



# Innovation, Not Just Improvement



# Annual Report

# 2010

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# Company Profile

With over 40 years of experience on the domestic and international market, Romelectro is currently one of Romania's most important EPC contractors, covering the entire energy chain: from generation to transmission, distribution and supply.

## OUR BUSINESS AREAS

Power and Heat Generation

Power Transmission & Distribution

Environmental Protection

Infrastructure Systems

Civil and Industrial Works

## OUR ROLE ON THE MARKET

- EPC Contractor
- Project Developer & Local Strategic Partner
- Investor
- Electricity trader

Referring to our Group's competencies, our references speak on their own: elaborate design and engineering for over 15,000 MW in conventional and nuclear power plants, representing 90% of Romania's total installed capacity, complex rehabilitation programs for over 3,000 MW, design and engineering for more than 150 high voltage substations and approximately 22,000 km of OHTLs designed or executed.

Even if during the past years our projects covered mainly the Romanian market, our international experience is also worth to be taken into consideration. Romelectro is known on all continents as EPC contractor and equipment supplier. Vafregan and Saveh dams in Iran, Ksob and El Fakia dams in Algeria, 10,000 km of OHTLs in Iran, Iraq, Philippines, Jordan, Syria, Algeria, Morocco and Nigeria, are just some of the most important projects in our portfolio.

Today, Romelectro group of companies has over 1,200 employees, out of which 800 are specialized exclusively in design and engineering. Being

supported by the most elaborate engineering structure in Romania, our competencies have extended continuously. Over the past years, Romelectro has become Romania's key EPC Contractor in environmental projects, successfully developing ash and slag removal and storage in dense slurry systems, low NO<sub>x</sub> burner projects, and lately, promoting flue gas desulphurization projects for coal power plants.

Renewable energy is another business line of great importance to our group of companies. Specialized teams of engineers cover virtually all market-available technologies.

The Group's references and competencies made of Romelectro the most preferred local strategic partner on the Romanian market. Even more so, our strategic partnerships and agreements with the world's most important equipment, technology and know-how suppliers offer the necessary advantages for consolidating the export activity on very competitive grounds.

## OUR OFFER

- Studies, research and development
- Technical and commercial consultancy
- Basic and Detailed Engineering
- Equipment, parts and know-how supplier
- Erection services for equipments and installations
- Civil works
- Site supervision and management
- Commissioning
- Operation monitoring during guarantee period
- Maintenance, rehabilitation and modernisation programs



# President's Statement



“In a world that is getting hot, flat, and crowded, the task of creating the tools, systems, energy sources, and ethics that will allow the planet to grow in cleaner, more sustainable ways is going to be the biggest challenge of our lifetime.”

Excerpted from *Hot, Flat, and Crowded: Why We Need a Green Revolution and How It Can Renew America* by Thomas L. Friedman. © 2008 by Thomas L. Friedman. Published in September 2008 by Farrar, Straus and Giroux, LLC.

## Dear Shareholders, Partners and Colleagues,

It is a pleasure to address to you in a moment when Romelectro is ready to celebrate its 40 years of continuous activity on the Romanian Market. 40 years in which I have seen the transformative power of development, the passion and commitment of our experts who devote their careers not just to execute and not even only to improve, but always to innovate for the better.

It is again a moment when we can evaluate our actions. And the past year was indeed a year to confirm our business vision developed through the years. I want to thank each and every one of you for our specific and measurable outcomes. In 2010 we managed to commission the first installations for ash and slag removal in our country, Rovinari, Craiova II and Ișalnița. We commissioned our own high efficiency cogeneration power plant in Buzău. We started the

works for the complete rehabilitation of our micro-hydro power plants. We successfully approached important flue gas desulphurization projects and new projects in the field of transmission and distribution. We strengthened our teams with highly reputable experts and made our subsidiary in Craiova to really function in complete synergy.

In the pages of this annual report, we can read a lesson about results, coming after long efforts with the main purpose oriented on how we can do things better, safer, more reliable, cost-effective and the most important, sustainable. Thank you all for concentrating on depth and not just on immediacy.

In these pages, we can also read a lesson about true partnership based on shared responsibility. We have selected our partners among those who have proven a commitment to development by practicing sound economic policies, managing their

resources sustainably and making their own financial contributions to their own development. Thank you all for concentrating on values.

We can say that today, Romelectro is confirmed as the most preferred local partner in Romania in its area of expertise, covering a wide range of services, with a flexible offer and projects on the entire energy chain.

All this being said, it is now time to make the next step, in order to support our business. We need to focus on the organic growth of our organization and to become a truly regional and international player in the field of EPC contracting works. Moreover, our own investments in power generation will probably lead to a more diversified business structure. It is now time to find the needed equilibrium for expanding the portfolio on our strategic development channels, with projects of higher and higher span. We learned a lot in the past years and we marked the good outcomes,

but now, the conditions are slightly changed. We are now part of a European and global economy in which the competitiveness is required more than ever. This means we need to better assess the general behaviours of a more complex and interdependent 21<sup>st</sup> century. What we actually need to do, is to remember about the difficulties we faced on the agitated local market of the last decades and to face the problems of a disturbed international market.

We need to develop new thinking, frameworks, models and tools for growth and innovation, rooted in the sustainable values that connect us as people, organizations, businesses, communities and countries. We need to expand our horizons, knowing that the borders are thinner and thinner. We need to stay pro-active and to respond our clients with the same level of professionalism as of today, with the best technologies available and with the best commercial conditions. We need to continuously reshape and in the same time to harness on the potential built in the past 40 years.

It is a new challenge, but it may be called *the* challenge of our lifetime, and I am sure that together we can consolidate a powerful long-lasting Romanian brand like Romelectro.

Mr. Viorel Gafița  
President

## Certificates

### Quality Management

The first step in proving the professional manner of acting on the internal and external energy markets was the Quality Management certification. Romelectro, as “**General Contractor, Import-Export Services and Power Supplier**” was certified for **Quality Management System** in the year 2000, by SRAC\*, and re-certified in 2003, by SRAC and IQNet, on the basis of ISO 9001:2000 standard.



### Quality and Environmental Management

Having in view the complexity of the activities performed by Romelectro and the relevant implications within the projects, a second step was performed, respectively the certification for **Quality and Environmental Management**, which stands for the commitment of our company in developing complex and eco-friendly energy projects.



The certifying process for this double integrated management system was completed in 2006, on the basis of ISO 9001:2000 and ISO 14001:2004 standards, issued by SRAC and IQNet.

### Quality, Environmental, Occupational Health and Safety Management

In 2008, Romelectro took a third step with the implementation of a triple integrated management system – **Quality, Environmental and Occupational Health and Safety Management** – completed by SRAC and IQNet, on the basis of ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:2007 standards.



During 2009, the third re-certification for the triple integrated management system was finalised, on the basis of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 standards.

\* Quality, Environmental, Occupational Health and Safety

\*\* Romanian Company for Quality Assurance

# Innovation, Not Just Improvement

Improvement and innovation – in today's business world, these two terms are used almost interchangeably. We see the fundamental differences and we made out of them our business philosophy.



On a market defined by restructuring processes, technological switch and strict environmental regulations, we understood that competitiveness can be gained only by applying truly successful innovative strategies to our business and our offer, making it not evolutionary, but revolutionary. We also understood that results may come only in time, planting the seeds of our development in investing our own resources in pilot projects and devoted specialists.

As EPC Contractor covering the entire energy chain, we need to combine individual creativity and

interactive creativity, using different but heterogeneous perspectives for creating something new. This was maybe the most important key factor of our development: an offer always shaped on our clients' needs, combining comprehensive technical skills with sustainable commercial conditions.

