque the tower is under in the field during snowstorms, high speed winds or hoar frost.

From three metal towers 200 feet (60 meters) each, the forces exercised on the pillar can be directed from three sides, from three directions.

The CELPI testing station can be provided with two universal foundations which allow the erection and testing of all tower types, even of the gigantic ones with a 65 feet (21.5 m) span between the ground mountings of the tower feet.

The maximum effort of compression on a tower foot reached in our station is of 400KN.

On the CELPI testing site mechanical testing is carried out of all parts used in the overhead lines constructions, such as clamps, reinforcements, assembling fittings, mechanical tests for rolled palletes which leads to the listing of a rich range of physical and mechanical features of all those mentioned above. A number of special machines allow the exertion of gradual charges which are measured and recorded on a diagram of effort-deformation.



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Member: 

REFERENCE LIST

- Electricity Authority of Cyprus CYPRUS, Supply of galvanised lattice steel towers - 132 kV d.c. OHTL, 1990;
- Electrification of railway station Salonic Idomeni, Horizontal galvanised girders for lattice, 1991-1992
- Azarbaijan Regional Electric Co. Ardebil IRAN, Steel towers, clamps and fittings, assembly organs - 230 kV, 1991-1992;
- Teheran Regional Electric Co. IRAN, Steel towers, assembly organs - 400 kV, 1991-1992;
- Guilan Regional Electric Co.- IRAN, Steel towers, assembly organs - 132 kV, 1992-1993;
- West Regional Electric Power IRAN, Steel towers, assembly organs 63 132kV, 1992-1993;
- Azarbaijan Regional Electric Co. IRAN Tabriz - Khoy, Steel towers, assembly organs-230; 400 Kv, 1992-1995;
- West Regional Electric Power IRAN, Steel towers 63 123 kV, 1992-1994;
- Bakhtaran Regional Electric Co. IRAN, Steel towers 230 kV, assembly organs, 1993-1994;
- Bakhtaran Regional Electric Co. IRAN, Steel towers- 400 kV, assembly organs, 1993-1994;
- Teheran Regional Electric Co. IRAN, Steel towers 230 kV, assembly organs, 1993-1994;
- Ministry of Energy and Water KUWAIT, Steelworks, assembly organs, 1993;
- Copper Industry Co. Sirjan IRAN, Steel tower and clamps 230 kV, 1993;
- Power Generation and Transmission Co. Ramin IRAN, Steel towers and assembly organs 230kV, 1995-1996;
- National Power Co. PHILLIPINE, Steelworks 138/230 kV and assembly organs, 1995-1996;
- Power Generation and Transmission Co. Tavanir IRAN, Design, Tower testing - 63 kV, 1995;
- Moshanir P.E. Co.- Jakigour IRAN, Steel tower testing 230kV, 1995;
- Ministry of Energy and Mines PERU, Steelworks 60 kV, 1996;
- National Electric Power Authority NIGERIA, Steel towers, lighting poles, poles for station entry 132/33kV , 1996;
- Sociedad Espanola de Montajes Industriales SPAIN, Steelworks, 1996;
- Sociedad Espanola de Montajes Industriales SPAIN, Galvanised Steel Ladders for telecommunication towers , 1996;
- Teheran Regional Electric Co. IRAN, Steel towers and assembly organs-230 kV, 1997;
- Ministry of Energy and Mines PERU, Steel towers, assembly organs, 10 types towers tested 60 138 kV, 1997;
- EGAT THAILAND, Steel towers, assembly organs LEA 115-230 kV, 1997-1998;
- Ministry of Energy and Mines PERU TARAPOTO, Steelworks 138 kV, 1998;
- Ministry of Energy and Mines PERU CHINANGO, Steelworks 220 kV, 1999;
- National Electric Power Co. JORDAN, Steel towers 132 kV, steelworks, 1998-1999;
- Sociedad Espanola de Montajes Industriales SPAIN, Metallic structures , 2000;
- Public Establishment for Distribution and Exploitation of Electrical Energy Siria, Steelworks for external transformation stations, 1996;
- National Power Co Philippines, "EDQ" towers 500 kV , 2000 – 2001;
- NEPCo Jordan, Steel towers 132 kV d.c., 2000 -2002;
- Khuzestan Water Power Authority IRAN, Steel towers, assembly organs 400 kV, 2001;
- CARAZ HUARAZ PERU, Steel towers 66 kV s.c., 2001 – 2002;
- Sociedad Espanola de Montajes Industriales SPAIN, Metallic structures , 2002;
- NMTC KUWAIT, Telephony towers H = 40 and 60 m, 2002;
- ESBI Ireland, Metallical towers type "54 D"; "101 C" 38 kV O.H.L., 2003;
- Electricity Authority of Cyprus CYPRUS, Metallical structures , 2003;
- Sociedad Espanola de Montajes, Industriales Spain, Metallical structures for RENFE, 2003;
- NMTC - Kuwait, Towers for telephony :H = 60 m, 2003 Chrome Consortium Energy;
- Nigeria, Metallical towers type "BH", 2003;
- TRYLON, Towers for telephonie H = 25 m, 2003;
- ESBI Ireland, Metallical towers type "408" 400 kV O.H.L. , 2003.



