

Electrical Equipment



ELECTROALFA®

MEDIUM VOLTAGE



LOW VOLTAGE



We believe in the power of innovation, we seek and invest in the latest technology to create competitive products and solutions.

After **25 years of experience** in the field, Electroalfa is a strong brand based on the expertise, qualifications and enthusiasm of more than 400 specialists. Located North East of Romania, Electroalfa holds three modern factories in Botosani, a design office in the Republic of Moldova, a 3.5 MW photovoltaic park, as well as sales offices in all regions of Romania and a research and development facility.

Electroalfa is a group of privately owned companies, a leading solution integrator in the most relevant industry sectors in Romania, specialized in:

1. Production and supply of Electrical Equipment for Medium and Low Voltage

2. Complex Electrical Installations Turnkey Projects

3. Engineering Services

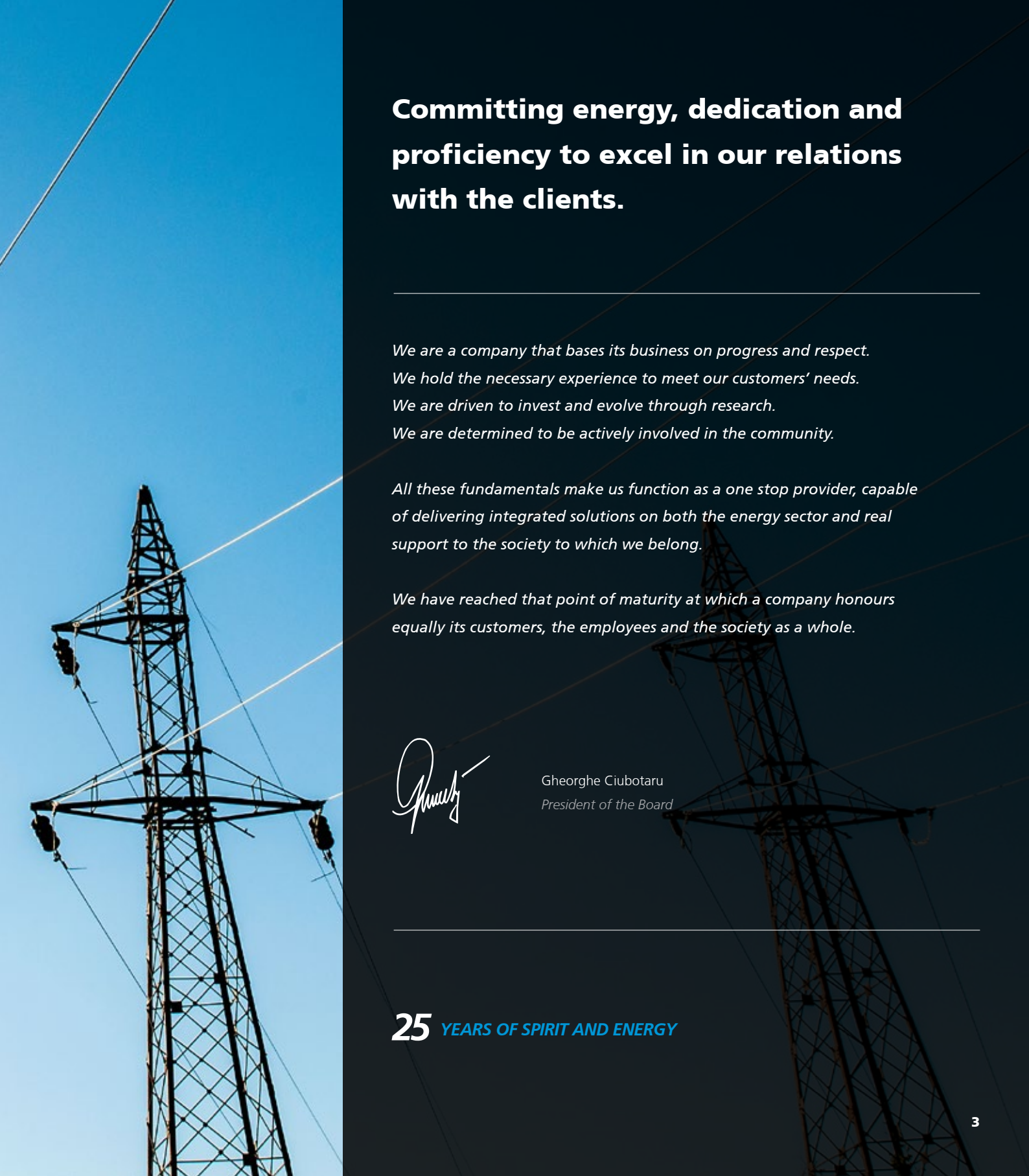
4. Steel Fabricated Parts

5. Renewable Energy Generation Projects

The Centre for Research and Development is an essential vector for Electroalfa's economic and technological competitiveness and growth. It is aimed at creating worldwide competitive prototypes and products. Electroalfa's experience in research focuses on: developing new products, optimizing existing products, integrating the latest technologies, streamlining existing processes.

National and international certifications:

- The System of Quality Management of Environment, Occupational Health and Safety certified by SRAC CERT
- Bureau Veritas 'BV Mode II Scheme' Certification for electrical equipment and sheet metal fabrications in shipbuilding applications
- Certifications from the National Energy Regulatory Authority (ANRE)
- Various other national certifications in fields like nuclear, rail, naval, aeronautical, land reclamation



Committing energy, dedication and proficiency to excel in our relations with the clients.

We are a company that bases its business on progress and respect.

We hold the necessary experience to meet our customers' needs.

We are driven to invest and evolve through research.

We are determined to be actively involved in the community.

All these fundamentals make us function as a one stop provider, capable of delivering integrated solutions on both the energy sector and real support to the society to which we belong.

We have reached that point of maturity at which a company honours equally its customers, the employees and the society as a whole.