We strive to make the energy processes simple, safer, sustainable and cost effective, strictly following in our EPC Contracting activity several values assumed by all the members of our organization:

## Development, promotion and transfer of new technologies

This is the goal of our engineers, focusing on environmental protection, higher efficiency of resources consumption, renewable energy and smart grids. Also, we are strongly involved in the development of new carbon capture and storage technologies among international development groups. We invest in good ideas and we invest in specialists that can see beyond the borders of the present times, considering that our offer should be prepared for tomorrow's needs. It remains a priority to participate

as an advised partner in public debates, as we strongly believe that is both our duty and responsibility to share our visions for the sustainable development of the energy sector.

## Meeting the schedule & quality standards

For us, quality does not mean only certifications, but the strict abeyance of the principles assumed through the internal policy documents. We rely on the professionalism of our people to use the entire accumulated experience for our clients' satisfaction. Also, we carefully choose our partners among the companies that have the abilities

to fulfil the tasks in accordance with the required standards.

## Meeting local labour needs and strengthening the local economy

At each and every project, we are trying to use as much as possible local labour as a matter of practice. The goal of this practice is not only to hire the required number of local employees for a particular project, but also to train and retain them as long term, productive members of our organization. We believe that this practice has common benefits for us, for the local economy and for the country as a whole, since it contributes

to raising the number of skilled workers available for future projects.

## Cost saving

We understand that commercial conditions are for some projects critical factors for promotion. We continuously deal with the catch of saving money without sacrificing quality. This is the reason why we always tried to bring value to our offer by strict cost assessing, efficient logistic, creative acquisition, careful selection of partners, special shaped financing strategies and maximum use of the local resource.



# Investors in Energy

Energy is essential in almost every aspect of our life and for the success of our economy. We face two long-term energy challenges: tackling climate change by reducing carbon dioxide emissions both within Romania and abroad, and ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel.

To deliver energy security and accelerate the transition to a low carbon economy requires urgent and ambitious actions. Also, to replace ageing electricity generation capacity and to meet demand, the EU and Romania will need substantial investment over the next 20 years, including the capacity to deal with peaks. More reserve must exist in order to prevent disruptions at times of high demand and to serve as back-up for intermittent renewable energy sources in continues increase. But for timely and sustainable investments, a properly functioning market is needed, giving the necessary price signals, incentives, regulatory stability and access to finance.

An effective energy efficiency policy does not mean sacrificing comfort or convenience. Nor does it mean reducing competitiveness. In fact, an effective policy in this area means the opposite: making cost-effective investments in order to reduce the waste of energy, thereby increasing standards of living and saving money, and using price signals, that would lead to more responsible, economical and rational use of energy.

In the past years, renewable energy and cogeneration represented strategic development directions for Romelectro to channel human and financial resources. Our investment policy is concentrated in projects fully compliant with the principles of sustainable

development, targeting three of the most important lines of the European Union documents: energy saving, development of cleaner energy supplies and securing reliable energy in competitive markets.

As business developer and investor, Romelectro initiated highly efficient cogeneration and renewable energy projects, building up the technical and financial bases for developing and multiplying such projects.

We believe in distributed or decentralised energy sources, producing and using electricity and heat at local level. Specialised collectives of engineers are looking to develop micro-generation, district heating schemes, combined heat and power and biomass fuelled heating, considering that efficiency means to tailor on local and specific conditions. Also, we are looking to harvest the renewable energy potential, considering that where available, renewable sources of energy – hydro-electric power, solar power, geothermal energy and biomass – can represent essential alternatives to fossil fuels.

An important portfolio of projects is currently being analyzed by our specialized departments. Romelectro is looking to capitalize the synergies resulting from the structure of a company with integrated competences. Our business portfolio is continuously diversified and expanded by our involvement in value-added investment projects.



# Dense Slurry Systems

Anticipating the need of developing an efficient solution for ash and slag collection, conveyance and storage, Romelectro and ISPE, together with international partners, most notably GEA EGI, developed since 2001 through a pilot project in Timișoara, special storage stabilizing and cleaning methods which have now been accepted on a large scale by most of the power plants in Romania.

The grounds of our research constituted both the results and analyses carried out on ash generated by domestic heat and power plants and the experience of the ISPE specialists, accumulated by designing pilot plants in cooperation with some of the world's most important technology, equipment and installation suppliers.

Romelectro applied its solutions acting as general contractor for 12 boilers operating on coal in Craiova Power Plant (2 × 150 MW), Ișalnița Power Plant (2 × 315 MW), Rovinari Power Plant (4 × 330 MW) and Turceni Power Plant (4 × 330 MW).

## System Benefits

Using this new technology, all the environmental issues related to ash and slag silos are eliminated and more:

- **The quantity of water** for ash and slag conveyance is drastically reduced
- **The volumetric density** is increased, thus obtaining a higher storage capacity
- **The dump surface** is hardened and insensible to the blowing of the wind due to the increased cohesion of the ash and slag particles
- **The harmful chemical elements** are retained and fixed in the inactive ash rock

- **The risk of waste water infiltrating** the underground waters is low due to the fact that in normal operating conditions there will be no excess water in the dump – the full quantity used in preparing the water/slag-ash mixture being consumed in chemical fixing reactions or being evaporated. Practically, the dense slurry systems represent a technology converting harmful waste such as ash and slag, into inactive and stabilised waste.

The essence of the dense slurry technology consists in the continuous mixing of the firing waste, i.e. dry ESP ash, wet slag from the Kratzer, and any desulphurization sub-product, with waste water, by intense hydraulic circulation, in a solid/liquid ratio greater than or equal to 1.

The intensive hydraulic mixing of the firing waste with a quantity of water less than the mass of such waste, leads to the dissolving of the CaO and MgO, the solution created partially activating the surface of the ash particles. The cementoid type chemical compounds found in the ash are then activated, creating a homogenous dense slurry which is pumped to the deposit, where it hardens in time.

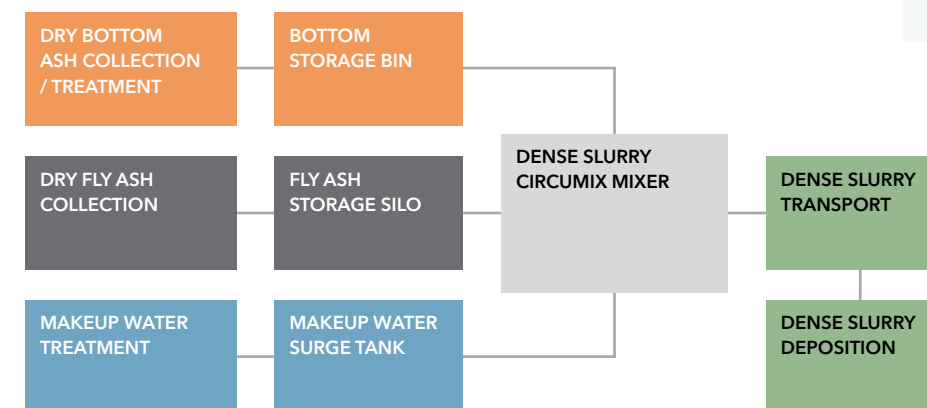


Walking on the surface of 24 hours ash stone

Dense Slurry Mixer Arrangement



## Comprehensive Dense Slurry System





## DSS IN CRAIOVA II

Part of Craiova Energy Complex, Craiova II TPP (2 × 150 MW) has a significant importance both for the Romanian power sector and for the city of Craiova, being the only heat producer for the population and strategic industrial consumers such as Ford automotive factory and other plants on the industrial platform.

Considering the immediate need to comply with EU regulations, the ash and slag deposit in SE Craiova II should observe the environmental requirements regarding soil, underground waters and air pollution.

**Scope of the project:** Minimizing the environmental impact of SE Craiova II through the implementation of a dense slurry system

**Starting year:** 2008

**Year of commissioning:** 2010

**Client:** Craiova Power Complex, Craiova II Branch.

### Main technical characteristics

#### ■ New Bagger pump station

Is achieved by replacing the current Bagger pumps with reduced size and parameter pumps, equipped with frequency converters and automatic control of their charge. The slag is conveyed to a thickener, to provide an optimum slag and water ratio, and then directed to a mixer, where the dense slurry is prepared.

