

Topography and Geomatics

Measuring the land and works

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 Topography and Geomatics Risk Division is described as follows:

Services

- Basic engineering.
- Pre-feasibility.
- Feasibility.
- Detail engineering.
- Work topographical control.

Software

- ArcGis for Desktop.
- PCI Geomatics.
- Hypack.
- Autocad Map 3D.
- Autocad Civil 3D.
- MicroStation.
- Topcon Tools.

Areas

Topography and Geodesy

- Geodetic and topographic control networks set up.
- Conventional surveys and surveys with airborne systems.
- Buildings laying out, structures position and level control, electromechanical installations control.
- Trace, Stakeout and Quantity takeoff.
- Survey for transmission lines, hydroelectric power plants, piping, mine closure plans, transportation, hospitals, drinking water and sewerage systems, mining projects, ports, buildings and urban habilitation.

Hydrography and Oceanography

- Bathymetric survey in all aquatic fields (sea, rivers, lagoons) with port and/or navigation infrastructure purposes.
- Reservoir capacity determination of lakes, lagoons and reservoirs.
- Hydro-oceanographic studies. Oceanographic variables monitoring, analysis and modeling (wave action, currents, tides, wind, temperature and salinity).
- Oil exploration platforms monitoring.
- Amazon rivers navigability studies. Navigation canals design.
- Monitoring for the underwater pipes and emitters installation.
- Dredging supervision and control.

GIS and Spatial Analysis

- Geographic information systems development, applying technologies and methodologies with a systemic approach in the geographic space study in several fields such as Hydrology, Mining, Transportation, Energy, Environmental Studies, Sewerage, Archeology, Education and Health.
- Cadastral information systems development (urban, rural and infrastructure).
- Base and theme drawings design, based on international standards (ISO 19100).

Cartography, Remote Sensing and Cadastre

- Satellite images digital treatment for the theme coverage identification, applied in return multi-temporal analysis regarding snow-capped mountains, desertification, vegetal coverage changes, crops health, river waterways behavior, mineral components identification in aquatic and terrestrial fields and current soil use identification.
- High-precision cartography through photogrammetric methods: traditional aerial digital photogrammetry, UAV photogrammetry (drones) and LIDAR aerial technology.
- Urban, rural and infrastructure cadastre projects development (ports and airports).



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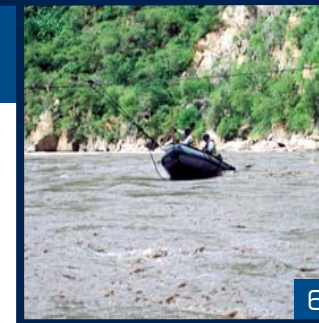
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- 1 Cerro de Pasco Deviation - Tingo María Highway. Pasco and Huánuco, Peru.
- 2 Emitter. Callao, Lima; Peru.
- 3 Hydrographic equipment, echo sounder. GPS.
- 4 Chinchaycocha lake. Junin, Peru.
- 5 Land survey with airborne system - LiDAR software.
- 6 Marañón river. Ancash and La Libertad, Peru.
- 7 Geodetic points georeferencing - Toromocho Project. Junin, Peru.
- 8 320k extension project - Cajamarquilla Zinc concentration plant. Lima, Peru.
- 9 Vilcanota river. Cusco, Peru.

Projects

- Topo-bathymetric profiles determination and gauging in Mara 320, Mara 300 and Mara 230 sectors. Marañón river. La Libertad and Ancash, Peru.
- Cajamarquilla zinc concentration plant. 160k and 320k extension project. Topographic control of the civil, metal-mechanical and equipment extension works implementation. Lima, Peru.
- Environmental management plan of the Chinchaycocha lake storage and discharge operations. Topography, bathymetry and Geographic Information Systems (GIS). Junin, Peru.
- Photovoltaic solar power plants. Topographic and geodetic service. Tacna and Moquegua, Peru.
- Toromocho mining project. Yauli - Morococha. Topographic survey and control services. Junin, Peru.
- New concentration plants in San Nicolás and Shougang Mine areas. Topography and geodesy services. Ica, Peru.
- Forest inventory in the right-of-way (30 m) belonging to the SIEPAC transmission line (285 km). Geo-referenced information system. El Salvador.
- Pucallpa port terminal. Topographic and bathymetric survey of the port development area. Ucayali, Peru.
- Callao Port - South and North Dock. Bathymetry service for the dredging control in the work supervision. Callao, Lima; Peru.
- Sudamericana de Fibras. Hydro-oceanographic study for the effluents Submarine Transmitter laying as part of the Environmental Impact Assessment (EIA). Callao, Peru.