Gheorghe Ciubotaru
President of the Board

25 YEARS OF SPIRIT AND ENERGY





Backed up by solid research, our portfolio of electrical equipment provides our customers all that are best in terms of innovation, quality and safety.

We offer complete solutions that include: design (electrical, mechanical or hydraulic), tendering, delivery, installation and commissioning, equipment maintenance.

The sheet metal enclosures provided with Electroalfa electrical equipment are manufactured in-house, by own factory, using the latest generation and high productivity machinery and technologies.

All equipment are tested in own research and development centre as well as in specialized laboratories in the country or abroad. In this way we guarantee proper performance for all the manufactured electrical equipment.

**We are
amalgamating
a strong
business on
the electrical
equipment
market.**





Our Medium Voltage portfolio provides you with some of our most complex products, carrying a high added value.

Considering the excellent degree of functionality and operational safety, we highly recommend our medium voltage products to the major potential customers on the market.

Medium Voltage Equipment

1. **Switchgear for primary and secondary distribution**

2. **Transformer and connection prefabricated substations**

● Medium Voltage Switchgear

- accounts to be our best solution for medium voltage in primary and secondary distribution networks
- air-insulated, indoor type metallic enclosures
- single busbar system
- widely used in the Energy sector, for power generation, in distribution networks, substations, for connection and supply, as well as for secondary distribution MV/ LV substations and industrial networks
- can be fitted with equipment from our strategic suppliers - SIEMENS, SCHNEIDER ELECTRIC, ABB, EATON or according to client specifications
- designed and tested in accordance with EN 62271-200.

Secondary Distribution Switchgear



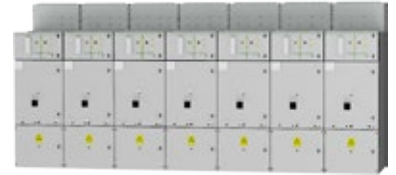
Secondary distribution switchgear is being used on the medium voltage side of MV/LV transformer substations (compact transformer substations with concrete or metallic enclosures, purposefully built transformer substations, junction points), for the supply of public buildings (hospitals, office buildings, residential areas, stadiums, airports, supermarkets) and industrial units (refineries, cement factories, shipyards, photovoltaic and wind power stations).