#### ■ New dry ash discharge system

The ash resulting from all the four fields of the electrostatic filters, from the rotative air preheaters and the economiser, is conveyed to the ash silos, from where it is dozed in the

mixer. The slurry coming from the flue gas desulphurization plant is directed in the mixer as well. The main purpose of the mixers is to provide an optimum concentration of the slurry.

#### ■ New dense slurry pump station

The dense slurry pumps represent the main equipment of the investment. The station is equipped with three piston pumps, which convey the dense slurry to the deposit, **over a 9 km distance. Actually, due to this distance, the rated working pressure in the evacuation installation exceeds 70 bar, making this installation one of the very few of this kind.**

#### ■ New compressor station

A compressed air station, equipped with 5 fully automatic compressors and 7 compressed air cylinders, was built to provide both technological and instrumental compressed air.

#### PARTNERSHIP

*Romelectro* – EPC Contractor

*GEA EGI (Hungary)* – equipment

engineering and supply

*SAEM Energomontaj* – construction and erection works

*ISPE* – engineering and design.



### FACTS AND FIGURES

#### CRAIOVA II POWER PLANT Dense Slurry Plant

- 2 × 150 MW power units (+8 district heating boilers)
- 2 × 86 t/h of dry solids (6 t/h bottom ash + 60 t/h fly ash + 20 t/h dry gypsum)
- 1:1 water to solid ratio
- CIRCUMIX continuous mixing technology
- 2 × 140 m<sup>3</sup>/h + 1 × 110 m<sup>3</sup>/h transport slurry lines
- 3 sets of Feluwa hose diaphragm slurry pumps for distance transport
- 9400 m transport distance
- 90 m geodetic level difference





## DSS IN IȘALNIȚA

Part of Craiova Energy Complex, Ișalnița TPP (2 × 315 MW) has a significant importance for the Romanian power sector, being one of the largest power generation capacities operating in Romania.

**Scope of the project:** Increasing the stability of the slag and ash storage of SE Ișalnița, on the right and left banks of Jiu river, using the dense fluid technology

**Starting year:** 2008

**Year of commissioning:** 2010

**Client:** Craiova Power Complex, Ișalnița Branch

The solution is designed to transform the existing heavily polluting ash handling system to match the eco-friendly dense slurry technology. In compliance with the environmental requirements, the risks of both spreading the ash from the deposit as dust, and of polluting the phreatic waters is thus decreased. The technological water consumption and the corresponding pumping energy are drastically reduced, thus increasing the overall installation energy efficiency.

### Main technical characteristics

Each of the four boilers are now equipped as following:

- **Ash transport pump transversal draft funnel**, with buffer tank included, respectively a pipeline up to the ash bunker corresponding to the boiler;
- **Three-serial pump system** for the transport of the ash from the draft funnels of drum 2, respectively a pipeline discharging the ash;
- **Two coarse ash transporting pumps** which

overtake the ash from the bunker corresponding to the boiler and two circuits for each pump (one toward the dense slurry station and another one toward the coarse ash dispatch silo);

- **Four-serial pump system** for the ash transport from the electrostatic filters, which overtakes the ash from the four diverters, and two circuits for each pump (one toward the dense slurry station and one toward the fine ash dispatch silo);
- **Four diverters** mounted on the four pneumatic gutters from the electrostatic filters, which discharge the ash to the pneumatic transport system, respectively to the boiler ash bunker – the failure (emergency) variant;
- **Ash pneumatic transport pipes** mounted overground, on their own structure, which connect the transport pumps to the silos of destination;
- **Filters with sacks** for each silo;
- **Devices for loading** the ash into vehicles (3 pieces), with mobile connection, that replaced the existing devices.

### PARTNERSHIP

The project is performed under an EPC contract.  
*Romelectro* – EPC Contractor  
*GEA EGI* – equipment supplier, engineering and commissioning works for the dense slurry plant  
*ISPE* – engineering and design  
*SAEM Energomontaj* – subcontractor for mechanical and electric erection works.



### FACTS AND FIGURES

#### IȘALNIȚA POWER PLANT Dense Slurry Plant

- 2 × 315 MW, 4 × 510 t/h boilers
- 4 × 77 t/h of dry solids (5 t/h bottom ash + 52 t/h fly ash + 20 t/h dry gypsum)
- CIRCUMIX continuous mixing technology
- 3 × 120 m<sup>3</sup>/h transport slurry lines – 1 ash field
- 4 sets of Warman centrifugal pump groups
- 3 pumps/group for distance transport
- 4600 m transport distance
- 45 m geodetic level difference.



## DSS IN ROVINARI

Having an installed power of 1320 MW (4 x 330 MW), Rovinari TPP was in 2010 the second largest coal fired producer in Romania, supplying about 9% of the total electricity generated on the local market. Romanian and EU authorities imposed a comprehensive environmental programme for the compliance with the environmental norms of the power plant commissioned in 1979.

The area accommodating the new deposit is approximately 1.6 km<sup>2</sup> and the three compartments create a storage capacity of about 32 million m<sup>3</sup>, ensuring the functioning of the plant for an estimated period of 15 years.

**Starting year:** 2008

**Year of commissioning:** 2010

**Client:** Rovinari Power Complex

### Main technical characteristics

#### ■ New Bagger pump station

Is achieved by replacing the current Bagger pumps with reduced size and parameter pumps, equipped with frequency converters and automatic control of their charge. The slag is conveyed to a thickener, to provide an optimum slag and water ratio, and then directed to a mixer, where the dense slurry is prepared.

#### ■ New dry ash discharge system

The ash resulting from all the four fields of the electrostatic filters, from the rotative air preheaters and the economiser, is conveyed to the ash silos, from where it is dozed in the

mixer. The slurry coming from the flue gas desulphurization plant is directed in the mixer as well. The main purpose of the mixers is to provide an optimum concentration of the slurry.

#### ■ New dense slurry pump station

The dense slurry pumps represent the main equipment of the investment. The station is equipped with 12 centrifugal pumps, which convey the dense slurry to the deposit, over a 7 km distance.

#### ■ New compressor station

A compressed air station was built to provide both technological and instrumental compressed air.

### PARTNERSHIP

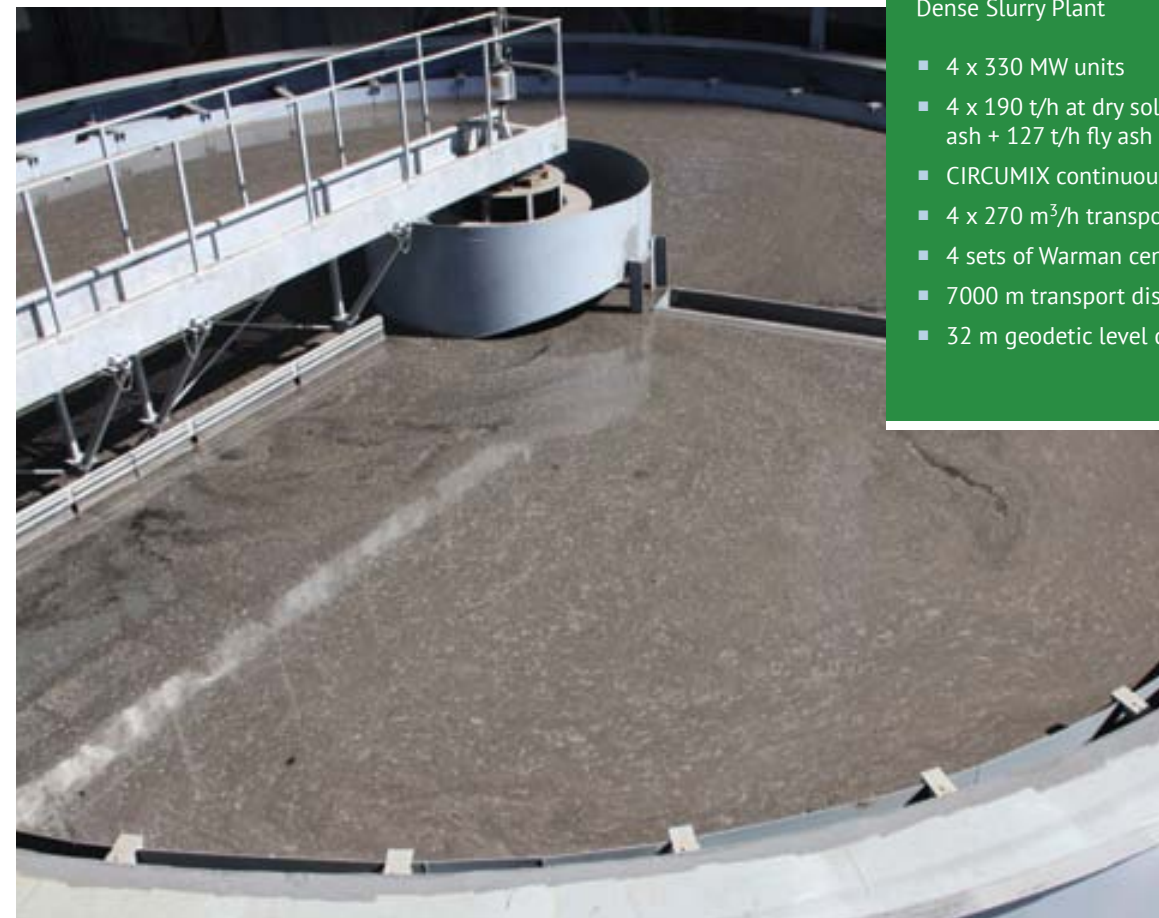
*Romelectro* – EPC Contractor for procurement, construction and erection works  
*GEA-EGI (Hungary)* – equipment engineering and supply  
*SAEM Energomontaj* – construction and erection works  
*ISPE* – engineering and design.