BLACK SEA ENERGY TRANSMISSION GROUP

Member: **ELM CLUJ**

Highly specialized in the field of Electromechanical and Civil Engineering, ELM CLUJ is a Romanian joint stock company with a large experience acquired along over 50 years of existence.

Best quality services are our major priority in dealing with domestic as well as foreign customers, being permanently committed to implement and to maintain a quality system capable to face the requirements of the ISO 9001 standard.

We have our own production units with high technology equipment that covers in a large measure our supply needs at the requested high quality.

We have a strong financial basis developed during our half century existence that leads to a continuous growing of our business relationships.

The wide range of activities we are involve in are accomplished using high standard equipment needed in production, transport, erection works an so on.

TODAY ELM CAN OFFER YOU DESIGN AND CARRYING OUT FOR:

- overhead power lines for power transport and distribution(0,4kV -750 kV);
- underground electric lines (0,4 -110 kV);
- electric power stations and transformer stations (0,4kv-750kV);
- indoor electric installation and connections;
- low power micro hydroelectric plants (up to 4 MW) ;
- works related to railway and urban electric traction;
- telecommunication aerials;
- public lighting networks ;
- optical fiber installation;
- laboratory testing.



PRODUCTS AND SUPPLIES:

- producing and supplying equipment and accessory for overhead and underground electric lines;
- supplying and erecting 3 M and RAYCH EM accessories for electric cables of 0.4kv to 33kv;
- supplying, erecting and maintaining of HOPPECKE stationary batteries ;
- completely equipped panels and metallic cabins for electric installations -tools and devices used for this activity ;



SPECIAL WORKS:

- designing special tools and devices ;
- drawing up technical documentation as part of the offers;
- complex equipment testing and checking performing in the laboratories or on the erection spot ;
- loading tests on towers and foundations;
- field investigations and topographical works;
- technical assistance and supervision through highly specialized consultancy ;
- personnel training and further development courses.



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Member: **ELM CLUJ**

REFERENCE LIST

- 150 KV Overhead transmission line, double circuit (BSOUS - BSALIM - NORTH) 73.8km Lebanon 1981;
- 132KV transmission lines, double circuit (ANDIMESHK BIDROIEH) 37. 5km Iran 1979;
- 230KV transmission lines, double circuit (AHWAZ - ABADAN) 123km Iran 1979;
- 230KV transmission lines, simple circuit (TEHERAN - SHAHRUD) 356km Iran 1983;
- 230KV transmission lines, simple circuit (LAR) 28 km Iran 1983;
- 230KV transmission lines, simple circuit (SHAHRUD - GORGAN) 114 km Iran 1984;
- 63KV transmission lines, double circuit (in SAVEH AREA) 32 km Iran 1986;
- 63KV transmission lines, simple circuit (in AZERBAIDJAN AREA) 668 km Iran 1984;
- 132KV transmission lines, double circuit (BAYADER - AMMAN GHOR SAFI QUATRANA - MA AN) 300 km Jordan 1982;
- 132KV transmission lines, double circuit (MA AN SHEIDIYEH; KHARRANA - AZRAQ - RISHAH) 327km Jordan 1982;
- 33KV transmission lines, double circuit (IRBID - YARMOUK UNIVERSITY) 12km Jordan 1982;
- 132KV transmission lines, single circuit (IRBID - WADI ARAB) 327 km Jordan 1983;
- 132KV transmission lines, double circuit; KUALA - LUMPUR; NILAI - UKM RASA-HNILAI; MALACCA - KG GADEK) 96 km Malaysia 1987;
- 33KV transmission lines, single circuit (NORTH AREA - CENTRAL AREA - WEST AREA) 890 km Iraq 1983;
- 33KV transmission lines, single and double circuit (BAGHDAD CITY) 90 km Iraq 1984;
- 132KV transmission lines, double circuit 368 km Iraq 1985-1987;
- 400KV transmission lines, double circuit 90 km Iraq 1985-1987;
- 225KV transmission lines, double circuit 170 km Egypt 1985;
- Telecommunication towers for MTC Kuwait 1997-1998;
- 500KV double circuit Overhead transmission line Cut in point Lipa to Ilijan substation 53km Phillippines 2000-2001;
- 32/33KV Substation Aba Nigeria 2001-2002;
- 330KV Double Circuit Transmission Line between YOLA, GOMBE, JALINGO Substation, 380km.