GENERAL INFORMATION:

- indoor use
- metallic enclosures
- single busbar system
- expandable
- used in secondary distribution systems up to 24kV
- rated current: continuous - up to 630A, short-time withstand - up to 20KA.

Compliant with the technical standards of nationwide power distribution companies such as CEZ Group, E.ON AG, Electrica SA (area distribution operators).

Primary Distribution Switchgear



DESIGNED FOR:

- rated voltages of 7.2; 12; 24kV
- rated currents up to 4000A

Compliant with the technical standards of nationwide power generation, transport and distribution companies such as Transelectrica (the national transmission operator), CEZ Group, E.ON AG, Electrica SA (area distribution operators).

● Compact transformer and connection prefabricated substations

The compact transformer substations provide connections between industrial or residential consumers and the medium voltage network. To meet the market's demands we design compact transformer prefabricated substations with concrete or metal enclosures with standard ranges from 160kVA to 1600 kVA (upon request, up to 2500KVA) with indoor or outdoor access.

Alfa Power transformer substations



The MV/ LV transformer substations are used in power distribution networks whether public / industrial or rural / urban, as well as on construction sites, in mining, irrigation or agriculture. Typical operation time (use) is 30 years.

The Alfa Power compact transformer prefabricated substations are manufactured and equipped by our specialized factories and are turnkey delivered directly the end user's site.

COMPONENTS:

- enclosure (foundation, cabin, oil retaining tank)
- medium voltage equipment
- transformer (separate compartment)
- low-voltage equipment

The Alfa Power transformer substations are compliant with the technical standards of nationwide power distribution companies such as CEZ Group, E.ON AG, Electrica SA (area distribution operators).





Electroalfa is a manufacturer with an extensive experience in the assembly of low voltage equipment having a portfolio with a full range of products.

The panels can be fitted with equipment from our strategic suppliers SIEMENS, SCHNEIDER ELECTRIC, ABB, EATON, LEGRAND or equipment from other manufacturers in accordance to specific clients' demands.

Low Voltage Equipment

- 1. Low voltage switchboard up to 5000A, PCC & MCC DISMOD type**
- 2. Main and secondary distribution boards**
- 3. 400/230 Vac and 48...220Vdc auxiliary services cabinets**
- 4. Industrial automation and control switchboards**
- 5. Control and protection panels for high voltage electrical substation**
- 6. Assemblies for power distribution in public networks**
- 7. AC/DC power supply solutions for telecom applications**

ELECTROALFA CONCEPT: DISMOD T3N
PCC & MCC Low voltage distribution panels



Our own concept switchboard, the DISMOD T3N was completed based on the principles of modularity, currently offering what we think is the best quality and technical performance for a wide range of applications in low voltage networks.

In addition to being our most praised product, we provide our DISMOD customers with technical support for installation and commissioning, operating personnel training, maintenance and repairs during warranty, post-warranty service.

CUSTOMER BASE:

- energy
- industry & infrastructure
- commercial and residential buildings

DESIGNED FOR:

- power distribution
- electric drives (frequency converters, progressive starters, variable speed for DC motors, electric drive for special electric motors)
- automation (automatic change over systems, processes monitoring and/or control, data transmission)
- motors control and protection

Certified by tests carried out in accordance with IEC 61439 in national and international testing laboratories.

PCC & MCC Low Voltage Switchboards SIVACON S8 type, Siemens licensed partner, EN61439



Low voltage distribution panels for commercial and residential buildings XENERGY, Prisma Plus System, XL3



400/230 Vac and 48...220Vdc auxiliary services cabinets



The 400/230 Vac and 48...220Vdc auxiliary services cabinets are designated to supply the low voltage consumers within the 110/20(6)kV transformer substations of the power supply and distribution companies: Electrica SA, CEZ Group, ENEL, E.ON AG; Transelectrica's 400/220/110kV connection and transformer substations; hydro power plants; thermal power plants.