### FACTS AND FIGURES

#### ROVINARI POWER PLANT Dense Slurry Plant

- 4 x 330 MW units
- 4 x 190 t/h at dry solids (30 t/h fly bottom ash + 127 t/h fly ash + 33 t/h dry gypsum)
- CIRCUMIX continuous mixing technology
- 4 x 270 m<sup>3</sup>/h transport slurry lines
- 4 sets of Warman centrifugal pump groups
- 7000 m transport distance
- 32 m geodetic level difference





## DSS IN TURCENI

In 2010, Turceni TPP supplied more than 10% of the energy consumed in our country, being the largest coal fired producer. Following the EU energy and environment regulations, Turceni TPP was imposed to comply with the norms regarding the soil, water and air protection.

**Scope of the project:** Solutions for evacuation, transport and storage of waste resulting from coal fired boilers in Turceni TPP in dense slurry system  
**Starting year:** 2009  
**Year of commissioning:** 2012

The project involves upgrading the current system of slag and ash discharge produced by the combustion process in the boilers.

The new investment consists mainly of:

- **Two dense slurry preparation stations**
- **Bagger pumps replacement**
- **Dry ash transport installation**
- **Air compressor station**
- **One wastewater treatment plant.**

For all the objectives above, Romelectro will ensure the design, procurement, erection and commissioning of the installations.

### Main technical characteristics

- **Two dense slurry stations**

One for the entire ash discharge system from units 3 and 4, and another for the entire discharge system from units 5 and 6, including dense ash slurry mixers, bottom ash slurry thickeners and distance transport pumps.

- **New dry ash discharge system**

The ash resulting from all the three fields of ESP, from the rotative air preheaters, economiser, and mechanical filters is taken over by a pneumatic system and conveyed to the ash silo, from where it is dozed in the mixer.

- **New Bagger pump station**

Is achieved by replacing the current Bagger pumps with reduced size and parameter pumps, equipped with frequency converters and automatic control of their charge. The slag is conveyed to a thickener, to provide an optimum slag and water ratio, and then directed to a mixer, where the dense slurry is prepared.

- **New compressor station**

A new compressor station will be built in order to provide the necessary air for dry ash transport installation. Also, instrumental air compressors will be procured to provide necessary air for all the pneumatic consumers inside the project limit.

- **Wastewater treatment plant**

To treat wastewater from units no. 3, 4, 5 and 6, a wastewater treatment plant will be installed in the engine room in block no. 2.



### FACTS AND FIGURES

#### TURCENI TPP Dense Slurry Plant

- 4 × 330 MW units
- 4 × 155 t/h of dry solids  
(30 t/h bottom ash + 105 t/h fly ash + 20 t/h FGD gypsum)
- 5 × 450 kW + 1 × 250 kW  
Atlascopco compressors
- 8 sets of Metso Mineral centrifugal pump groups
- CIRCUMIX continuous mixing technology
- 4900 m transport distance
- 24 m geodetic level difference

#### PARTNERSHIP:

*Romelectro* – EPC Contractor for procurement, construction and erection works  
*GEA EGI (Hungary)* – equipment supply and basic engineering  
*SAEM Energomontaj* – construction and erection works  
*ISPE* – engineering and design.



## LOW NO<sub>x</sub> BURNERS FOR BOILERS NO. 4, 5, 6, 7 AND 8 IN SC ELECTROCENTRALE GALAȚI SA

This contract covers the retrofitting of 5 steam boilers of 420 t/h with low NO<sub>x</sub> natural gas – fuel oil mixed firing installations, integrated in a new Burner Management System (BMS).



For each boiler, the new installation shall consist of:

- 6 low NO<sub>x</sub> 53 MWt burners
- New BMS and DCS Systems
- New modern dual gas – fuel oil supply systems
- Emission monitoring system
- Methane leakage monitoring system, a.s.o.

The BMS system shall be integrated into the automated management system to be upgraded with a DCS OVATION and HIMA protection system.

### Estimated performances

Reducing the level of noxious emissions to the following values:

- 150mg NO<sub>x</sub>/Nm<sup>3</sup>, 100mg CO/Nm<sup>3</sup>, 5mg dust/Nm<sup>3</sup> for natural gas firing
- 350mg NO<sub>x</sub>/Nm<sup>3</sup>, 170mg CO/Nm<sup>3</sup>, 50mg dust/Nm<sup>3</sup> for heavy fuel oil firing.

### PARTNERSHIP

*Romelectro* – EPC Contractor  
*Mehldau & Steinfath* – equipment and subassembly supplier  
*ICPET Steam Generators and ISPE* – design and technical consultancy  
*Nuclearmontaj and Termoserv Galați* – construction and erection works.

The modernized burning installations shall meet the environmental requirements at national and international levels.

**Starting year:** 2008

**Year of commissioning:** 2012

## MODERNIZATION OF THE FIRING INSTALLATIONS AT IERNUT TPP

The works consist in the modernization and retrofitting of the firing installations of four 320 t/h gas fired boilers at Iernut TPP, with low NO<sub>x</sub> burners and automatic Burner Management System (BMS).

The modernized burning installations shall comply with the environmental requirements imposed by the legislation in force.

**Starting year:** 2009

**Year of commissioning:** 2011

For each boiler, the following main equipments shall be installed:

- 10 burners for low NO<sub>x</sub> content
- A new BMS unit
- A new modern system for gas supply
- Emission monitoring system
- Methane leakage monitoring system, a.s.o.

The BMS shall be integrated with the existing automated management system (DCS), which shall be completed with the software and hardware necessary to assure the new operational conditions.

The existing boiler technological protections (ESD) will function further on using the same principles, while only certain modifications of the hardware and software shall be executed for the interconnection with the BMS and for introducing certain additional protections, which are deemed as necessary.



### Estimated performances

Achieving the emissions limits for 3% O<sub>2</sub> at:

- 170mg NO<sub>x</sub>/Nm<sup>3</sup>
- 100mg CO/Nm<sup>3</sup>
- 5mg dust/Nm<sup>3</sup>.

### PARTNERSHIP

*Romelectro* – EPC Contractor  
*Mehldau & Steinfath* – equipment and subassembly supplier  
*ICPET Steam Generators and ISPE* – design and technical consultancy.