BLACK SEA ENERGY TRANSMISSION GROUP

SUBSTATIONS

Our group covers all the activities involved in the implementation of turn-key projects for high voltage substations up to **750KV**, as:

- all stage design (feasibility studies, basic and detail engineering, etc);
- technical consulting, technical assistance and supervision at site works;
- manufacturing and supplying of steel structures, clamps and fittings, cells for transformer substations, etc;
- supplying of electrical equipment from well-known manufacturers from European countries and USA;
- erection and tests on commissioning;
- maintenance and overhaul.

Business area:

- Power and heat generation;
- Power transmission and distribution;
- Environmental protection;
- Infrastructure system;
- Public services ;
- Civil and industrial works.





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Substations – Reference List

Substation 110 KV Cavnica, 1980, 16 MVA	Substation 110 KV Poltura Arad, 1988, 25 MVA	200MVA
Substation 110 KV Firiza, 1980, 16 MVA	Substation 110 KV Tarnaveni, 1988, 25 MVA	Substation 220 KV Baia-Mare, 1981, 200 MVA
Substation 110 KV Gura Rosie, 1980, 16 MVA	Substation 110 KV Munteni, 1989, 16 MVA	Substation 220 KV Ungheni, 1981, 200 MVA
Substation 110 KV Tasnad, 1980, 16 MVA	Substation 110 KV Zalau II, 1989, 25 MVA	Substation 220 KV Gheorgheni, 1983, 200MVA
Substation 110 KV Tg. Lapus, 1980, 16 MVA	Substation 110 KV Muresel, 1995, 16 MVA	Substation 220/110 KV Sangiorgiu-Fantanele, 1962, 200 MVA
Substation 110 KV Sasar, 1981, 16 MVA	Substation 110 KV Barzava, 1995, 16 MVA	Substation 220/110 KV Baia-Mare, 1969, 200MVA
Substation 110 KV Aiud, 1981, 16 MVA	Substation 110 KV Lugoj, 1995, 16 MVA	Substation 220/110 KV Oradea Sud, 1971, 200 MVA
Substation 110 KV Baci, 1981, 16 MVA	Substation 110 KV Sinteza Oradea, 1995, 2x16MVA	Substation 220/110 KV Baia-Mare, 1972, 200 MVA
Substation 110 KV Gheorgheni - Cluj, 1981, 25MVA	Substation 110 KV Victoria Timisoara, 1995, 16MVA	Substation 220/110 KV Cluj, 1973, 200MVA
Substation 110 KV Nasaud, 1981, 16 MVA	Substation 110/20 KV Bistrita Vest, 1980, 16MVA	Substation 220/110 KV Gheorgheni, 1974, 200 MVA
Substation 110 KV Negresti, 1981, 16 MVA	Substation 110/20 KV Alba-Iulia, 1981, 16 MVA	Substation 220/110 KV Cluj, 1975, 200MVA
Substation 110 KV Sasar, 1981, 16 MVA	Substation 110/20 KV Teius, 1981, 25 MVA	Substation 220/110 KV Tihau, 1976, 200MVA
Substation 110 KV Vetis, 1981, 16 MVA	Substation 110/20 KV Nufarul Oradea, 1982, 16 MVA	Substation 220/110 KV Alba Iulia, 1977, 200MVA
Substation 110 KV Viseu, 1981, 16 MVA	Substation 110/20 KV Borsa II, 1983, 25 MVA	Substation 220/110 KV Targu Mures, 1978, 200 MVA
Substation 110 KV Voievozi, 1981, 16 MVA	Substation 110/20 KV Lechinta, 1983, 16 MVA	Substation 220/110 KV Zalau, 1981, 25MVA
Substation 110 KV Jibou, 1982, 25 MVA	Substation 110/20 KV Satu-Mare Carpati, 1983, 16 MVA	Substation 220/110 KV Satu-Mare, 1981, 25 MVA
Substation 110 KV Lupsa, 1982, 16 MVA	Substation 110/20 KV Pecica, 1984, 16 MVA	