Control and protection panels for high voltage electrical substations



The 110 kV control and protection panels are aimed for transformer substations (mostly aimed at electrical power supply and distribution companies) to provide protection, control, interlocking, automation and SCADA functions. The protection systems are performant and their configuration is compatible and integrated into the control-protection systems with hierarchical, distributed and open type architecture, fully redundant and dedicated to the present EMS/ SCADA applications.

CONFIGURATION TYPES:

- 110kV lines protection panels
- 110/20(6)kV transformer protection panels
- 110kV coupling protection panels
- SCADA panels
- Arc-suppression coil automation panels

Compliant with the technical standards of nationwide power generation, transport and distribution companies such as Transelectrica (the national transmission operator), CEZ Group, E.ON AG, Electrica SA (area distribution operators).

● Assemblies for power distribution in public networks

Electroalfa assemblies for power distribution in public networks are equipped with the safest and most reliable. Judiciously tested and evaluated in the authorised laboratories in Romania, our products comply with the latest European standards.

Our products comply with the technical standards of the companies providing power generation, transport and distribution nationwide as Transelectrica (the national energy transmission operator), CEZ Group, E.ON AG, Electrica SA (area distribution operators).

● 0,4kV power distribution panel



The distribution panels are designed for network transformers substations on one or two pillars, equipped with 40÷250 (400)kVA, 20/0, 4kV power transformers. Their role is to supply rural /suburban consumers and for street lighting.

- metallic enclosure
- polycarbonate enclosure

● Low voltage three phase selective box



The selective box is used in low voltage distribution networks to provide selective and sensitive protections to short circuit currents, after the fitting point, before the end of line and its derivatives.

● Distribution panels for transformer substations



The distribution panels are used in network transformer substations, equipped with 250 ÷ 630 (1000) kVA, 20/0, 4kV power transformer, for supplying power to public buildings, residential, commercial, industrial consumers and street lighting.

● Three phase metering and protection panel



The three phase metering and protection panel board is used in the low voltage distribution network to supply power to household consumers or public buildings.

- metallic enclosure
- polycarbonate enclosure

● Low voltage three phase junction box



The junction box is used in low voltage distribution networks for public lighting underground or overhead cables connection and for short circuit protection.

- metallic enclosure
- polycarbonate enclosure

● Connection box



The connection box is used in low voltage distribution networks for supplying power to household users (apartment buildings, houses, etc.) and to public administration buildings.

- metallic enclosure
- polycarbonate enclosure

● Distribution and metering panel



The distribution and metering panels are employed for the distribution, monitoring and protection of households' power supply circuits.

- metallic enclosure
- polycarbonate enclosure

● Single phase metering and protection panel



The single phase metering and protection panel board is employed in the low voltage final distribution network to supply single phase power to individual users.

- metallic enclosure
- polycarbonate enclosure

● Public lighting main switchboard



The public lighting main switchboard is used in low voltage networks to supply power to public lighting, in single and three phase systems, manual or automatic operation, as well as for electricity metering.

● Power Factor Correction equipment



The power factor correction equipment adjusts the reactive power consumed by the inductive receivers for achieving a power factor in accordance with the current legislation.

- **AC/DC power supply solutions for telecom applications**

- **Indoor /Outdoor cabinets**

Intended for indoor or outdoor use the power supply sources for the GSM are based on a modular cabinet concept and represents a new approach on how they can increase the capacity of a DC cabinet for telecommunication applications.

- **Outdoor cabinets**



The outdoor cabinet is meant to be used on GSM site and is designed to withstand different environmental conditions, the microclimate inside the cabinet being achieved in accordance with the operational environmental temperature and humidity (specified by the customer).

The microclimate inside the cabinet is preserved at the required level required by the customer via the heating management units (heaters for temperatures below 10°C and/or fans, integrated air/ air heat exchangers for temperatures above 25°C).

- **Indoor modular cabinets**



The cabinet will be used to power telecommunications equipment including mobile networks. The power will be supplied with grounded “+” and the power system will be “-48Vdc” type (upon beneficiary’s request also other voltage levels can be provided).