## COMPLEX HYDRO-DEVELOPMENT OF JIU VALLEY, BUMBEȘTI-LIVEZENI STRETCH

Romelectro, through its specialized Hydropower Project Division, offers consultancy, development and turnkey execution works for projects in hydrotechnical and hydropower fields.

Starting year: 2004

Commissioning year: 2013

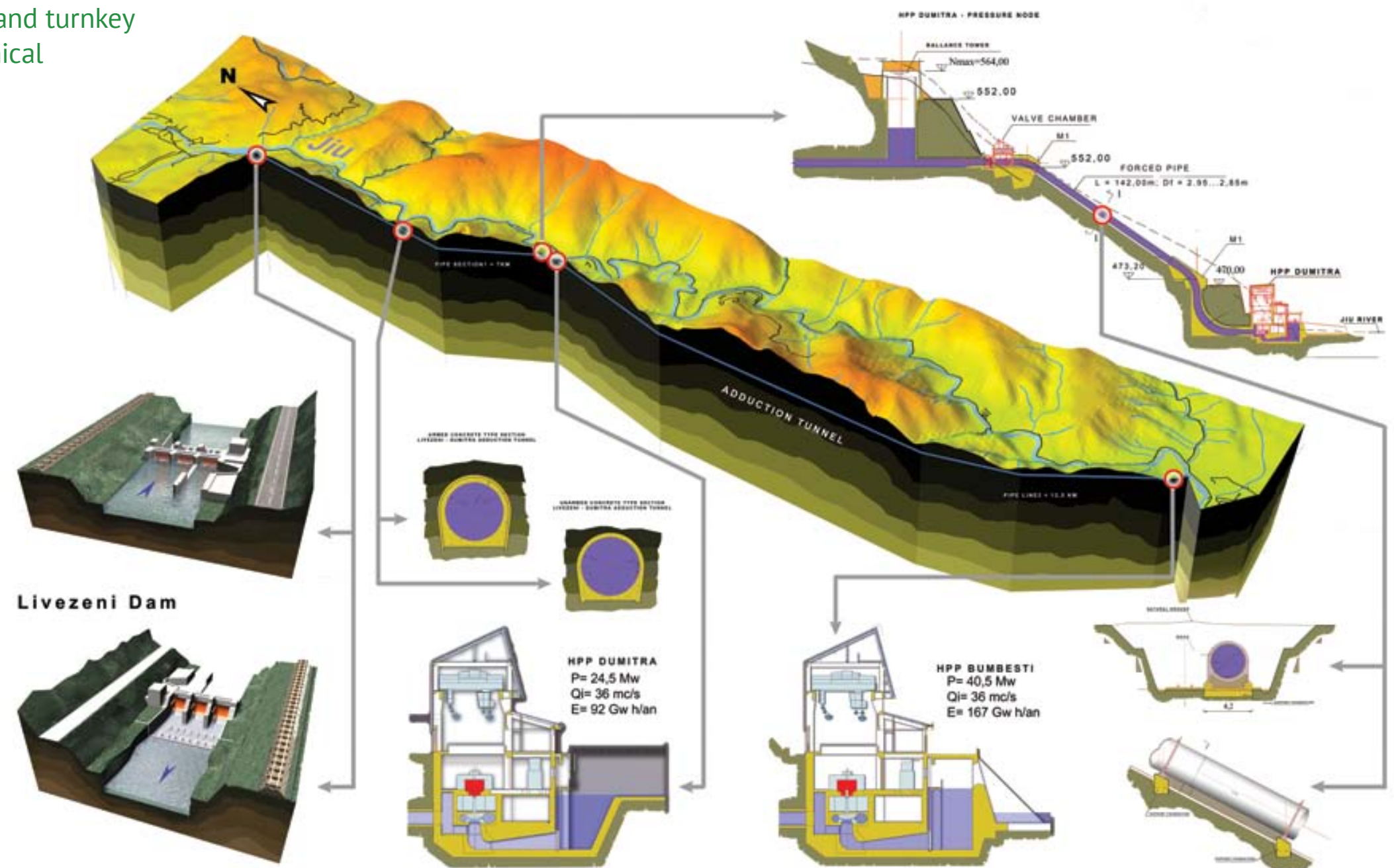
Acting as EPC Contractor, Romelectro is involved in performing the most important investment in Romania in hydropower field after 1990: the complex development of the Jiu River on Bumbești–Livezeni stretch and construction of three hydropower plants with an installed power of approximately 80 MW.

Initiated in July 2004, the work will be completed in 2013, with the commissioning of:

- **Dumitra Hydropower Plant**, located on the right bank of the Jiu River, equipped with 3 vertical Francis turbines, with an installed power of 24.5 MW
- **Bumbești Hydropower Plant**, located on the right bank of the Jiu River, equipped with 3 vertical Francis turbines, with an installed power of 54 MW
- **Livezeni Micro-hydro Power Plant**, located on the technological platform adjacent to the dam and the power intake, equipped with a helical tubular turbine, with an installed power of 260 kW.

### PARTNERSHIP

*Romelectro* – joint venture leader, providing all mechanical and electrical equipments, erection and commissioning  
*Hidroconstrucția* – joint ventures partner, contractor for civil works  
*ISPH* – engineering works.



## REFURBISHMENT OF 400/110 KV BRAȘOV SUBSTATION

Considering the particular importance of this electrical substation, the condition of its current installations and the legal requirements, the complete rehabilitation programme was imperative, in order to insure the security of supply and operational safety.

**Starting year:** 2010

**Year of commissioning:** 2013

The 400/110 kV electrical substation in Brașov has a particular importance the National Power System and for the local grid. Firstly, it represents a junction for power lines connecting Muntenia, South Transylvania and the poorly covered Moldavian area. Secondly, the importance for the local distribution grid must not be neglected. The substation supplies the consumption area (approx. 167 MW), being also the connection point for CET Brașov.

### Project description

The purpose of this project is to complete a new 400 kV outdoor electrical substation, equipped with the modern high-performance conventional installations, as well as a new indoor 110 kV electrical substation, equipped with SF6 insulated installations (GIS cells). During this project, all primary and secondary equipments will be replaced (command – control – safety devices, internal services DC/AC, backup generators, batteries, remote-controlled safety devices).

### Benefits after project implementation

- Increased safety level of the National Energy System (NES)
- Ease in further upgrades by adding new cells for the 400 kV and 110 kV lines
- Possibility of remote access and control from all dispatching levels (regional, national)
- Important decrease in exploitation and maintenance cost
- Reduction of both the internal technological consumption and unscheduled interruptions.

### PARTNERSHIP

*Romelectro* – EPC Contractor, consortium leader  
*CG Holding Belgium* – Consortium partner  
*ISPE* – engineering and design  
*Emsens Prod* – civil works  
*Electromontaj Carpați Sibiu* – erection & commissioning works.

## GRID CONNECTION OF THE GREEN FIELD 800 MW CCGT BRAZI

The work consisted in the supply and erection of the two new OHTLs to connect the green field power plant to the National Power System.



**Starting year:** 2008

**Year of commissioning:** 2010

### Connection point:

400/220/110 kV Brazi West Substation

**Length:** 3 km

### Voltage level:

- 400 kV for the double circuit DONAU type towers
- 220 kV for the simple circuit RODELTA type towers

**Distance between the axes:** 80 m

**Corridor:** the corridor for the new OHTL starts in the power plant substation and taking a North-West direction, it crosses the local road to Negoiești and 4 other OHTLs (110 kV Brazi – Tâncăbești, 110 kV Brazi – Florești, 20 kV Negoiești, 110 kV Brazi West – Ploiești South)

**Investor:** Petrom SA

### PARTNERSHIP

*Siemens Romania* – General contractor  
*Romelectro* – Subcontractor & equipment supplier  
*Electromontaj Carpați Sibiu* – Erection, tests and commissioning works.



