Electrical Energy

Energy traveling long distances

CESEL S.A. is a consulting company with more than 40 years of experience in developing engineering with several integrated disciplines. Its headquarters are located in Peru and it has branches and offices in several Latin American countries. CESEL develops studies, designs and engineering projects; studies, works and assembly supervision; factory inspection; environmental studies and comprehensive management of engineering and construction projects through its twelve operating divisions and six technical departments. The Electrical Energy Division is described as follows:

Services

- Materials balance.
- Energy balance.
- Project referential schedule.
- Preliminary equipment design.
- Preliminary design.
- Preliminary program.
- Preliminary estimation.
- Pre-feasibility.
- Feasibility.
- Final engineering study.
- Works and assembly supervision.
- Factory inspection.
- Project management (EPCM).

Software

- Digsilent.
- PLS-CADD.
- ILOG CIPLEX.

Areas

Hydrogeneration
- Hydroelectric power plants electric and electromechanical design.
- Main equipment and auxiliary services selection.
- Supervision system and hydroelectric power plants control design (SCADA).

Simple and combined cycle thermal power stations, steam and diesel power plants
- Thermal power station electric, electromechanical and civil designs.
- Main equipment and auxiliary services selection.
- Co-generation systems.

Overhead transmission lines
- Layout selection.
- Equipment technical characteristics selection for 60, 138, 220 and 500 kV lines.
- Electric, electromechanical and civil designs. Equipment and construction technical specifications.
- Budgets and schedules development.

High and medium voltage insulated cables transmission lines
- Layout selection and coordination with other basic services facilities.
- Electric, electromechanical and civil designs. Construction equipment technical specifications for 60, 138 and 220 kV voltage levels. Dry and fluid-filled cables.
- Transmission capacity in regular and cyclic load regime.
- Budgets and implementation schedules development.

Electric power distribution systems
- 10, 13,8; 22,9 and 33 kV medium voltage primary networks.
- 220 and 380/220 kV secondary networks.
- Public lighting.
- Rural electrification.

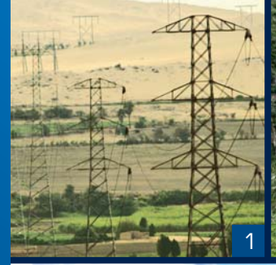
Transformation substations
- Substation type selection.
- Main equipment and hardware characteristics selection.
- 60, 138, 220 and 500 kV substations electric, electromechanical and civil designs.
- Supervision system and substations control (SCADA).
- Automation.
- Telecommunications.
- Budgets and implementation schedules development.

Industrial electricity
- Industrial, mining and commercial plants engineering designs.
- Massive rapid transport systems engineering designs.

Electric system studies
- Stationary state analysis: power flow, short circuit, stability.
- Electromechanical transient: transient and dynamic stability.
- Electromagnetic transient.
- Protection coordination.
- Harmonics.

Wind power plants
- Electromechanical and civil designs.
- Technical-economic evaluation to determine its connection point to the system.
- Linking, overhead and underground electric line design.
- Budget, schedule and works execution bidding file development.

Miscellaneous studies
- Pre-operativity and operativity studies.
- Electricity market.
- Rate regulation.
- Consulting in power supply contracts.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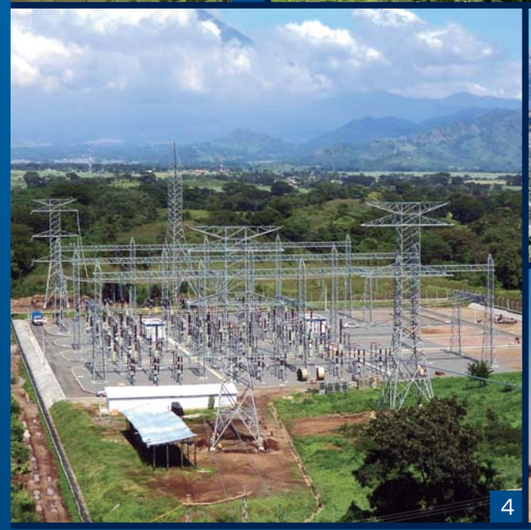
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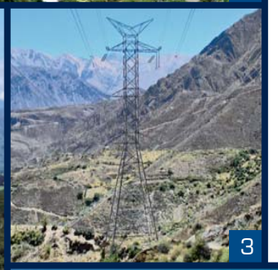
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Projects

- Electric Interconnection System for Central American countries (SIEPAC), 230 kV, 1800 km. Layout section and topographical survey in El Salvador, Nicaragua and Panama sections. Structures distribution design in Guatemala, Honduras and Nicaragua.

- 2008-2018 transport system extension plan. 16 230 kV new transmission lines, 12 adaptations (850 km) and 12 230/138/69 kV new substations, 15 extensions, with a total installed power of 1140 MVA. Design and construction supervision. Guatemala.

- Mantaro - Caravelí - Montalvo 500 kV transmission line, including its 3 500 kV substations. Lime operativity comprehensive study (740 km, 600 MW). 500 kV substations final design. Central and South area of Peru.

- Talara (30 MW) and Cupisinique (80 MW) Wind Farms. Operativity study, communication system detail engineering development, substations inspection, verification and revision and future extensions analysis. Piura, Peru.

- El Mirador (220/60 kV - 3x120 MVA) and Malvinas (220/60 kV - 3x180 MVA) Substations. Detail engineering design (electromechanical and civil works), pre-operativity study and use systems design. Lima, Peru.

1. Zapallall – Paramonga – Chimbote 220 kV transmission line. Lima and Ancash.
2. Mantaro – Caravelí 500 kV transmission line and substations. Central and South area of Peru.
3. Mantaro – Cotaruse – Socabaya 220 kV transmission line. Cusco and Apurimac.
4. Guatemala's transmission system extension plan.
5. Talara Wind Farm. Piura, Peru.
6. San Juan 220 kV Substation. SINC's reactive power compensation system. Lima, Peru.
7. Mantaro – Pachachaca – Callahuanca 220 kV transmission line. Huancavelica, Junin and Lima, Peru.
8. San Gabán 138 kV Substation. Puno, Peru
9. 220 kV and 138 kV transmission lines connected to the Socabaya substation. Arequipa, Peru

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