MODULAR DESIGN CONCEPT:

- Easy adaptation to conditions on site
- Compliance with requirements related to weight density on the floor
- Ease of transport
- Easy Expansion

● Outdoor cabinets with built-in environment control



The outdoor cabinet is designed for a diversity of applications and can be adapted to suit different specific requirements. The cabinet is very suitable for power equipment, batteries, telecommunications equipment, all integrated into a robust and cost-effective package. The cabinet can be equipped with wireless components, optical fibre, TV cable, DSL and WLAN applications.

● Outdoor cabinets with integrated thermal management



The outdoor cabinet with integrated thermal management is used as a connection point for hosting wireless, optical fibre, TV cable, DSL and WLAN applications equipment and is designed to withstand various environmental conditions, the microclimate inside the cabinet being achieved in accordance with the environmental temperature and humidity (specified by the customer).

The microclimate inside the cabinet is preserved at the required level required by the customer via the heating management units (heaters for temperatures below 10°C and/or fans, integrated air/ air heat exchangers for temperatures above 25°C). The specific cooling capacity is about 22W/K, subject to the fans' speed.

The heat exchanger's input power is 48 VDC, total 30 W for 4 fans (max. 7.5W for each fan)



References



● **REFERENCES**
ENERGY POWER GENERATION

	Project	Equipment
<p>Complexul Energetic Oltenia S.A. (national provider for coal based power)</p>	<ul style="list-style-type: none"> → Isalnita Power Plant - Complexul Energetic Craiova branch → Complexul Energetic Rovinari → Complexului Energetic Turceni 	<ul style="list-style-type: none"> → Primary distribution medium voltage switchboards → Industrial automation and control switchboards → 400/230 Vac and 48...220Vdc auxiliary services cabinets → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type
<p>Hidroelectrică S.A. (national hydro based energy provider)</p>	<ul style="list-style-type: none"> → Rastolita Hydro Plant → Robesti Hydro Plant 	<ul style="list-style-type: none"> → Primary distribution medium voltage switchboards → Industrial automation and control switchboards → 400/230 Vac and 48...220Vdc auxiliary services cabinets → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type
<p>Govora S.A. Electric thermal power plant</p>	<ul style="list-style-type: none"> → Boiler no. 7 flue gas desulphurisation equipment 	<ul style="list-style-type: none"> → Primary distribution medium voltage switchboards → Industrial automation and control switchboards → 400/230 Vac and 48...220Vdc auxiliary services cabinets → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type
<p>Nuclearelectrică S.A. (national provider of electricity, thermal power and nuclear fuel)</p>	<ul style="list-style-type: none"> → Cernavoda nuclear power plant, generation unit 1 and 2 	<ul style="list-style-type: none"> → Primary distribution switchboards → Main and secondary distribution boards

● **REFERENCES**
ENERGY POWER DISTRIBUTION

	Project	Equipment
F.D.E.E. Electrica Distributie Transilvania Nord S.A. (area power distribution operator)	110/20kV substation upgrade: → Aghires → Marghita → Clujana → Palota → Iosia → Power supply Károlyi Castle from Carei	→ Junction Point; → Primary and secondary distribution medium voltage switchboards → Control and protection panels for high voltage electrical substation → 400/230 Vac and 48...220Vdc auxiliary services cabinets
CEZ Distributie S.A. (area power distribution operator)	110/20kV electrical substation retrofit: → Alunu → Berbesti → Craiova III → Rosia Jiu → Basarabi → Barsesti → Valea Mare → Brezoi → Lupoiaia → Corabia	→ Primary and secondary distribution medium voltage switchboards; → Control and protection panels for high voltage electrical substation → 400/230 Vac and 48...220Vdc auxiliary services cabinets
E.ON Moldova Distributie S.A.	→ Upgrade and integration into SCADA systems of 26 transformer stations	→ Primary and secondary distribution medium voltage switchboards → Control and protection panels for high voltage electrical substation → 400/230 Vac and 48...220Vdc auxiliary services cabinets → SCADA integration systems

