Monitor any Dam

Measure any parameter in any plant.

Design and installation of structural (static, dynamic) and seismic monitoring systems for any type of dam and for reservoir slope instability. CESI has developed specific Software for data acquisition and analysis of structural behavior, suitable for any Client's needs.

CESI is a key player in consulting services related to Dam Safety, Structural Engineering, Environmental Management of Industrial Plants, Natural Risks Mitigation and Environmental Impact Assessment. CESI's services cover both new plants construction and existing plants management/revamping: from environmental impact studies and permitting to emergency and risk mitigation plans and remediation design.
Monitoring campaigns are carried out to assess air and water quality, electromagnetic field and noise pollution. Modelling techniques are applied to identify polluting sources and to evaluate the effects of different polluting scenarios.
CESI can perform seismic and static monitoring of civil structures (e.g. dams) and protection of monumental heritage, numerical analysis to verify the behaviour of the structure with operating loads and loads associated to hypothetical scenarios of interest (e.g. earthquake).

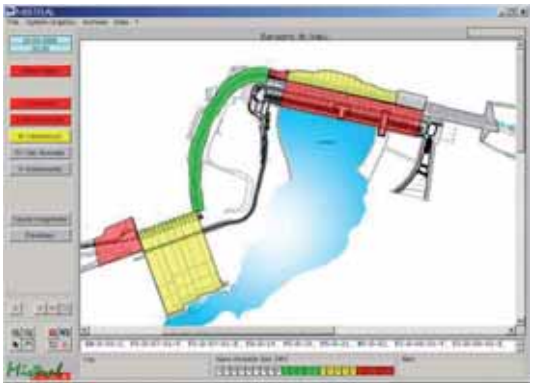
CESI

Trust the Power of Experience

Testing • Consulting • Engineering • Environment

CESI's expertise

CESI has a long tradition in providing services for the surveillance phase through control and monitoring of the structure behavior and of the surrounding territory.



The monitoring system on the entire dam is generally requested by the Authorities for:

- new guideline for monitoring system and the widely usage of automatic data collection;
- new seismicity hazard map (for seismic monitoring systems);
- improving Dam's safety during emergency situation (e.g. floods, seismic conditions).

More specifically, CESI's services are:

- design and installation of structural (static, dynamic) and micro seismic monitoring systems for reservoir and slope control, as well as hydrogeological and hydraulic for the surrounding basin and downstream river bed;
- management and maintenance of monitoring systems;
- supply of management systems for the on-line and off-line analysis of structural behavior;
- specific advice for interpreting the structural behavior, by mathematical modeling;
- customized surveillance and management procedures for structural surveillance and for reservoir managing (in normal operation and during floods);
- joint execution of monitoring installation with experimental investigation in order to characterize the dam structure and foundation geotechnical characteristics.

CESI, also through its specialized subsidiary ISMES, has over fifty years of international experience.

Dam Monitoring System

Over 100 Dam monitoring systems installed and over 100 consulting services about data analysis and maintenance operations over the last 5 years.

Civil Structural Monitoring System

About 120 sites monitored over the last 5 years including the most famous Italian architectural heritage.

CESI's specific Software

CESI developed many Software to ensure data acquisition and analysis. Main software are INDACO, MIDAS and MISTRAL.

INDACO

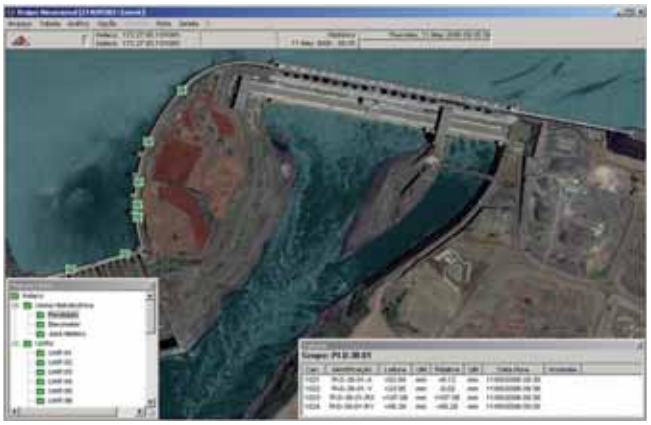
Represents the interface (front end) between the equipment installed in-field and the technician in charge of controlling the measurements acquired by monitoring system. INDACO also ensures remote communication between the data acquisition units distributed in the dam body and the central control station. Communication is managed through serial cables, optical fibers, radio network, GSM and GPRS systems, satellite. According to the set data acquisition intervals, INDACO allows automatic data transmission and storage in a database and subsequent validation to ensure proper system operation. It allows the operator to manage data, displaying and printing the acquired data in graphical or numerical format. It also allows automatic data transmission to MIDAS and MISTRAL systems.

MIDAS

Software for managing and processing data able to characterize the dams behavior. It allows storing data in an proprietary database and periodically updates and returns it in numerical and graphical format to let engineers perform off-line data analysis in order to properly evaluate dam safety.
Furthermore, MIDAS may individuate and apply statistical and deterministic models aimed at define data trend in order to make a cause-effect analysis.

MISTRAL

Real-time decision support system based on data acquired by automatic monitoring systems. MISTRAL can process the acquired data in real-time and provide a global analysis of the dam behavior, analyzing the state of the various structural parts and comparing them to the stability and safety conditions, which can be configured and customized during the installation phase and modified subsequently. MISTRAL is equipped with an intuitive interface based on various cartographic levels, which represents the evolution of the structure behavior through a color code that allows for an immediate interpretation of the phenomena in progress.



CESI's Business Areas:

- Testing, Inspection and Certification services for HV, MV and LV electrical components;
- Engineering and Consulting services for power systems and markets, transmission and distribution grids, generation plants, renewable and hydro plants;
- Environmental Consulting and Structural Engineering services for Energy, T&D, Industry and Transport sectors;
- Production of Solar Cells for Space and Terrestrial (CPV) applications.

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