Substation 110 KV Danes, 1983, 2x16 MVA	Substation 110/20 KV Fabrica de zahar Seica, 1986, 16 MVA	
Substation 110 KV Sapanta, 1983, 16 MVA	Substation 110/20 KV Zlatna, 1986, 16 MVA	
Substation 110 KV Sovata, 1983, 16 MVA	Substation 110/20 KV Buzac Arad, 1995, 16 MVA	
Substation 110 KV Taga, 1983, 16 MVA	MVA 110/20 KV/6 KV Alba Iulia Nord, 1976, 16MVA	
Substation 110 KV Tusnad Bai, 1983, 16 MVA	Substation 110/20 KV/6 KV amplificare Sarmasag, 1977, 16 MVA	
Substation 110 KV Vascau, 1983, 16 MVA	Substation 110/20 KV/6 KV Sighet I, 1978, 16MVA	
Substation 110 KV Fabrica de zahar Arad, 1984, 25 MVA	Substation 110/35/15/6 KV Tg-Mures, 1960, 16 MVA	
Substation 110 KV Lechinta, 1984, 16 MVA	Substation 110/6 KV Tauni- compresare gaze, 1986, 25 MVA	
Substation 110 KV Teius, 1984, 2x25 MVA	Substation 110/6 KV Comprimare gaze Suplac II, 1987, 2x25 MVA	
Substation 110 KV Borsa II, 1986, 2x25 MVA	Substation 110/6 KV Compresiune gaze Suplac, 1995, 25 MVA	
Substation 110 KV Compr.gaze Tauni, 1986, 16+25 MVA	Substation 110/6 KV Baia-Mare IV Vest, 1981, 25 MVA	
Substation 110 KV Compresare gaze Tg-Mures, 1986, 25 MVA	Substation 110/6 KV Suncuius, 1980, 25 MVA	
Substation 110 KV ISPMT Oradea, 1986, 25MVA	Substation 110/6 KV Suplacu de Barcau, 1983, 16 MVA	
Substation 110 KV Nistru, 1986, 16 MVA	Substation 110/6 KV SRP Draganesti Olt, 1995, 2x16 MVA	
Substation 110 KV Prundul Bargaului, 1986, 16MVA	Substation 110/20 KV Prundu Bargaului, 1984, 16 MVA	
Substation 110 KV Salonta, 1986, 16 MVA		
Substation 110 KV Zalau, 1986, 16 MVA		
Substation 110 KV-Inst. sulfura de carbon CFA -Dej, 1986, 16 MVA		
Substation 110 KV-Inst.celofibra tip bumbac IFA Dej, 1986, 16 MVA		
Substation 110 KV Compr.gaze Tauni, 1987, 25 MVA		
Substation 110 KV Draganesti-Olt, 1987, 16MVA		
Substation 110 KV Freoni-Tarnaveni, 1987, 16MVA		
Substation 110 KV Lechinta, 1987, 25 MVA		
Substation 110 KV Nistru, 1987, 25 MVA		
Substation 110 KV Tarnaveni III, 1987, 25 MVA		
Substation 110 KV Ungheni, 1987, 25 MVA		
Substation 110 KV Bistrita, 1988, 25 MVA		
Substation 110 KV Alverna Cluj, 1988, 25MVA		
	<u>220 KV SUBSTATION</u>	<u>400 KV SUBSTATION</u>
	Substation 220 KV Floresti, 1971, 200 MVA	Substation 400/220 KV Slatina, 1970, 250KVA,
	Substation 220 KV Vetis, 1973, 200 MVA	Substation 400 KV CTE Ludus, 1972, 250KVA,
	Substation 220 KV Arad, 1978, 200 MVA	Substation 400/220 KV Seini, 1976, 250KVA,
	Substation 220 KV Campia Turzii, 1978,	Substation 400/220/110 KV Oradea, 1977, 250 KVA,
		Substation 400/110/20 KV Lupsa, 1979, 250 KVA,
		Substation 400 KV Rosiori, 1981, 250 KVA,
		Substation 400 KV Gadalina, 1981, 200 KVA,
		Substation 400 KV Cluj-East, 1983, 250KVA,
		Substation 400 KV Mintia, 1983, 250 KVA,
		Substation 400 KV Extindere Tantareni, 1986, 250 KVA,
		Substation 400 KV Medgidia-Sud, 1989, 250 KVA,
		Substation 400 KV Draganesti - Olt 1995, 250 KVA, construction
		Substation 400 KV Medgidia, 1995, 250KVA, construction
		Substation 400 KV Oradea, 1995, 250KVA, construction
		<u>750 KV SUBSTATION</u>
		Substation 750 KV Isaccea - DEN automatizari, 1987, 2500 MVA