● **REFERENCES**
ENERGY POWER TRANSPORT

	Project	Equipment
C.N.T.E.E. TRANSELECTRICA S.A. (national power transport operator)	Transformer substations upgrade: → 220/110kV FAI Iasi substation → 400 (220)/110/ 20KV Focsani Vest substation	→ Compact transformer substation → Primary and secondary distribution medium voltage switchboards → Control and protection panels for high voltage electrical substation → 400/230 Vac and 48...220Vdc auxiliary services cabinets → Main and secondary distribution boards

● **INDUSTRY SHIPYARDS**

	Project	Equipment
Daewoo-Mangalia Heavy Industries	→ PT6-4 transformer substation upgrade – Mangalia shipyard	→ Main and secondary distribution boards → Secondary distribution switchboards
Damen Galati Shipyards	→ Power supply upgrade	→ Main and secondary distribution boards → Secondary distribution switchboards
STX OSV ELECTRO SRL (Fincantieri Group)	-	→ Main and secondary distribution boards → Secondary distribution switchboards

● **REFERENCES**
INDUSTRY OIL AND GAS

	Project	Equipment
KREMSMUELLER ROMANIA S.R.L.	<p>Power distribution system revamp:</p> <ul style="list-style-type: none"> → Petrobrazi Refinery SRA1, SRA2 and SRA4 	<ul style="list-style-type: none"> → Primary distribution switchboards → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type → Assemblies for power distribution in public networks
SIEMENS S.R.L.	<ul style="list-style-type: none"> → Load shedding System Petrobrazi Refinery 	<ul style="list-style-type: none"> → Retrofit solution for Primary distribution switchboards → Installation on site
MAN Ferrostaal Industrieanlagen GmbH Geisenheim- Ploiesti Branch	<ul style="list-style-type: none"> → Petrom Hurezani substation 	<ul style="list-style-type: none"> → Primary distribution switchboards → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type → Assemblies for power distribution in public networks → Main and secondary distribution boards → Transformer compact substations → Steel container for medium and low voltage equipment → Installation on site
EXPERT PETROLEUM S.R.L.	<ul style="list-style-type: none"> → Electrical installations 	<ul style="list-style-type: none"> → Industrial automation and control switchboards → Central control unit and data acquisition
Petromidia Refinery (Grup KazMunayGas International)	<ul style="list-style-type: none"> → System installation to reduce particulate emissions from the chimney exhaust 	<ul style="list-style-type: none"> → Low voltage switchboard up to 5000A, PCC & MCC DISMOD type → Training

● **REFERENCES**
INDUSTRY AUTOMOTIVE

	Project	Equipment
STC Star Transmission (Daimler Group)	Star Assembly Sebes Factory: → Mercedes-Benz gearbox manufacturers -	→ Low voltage switchboard up to 5000A, PCC & MCC DISMOD type → Main and secondary distribution boards → Assemblies for power distribution in public networks
Yazaki Component Technology S.R.L. (Yazaki Corporation)	Arad Factory: → Automotive electrical and electronic components	
Delphi Packard Romania S.R.L. (Delphi Automotive PLC - USA)	Ineu (Timisoara) manufacturing premises	

● **INDUSTRIAL AUTOMATION**

	Project	Equipment
CNUD EFCO ROMANIA SRL (CNUD-EFCO INTERNATIONAL Group)	→ P4288 heating, cooling, actuators, drive → P4262	→ Industrial automation and control switchboards → Engineering