## INVESTMENT FOR COMBINED HEAT AND POWER PLANT IN BUZĂU

As investor and project developer, Romelectro initiated in 2007 the project consisting in transforming the existing power plant of Buzău into a modern combined heat and power plant, using high efficiency technology.

The new generation capacity is operated by the special purpose vehicle created on the basis of private-public joint venture.

**Starting year:** 2008

**Year of commissioning:** 2010

The investment consists in a 2 × 3 MW gas motor unit and 2 × 30 Gcal/h hot water boiler, with overall efficiency higher than 85%. Through its complex role in the project – investor, project developer and electricity off-taker – Romelectro ensured the best technical and economical solutions which were essential for the financial closure of the project. In this way, more than 21,000 apartments and about 100,000 inhabitants benefit of energy services in compliance with the efficiency and sustainability principles.

### Technical Characteristics

- 2 GE Jenbacher gas engines of 3,041 MWe and 3,071 MWt  
Net efficiency: 86 %
- 2 hot water boilers of 60 Gcal/h  
Net efficiency: 93.3%



### PARTNERSHIP

Romelectro, ISPE, Eximprod, Buzău Local Council – investors and project developers  
RAM Buzău – investor and heat off-taker  
GE Jenbacher (Austria), Aalborg Engineering (Slovakia) – equipment producer and supplier.

### FACTS AND FIGURES

- Inhabitants: ~150,000
- Length of primary district heating system: ~26 km
- Length of secondary district heating system: ~56 km
- Total number of apartments: ~35,000
- Number of apartments supplied: ~21,000

## REHABILITATION AND REFURBISHMENT OF VOINEASA MICRO HYDRO POWER PLANT

In 2009, Romelectro started the works for the complete rehabilitation of Voineasa MHPP, creating thus a new and efficient capacity for harvesting the renewable potential of Mănăileasa creek.

**Starting year:** 2009

**Year of commissioning:** 2011

Voineasa I, II and III MHPPs were built before 1987. In 2006, following an open tender initiated by Hidroelectrica, Romelectro became the owner of the hydro power capacity. Based on the original project, the energy to be produced for an average hydrological year should have been 5,600 MWh/year. However, during 1987 and 2003, the average energy generated was 1939 MWh/year, representing less than 35% of the designed production.

For harvesting the renewable potential of Mănăileasa creek, it was necessary to replace the old generation capacities with new hydro-mechanical and electrical equipment, using a modern technology, based on a project conceived in such a way as to capitalize – under maximal efficiency and performance conditions – the existing potential of renewable resources. In the new conditions, the total green energy produced will reach more than 5,000 MWh/year, Romelectro becoming a green certificates supplier.

We bring our contribution to the essential development directions that our country approaches on the medium and long term:

- Enhancing the power quantities generated in Romania from renewable sources
- Protecting the environment by reducing the pollutant emissions

- Diversifying the power generation sources, the technologies and infrastructure for power generation.

### Technical characteristics:

#### Voineasa III MHPP:

- $H_{br} = 110$  m
- $Q_i = 2 \times 0.3$  m<sup>3</sup>/s
- $P_i = 500$  kW
- $E_m = 1,500$  MWh/year

#### Voineasa II MHPP:

- $H_{br} = 102.3$  m
- $Q_i = 2 \times 0.3$  m<sup>3</sup>/s
- $P_i = 500$  kW
- $E_m = 1,800$  MWh/year

#### Voineasa I MHPP:

- $H_{br} = 93$  m;
- $Q_i = 2 \times 0.30$  m<sup>3</sup>/s
- $P_i = 680$  kW
- $E_m = 2,300$  MWh/year



### PARTNERSHIP

SC Hydro-Engineering SA Reșița – electric and mechanical equipment supplier.

Project co-financed with EU structural funds, Ministry of Economy, Commerce and Business Environment – Intermediary Organism for Energy, Operational Sectorial Program – Increase of Economic Competitiveness.

# Major Projects in the Past Years

## THERMAL POWER PROJECTS

Solutions for the discharge, conveyance and storage of the waste resulting from the coal firing process in Turceni TPP (4 × 330 MW), using dense slurry technology	2009-2012	TPP Turceni
Delivery and erection of low NO <sub>x</sub> burners at the boilers type PK 47-2 from TPP Iernut	2009-2011	Electrocentrale București
Delivery and erection of the low NO <sub>x</sub> emission burners at boilers no. 4, 5, 6, 7 and 8 in SC Electrocentrale Galați SA	2008-2012	Electrocentrale Galați
Green field combined heat and power plant of 6 MWe and 80 Gcal in Buzău	2008-2010	ECOGEN Buzău (IPP)
Increasing the stability of the ash and slag storage on the right and left banks of Jiu River in SE Ișalnița (2 × 315 MW) using the dense slurry technology	2008-2010	TPP Craiova
Refurbishment and upgrade of electrical and automation installation for 330 MW unit no. 6 at TPP Rovinari	2008-2010	TPP Rovinari
New Gârla ash and slag deposit and installation for collecting, preparation, discharge and storage of dense slurry in CTE Rovinari TPP (2 × 330 MW)	2008-2009	TPP Rovinari
Increasing the stability of the Valea Mănăstirii slag and ash deposit by executing the installations for ash and slag dense fluid and development of the storage for the first heightening in SE Craiova II (2 × 150 MW)	2007-2010	TPP Craiova-Branch Craiova II
Rehabilitation of the 420 t/h CR 1737-type boilers in order to increase the safety in operation, especially on heavy fuel oil and for dual operation, including low NO <sub>x</sub> burners – CET Progresu – Boiler 2	2007	ELCEN București
Rehabilitation of the 420 t/h CR 1737-type boilers in order to increase the safety in operation, especially on heavy fuel oil and for dual operation, including low NO <sub>x</sub> burners – CET Progresu – Boilers 3 and 4	2006-2007	ELCEN București
Rehabilitation and modernizing of 315 MW unit no. 7 in Ișalnița TPP	2005-2006	TPP Ișalnița
Rehabilitation of the firing installations for 525 t/h steam boiler no. 2 in București Vest CHPP and no. 5 and 6 in București Sud CHPP, by replacing with modern low NO <sub>x</sub> burners	2004-2006	ELCEN București
Capital refurbishment of 330 MW units no. 4 & 5 in Turceni TPP (Programme A3)	1995-2003	TPP Turceni
Expedite refurbishment of 330 MW units no. 3 & 7 in Turceni TPP and no. 5 & 6 in Rovinari TPP (Programme A2)	1994-1998	TPP Turceni TPP Rovinari
Expedite refurbishment of 330 MW units no. 2 & 6 in Turceni TPP and no. 3 & 4 in Rovinari TPP (Programme A1)	1991-1994	TPP Turceni TPP Rovinari

## OVERHEAD TRANSMISSION LINES

400 kV OHTL Oradea – Nadab – Békéscsaba, new interconnection line with Hungary	2006-2008	Transelectrica
Capital rehabilitation of 400 kV București Sud – Gura Ialomiței OHTL	2006-2007	Transelectrica
Execution of 220 kV and 400 kV connections in Iernut Electrical Substation	2005-2006	Transelectrica
Capital rehabilitation of 220 kV Brazi Vest – Târgoviște OHTL	2004-2005	Transelectrica
Improving the dispatcher transmission system by executing the interconnection of the data transmission system between the national dispatching centers of Romania and Bulgaria	2003-2004	Transelectrica
Capital rehabilitation of 220 kV Borzești – Gutinaș OHTL	2003	Transelectrica