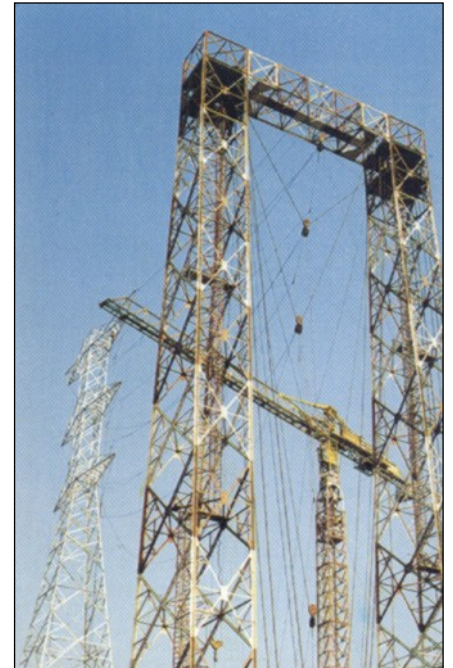
BLACK SEA ENERGY TRANSMISSION GROUP

Partner: **ELECTROMONTAJ S.A.**

ELECTROMONTAJ S.A. is a Romanian joint stock company acting as specialized main contractor for turn-key projects of transmission and distribution of electric power. Since its establishment in 1949, the main concern of ELECTROMONTAJ S.A. was to continuously increase the quality standards of its activity, to the full satisfaction of its Clients. The volume of works increased steadily and the range of activity grew wider year after year.

Along the 50 years of activity, a huge number of projects have been completed, amounting:

- 70,000 km of 1÷132 kV underground cables;
- 240,000 km of 20÷132 kV overhead lines;
- 11,000 km of 220÷400 kV overhead transmission lines;
- 154 km of 750 kV overhead transmission lines;
- 65,000 substations up to 63 kV;
- 900 substations of 132 kV;
- 70 substations of 220÷400 kV;
- 1 substations of 750 kV.



ELECTROMONTAJ S.A. offers to its customers all over the world a complete range of activities in the field of electric power, such as:

- Consulting, engineering, design, technical investigations and studies, technical assistance and supervising.

- Turn-key projects for:
 - Substations up to 750 kV;
 - Overhead transmission lines up to 750 kV;
 - Underground cables up to 132 kV;
 - Rural electrification networks;
 - Urban public works (lightning, catenaries);
 - Low power hydro-plants;
 - Wind power plants.



- Manufacture and supply of:
 - Hot dip galvanized steel towers for transmission lines;
 - Steel structures for substations and industrial projects;
 - Clamps and fittings for transmission lines and substations.

- Special works:
 - Engineering studies and design works;
 - Full scale load tests on tower prototypes;
 - Soil investigation and survey works;
 - Technical assistance and supervision of site works;
 - Training courses.