REFERENCES
INFRASTRUCTURE PUBLIC UTILITIES - WATER PUMPING STATIONS AND IRRIGATION SYSTEMS

	Project	Equipment
AQUASERV S.A.	<p>Rehabilitation and extension of drinking water supply and sewerage system:</p> <ul style="list-style-type: none"> → SP 1, 2, 3 and SPAU 1, 2, 3 Baia Mare → SPAU 1, 2, 3, 4, 5, 6, 7, 8 and SPAU S1 Viseul de Sus → SP1, 2, 3 Cihei, SP1, 2, 3, 4,5 Cordau and SP1 Rontau (Sinmartin commune) → SP Verii 4, SP Trebely, SP Aquaserv Targu Mures 	<ul style="list-style-type: none"> → Industrial automation and control switchboards → Main and secondary distribution boards → Assemblies for power distribution in public networks
Apa Canal S.A.	<p>Water treatment plants enlargement and upgrade:</p> <ul style="list-style-type: none"> → WWTP2 Galati → WWTP Pechea → WWTP Liesti 	<ul style="list-style-type: none"> → Industrial automation and control switchboards → Main and secondary distribution boards → Assemblies for power distribution in public networks
HIDROCONSTRUCTIA 2013 SRL	<p>Chircani Zirnesti irrigation system rehabilitation (Republic of Moldova)</p>	<ul style="list-style-type: none"> → Industrial automation and control switchboards

● **REFERENCES**
INFRASTRUCTURE TELECOM

	Project	Equipment
CENTRUL PENTRU SERVICII DE RADIOCOMUNICATII S.R.L.	<ul style="list-style-type: none"> → RO-FSCH-15 Extension and consolidation of ATM WAN communications infrastructure of the Special Telecommunications Service at cities' level → WiMAX 802.16e base stations installation and Ethernet radio relay links in 7 GHz wavelength 	<ul style="list-style-type: none"> → AC/DC power supply solutions for telecom applications
UPC ROMANIA SRL	<ul style="list-style-type: none"> → Outdoor UPC Romania 	<ul style="list-style-type: none"> → AC/DC power supply solutions for telecom applications
BUSINESS SERVICE CONSULT INTERNATIONAL SRL	<ul style="list-style-type: none"> → Building a national broadband infrastructure in deprived areas 	<ul style="list-style-type: none"> → AC/DC power supply solutions for telecom applications
VODAFONE ROMANIA SA	<ul style="list-style-type: none"> → SAC-07-2864, SAC07-324 framework contracts 	<ul style="list-style-type: none"> → AC/DC power supply solutions for telecom applications → Main and secondary distribution boards

● REFERENCES BUILDINGS

Project	Equipment
Sky Tower (Floreasca City Centre) Office building	→ Low voltage switchboard up to 5000A, PCC & MCC DISMOD type
St. Spiridon Iași Emergency County Hospital	→ Assemblies for power distribution in public networks
Bucharest Mall Vitan	→ Main and secondary distribution boards
Lia Manoliu National Arena, Bucharest	→ Secondary distribution switchboards
America House Bucharest	
IKEA Romania, Bucharest	
The Palace of Culture Iasi	
National Library of Romania, Bucharest	
Moldova Mall	

INTERNATIONAL PROJECTS

	Project	Equipment
United Nations Economic Commission for Africa Ethiopia	→ UNECA Headquarters. Addis Ababa	→ Primary distribution switchboards
Global Vision Kuwait	→ Natural gas compression station KOC	→ Main and secondary distribution boards → Control and protection panels for high voltage electrical substation
CIExport France	→ Presidency of the Republic of Equatorial Guinea	→ Primary distribution switchboards
Î.C.S. Red Union Fenosa S.A. Republic of Moldova	→ Power supply networks' upgrade	→ Assemblies for power distribution in public networks
UNAMID - African Union - United Nations Mission in Darfur Sudan	-	→ Low voltage switchboard up to 5000A, PCC & MCC DISMOD type
Uhde GmbH (Grup ThyssenKrupp) Germany	→ Petrobrazil Refinery power supply extension	→ Primary distribution switchboards
IMECA (Grup Michelin) France	→ Multex Maj	→ Industrial automation and control switchboards

	Project	Equipment
PSE Engineering Gmbh Germany	→ Petromar International Oil platform	→ Industrial automation and control switchboards
SALONIX-TEH SRL Republic of Moldova	→ Grozesti Pumping station, Leovo Pumping station	→ Primary distribution switchboards
TEC INTERNATIONAL SARL France	-	→ Primary distribution switchboards → Main and secondary distribution boards
P.P.I. - PROJET PRODUCTION INTERNATIONALE Mali	→ Mali Court of Justice	→ Main and secondary distribution boards







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