## ELECTRICAL SUBSTATIONS

Refurbishment of 400/110 kV Brașov substation	2010-2013	Transelectrica
Capital refurbishment and modernization of 110 kV and 220 kV bays in Fai substation	2007-2011	Transelectrica – Bacău branch
Extension and modernization to increase the safety in operation of 110/20 kV Dumbrava Sibiu substation	2007-2009	Electrica Transilvania Sud
Primary equipment upgrade in 110/20 kV Petrila substation	2007-2007	Transelectrica
Modernizing the protection systems of 250 MVA transformer and 110 kV PDB in 400/110 kV Brașov, Dârste, Domnești, Medgidia Sud, Pelicanu, Tulcea Vest, Smârdan, Drăgănești Olt substations	2006-2009	Transelectrica
Upgrade of the 110 kV bays in HPP Ciunget substation	2006-2008	Hidroelectrica – Vâlcea branch
Modernization of 110 kV Râmnicu Vâlcea HPP substation	2006-2007	Hidroelectrica – Vâlcea branch
Modernization of 110 kV HPP Govora substation	2006-2007	Hidroelectrica – Vâlcea branch
Turnkey refurbishment of the 110/10 (20) kV București Centru substation	2005-2007	Electrica Muntenia Sud
220/110/20 kV Baia Mare substation – major refurbishment at 110 kV bay	2005-2005	Transelectrica
Refurbishment of 440/220 kV Roșiori substation	2004-2006	Transelectrica – Cluj branch
Modernizing works at 220/110 kV Vetis substation	2004-2006	Transelectrica – Cluj branch
Turnkey 110/20 kV Borsec substation	2003-2005	Electrica Transilvania Sud
Turnkey modernization of 110/10 kV Cluj Center substation	2003-2004	Electrica Transilvania Nord
Turnkey refurbishment at 6 (20) kV Filești – Galați connection substation	2002-2003	Electrica Muntenia Nord
Capital refurbishment of the 220/110/20 kV Turnu Măgurele		Transelectrica

## HYDROPOWER

Hydropower development of the Jiu River on the Livezeni–Bumbești stretch, with the execution of hydropower plants with an installed power of 80 MW	2004-2013
Feasibility studies for the Ramdane, Djamel and Zaouia Dams. Technical design for the Bougous and Bouhalufa Dams. Detailed technical design (Avant Projet Détaillé) for the Bougous Dam	2001-2002
Turnkey execution of the Vafreghan Dam – Iran, El-Fakia – Algeria and heightening of the Ksob Dam – Algeria	1992/1985/1976



# Report of the Independent Auditors

## REPORT ON THE FINANCIAL STATEMENTS

We have audited the accompanying financial statements of Romelectro SA (“the Company”), which comprise the balance sheet at 31<sup>st</sup> December 2010, the income statement of changes in equity and cash flow statement for the year that ended, a summary of significant accounting policies and other explanatory notes presenting the following:

**TOTAL EQUITY AND RESERVES:**  
**RON 108,673,969**

**PROFIT FOR THE YEAR:**  
**RON 51,694,562**

### Management’s Responsibility for the Financial Statements

The Management is responsible for the preparation and fair presentation of these financial statements in accordance with the Order of the Minister of Public Finance no. 3055/2009 and related amendments and as described in the accounting policies presented in the notes to the financial statements. This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; making accounting estimates that are reasonable in the circumstances.

### Auditors’ Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing as adopted by the Romanian Chamber of Financial Auditors. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor’s judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity’s preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity’s internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the financial statements have been prepared, in all material respects in accordance with the Order of the Minister of Public Finance no. 3055/2009 and related amendments and, as described in the accounting policies, presented in the notes to the financial statements.

### Other Matters

This report is made solely for the Company’s shareholders, as a body. Our audit work has been undertaken so that we might state to the Company’s shareholders those matters we are required to state to them in an auditor’s report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company’s shareholders as a body, for our audit work, for this report, or for the opinion we have formed. The accompanying financial statements are not intended to present the financial position, results of operations and a complete set of notes to the financial statements of the Company in accordance with accounting principles and practices generally accepted in countries and jurisdictions other than Romania. Accordingly, the accompanying financial statements are not designed



for those who are not informed about Romanian legal and statutory requirements including the Order of the Minister of Public Finance no. 3055/2009 and related amendments.

### REPORT ON CONFORMITY OF THE ADMINISTRATORS’ REPORT WITH THE FINANCIAL STATEMENTS

In accordance with the Order of the Minister of Public Finance no. 3055/2009, article no. 318, point 2,

we have read the Administrators’ Report. The Administrators’ Report is not a part of the financial statements. In the Administrators’ Report, we have not identified any financial information which is not in accordance, in all material respects, with the information presented in the accompanying financial statements.

**For and on behalf of KPMG Audit SRL:**  
*John Lane KPMG AUDIT SRL*  
Registered with the Chamber of Financial Auditors of Romania under no. 1507/2003  
Registered with the Chamber of Financial Auditors of Romania under no. 9/2001

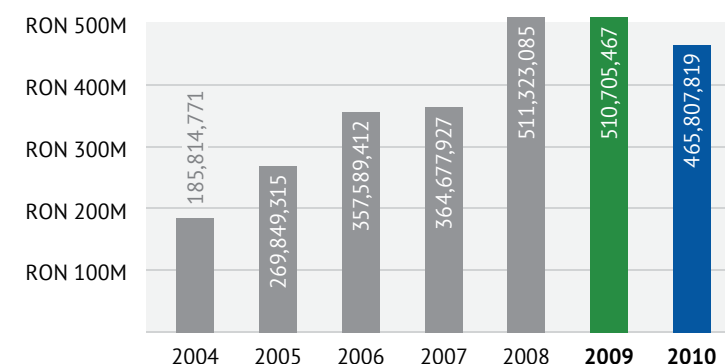
Bucharest, 5 April 2011.

# Financial Highlights

## BALANCE SHEET

	2009	2010
RON to EUR exchange rate on 31-12-2010	4.2282	4.2848
RON to EUR average exchange rate	4.2373	4.2099
<b>KEY FIGURES</b>		
Employees, average number	87	96
Turnover (RON)	510,705,467	465,807,819
Nominal capital (RON)	15,650,640	15,650,640
Gross profit (RON)	50,108,119	62,398,275
Net profit (RON)	42,207,207	51,694,562
<b>CONSOLIDATED PROFIT AND LOSS ACCOUNT</b>		
	RON	RON
Operating income	510,714,358	465,807,826
Financial income	5,518,680	3,245,166
Operating expenses	460,617,793	402,639,642
Financial expenses	5,507,126	4,015,075
Total expenses	466,124,919	406,654,717
<b>CONSOLIDATED BALANCE SHEET</b>		
	RON	RON
Noncurrent assets	47,171,639	47,388,807
Intangible assets	77,148	316,843
Tangible assets	24,259,091	19,224,272
Financial assets	22,835,400	27,847,692
Current assets	212,236,553	189,950,063
Regularisation & similar account	-	-
Assets Total	259,408,192	238,025,870
Own capital	94,036,904	108,321,691
Debts	152,367,136	106,630,686
Liabilities Total	259,408,192	238,025,870

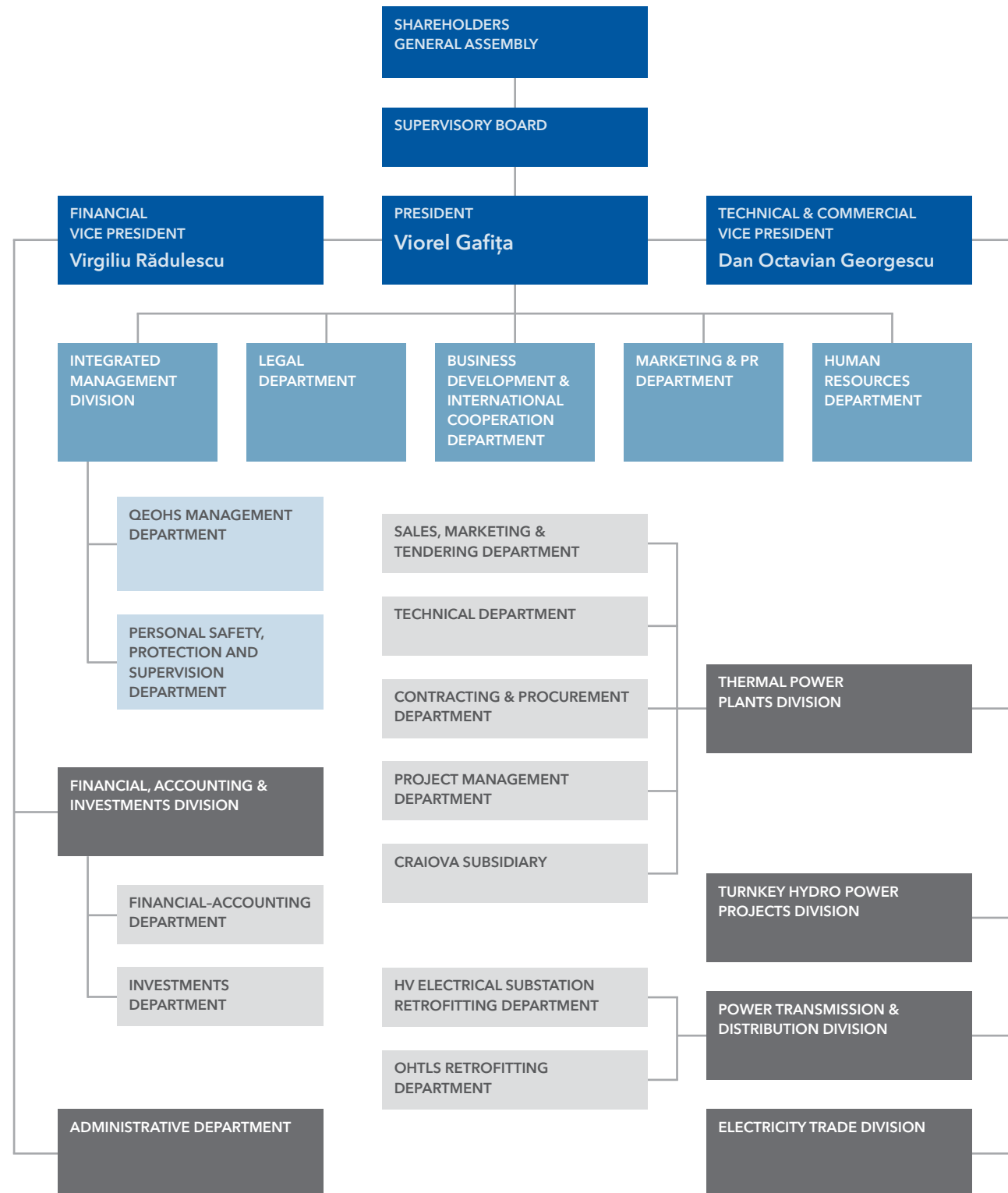
TURNOVER EVOLUTION GRAPH (million RON / year)



	2009	2010
<b>KEY FIGURES</b>		
Employees, average number	87	96
Turnover (EUR)	120,526,153	110,645,816
Nominal capital (EUR)	3,701,490	3,652,595
Gross profit (EUR)	11,825,483	14,821,795
Net profit (EUR)	9,960,873	12,279,285
<b>CONSOLIDATED PROFIT AND LOSS ACCOUNT</b>		
	EUR	EUR
Operating income	120,528,251	110,645,817
Financial income	1,302,405	770,842
Operating expenses	108,705,495	95,641,142
Financial expenses	1,299,678	953,722
Total expenses	110,005,173	96,594,864
<b>CONSOLIDATED BALANCE SHEET</b>		
	EUR	EUR
Noncurrent assets	11,156,435	11,059,748
Intangible assets	18,246	73,946
Tangible assets	5,737,451	4,486,621
Financial assets	5,400,738	6,499,181
Current assets	50,195,486	44,331,139
Regularisation & similar account	-	-
Assets Total	61,351,921	55,551,221
Own capital	22,240,411	25,280,454
Debts	36,035,934	24,885,802
Liabilities Total	61,351,921	55,551,221



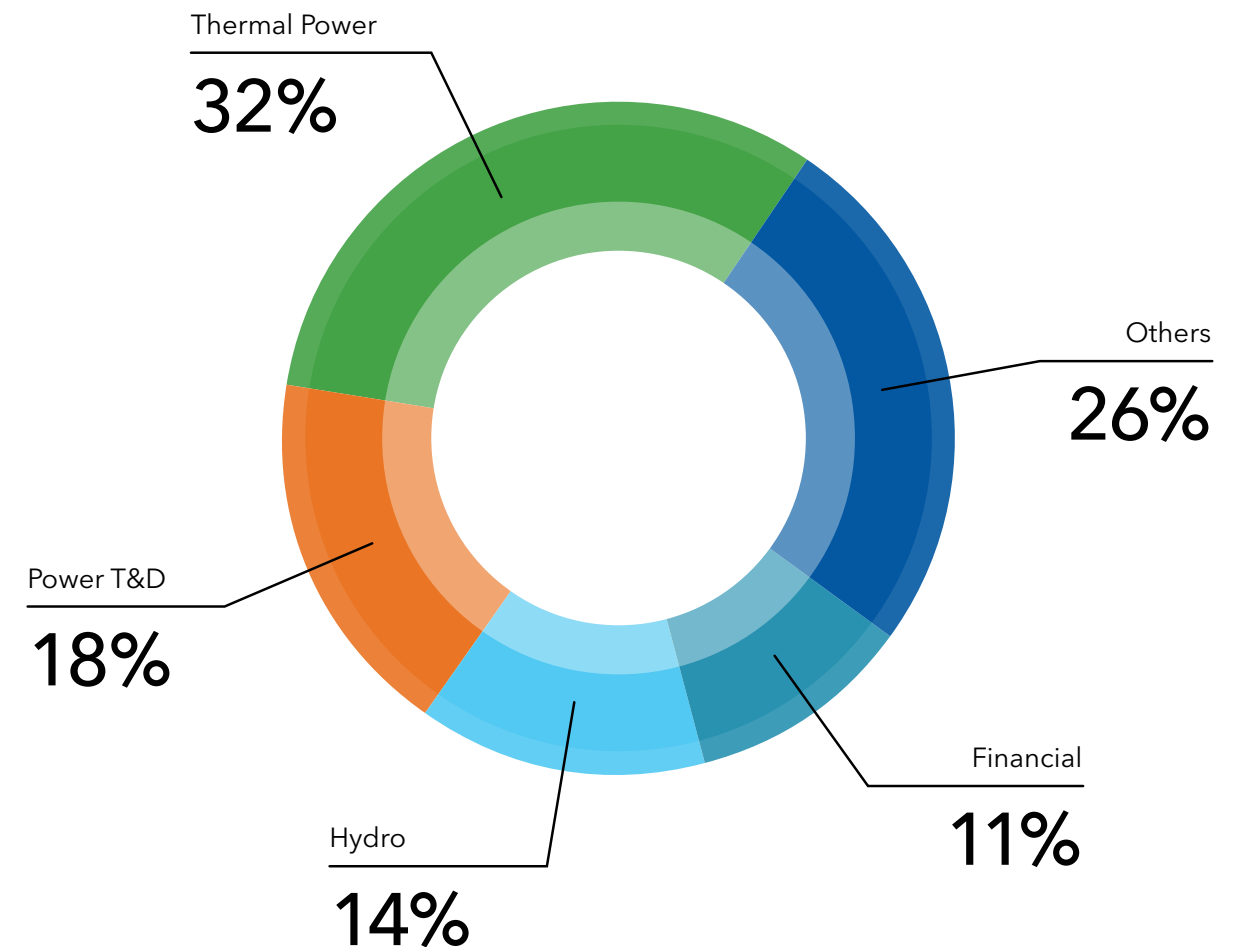
# Organizational Chart



# Human Resources Distribution

For over 40 years, Romelectro has relied on its employees' professionalism, experience and dedication. We are proud to have Romania's most famous engineers within our company, people for whom power means not just megawatts but their whole career.

That is why we consider the performances achieved by our company as being both an individual and a team effort. That is the reason for which we are continuously developing each employee's professional abilities and skills. To us, human capital is the most important resource.





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