LEN
INGENIERIA

48 years collaborating
with the progress of Chile

Infrastructure – Energy – Environment – Mining - Technical Inspections of Works
Civil Projects – South Zone Engineering

len.cl

LEN INGENIERIA

About us

LEN Engineering is an organization with more than 48 years of experience collaborating with the progress of Chile.

We are the leading company, within the region, in project design engineering, studies, and consultancy.

Since its inception in 1974, LEN has addressed Infrastructure projects of substantial importance and size, highlighting its participation in works of great significance for the country's growth, such as highways and urban and intercity roads, ports, railway projects, docks, and underground parking, among others.

Our resources allow us the necessary experience to carry out new projects of various magnitudes. We have expertise in many areas, **including road infrastructure and transport, energy, technical inspection, environment, civil, mining, and industrial processes, hydrology, hydraulic works and irrigation, telecommunications, and railway**, among others. This has positioned us as one of the field's leading and most reliable Chilean companies.

LEN has started an essential process of diversification, incorporating new divisions and service areas, each led and composed of highly qualified professionals. We master advanced technics and software that guarantees best-class solutions in the industry. Decades of experience, with an integrated perspective, allow our teams a comprehensive understanding of all possible technical challenges.

Mission

We are a multidisciplinary engineering organization recognized for its technical and human quality. Driven by excellence, we meet the needs of our external and internal customers by delivering professional and reliable services leading the development of the industry.

Vision

To be a leading company in engineering for the progress of Chile and Latin America.

Values

COMMITMENT: Our strong convictions and love for what we do allow us to accomplish our promises and deliver results that generate a positive outcome for our teams and customers.

RESPECT: We recognize the rights and dignity of our most important asset: our people.

HONESTY: Our everyday work is defined by the value of truth and transparency.

LOYALTY: We act with commitment and a deep sense of belonging to who we are. Our behavior will never have a negative impact on our people and customers.

RESPONSIBILITY: We all carry out our work respecting our commitment with society and the environment.

Pedro Inojosa Bañados
Civil engineer, mention in Construction
39 years of experience
Director - Partner

Infrastructure Division

This division represents our primary experience in Road Infrastructure Studies and Consultancy, both urban and suburban.

LEN counts with solid knowledge in the field of transport systems and road designs. This includes its conceptual definition, feasibility, and demand studies, preliminary and definitive design, technical specifications of construction and investments determinations.

We have developed significant infrastructure engineering projects for the Ministry of Public Works by concession and direct administration.

LEN has generated the currently in force Road Manuals (volumes 2,3,5,7, and 8), with its procedures, instructions and design criteria, maintenance, sampling methods, testing, and area control.

Claudio Muñoz R.
Civil engineer
29 years of experience
Manager
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Industrial bridge concession project

PROJECTS:

Improvement of route F-30, cemetery sector Concón – Concón roundabout

Engineering study for the construction of the Maipo-Ruta 5, South Bridge

Manquehue Junction

San Cristobal Tunnel

Las Chilcas

Technical Inspections of Works Division

Formed by a multidisciplinary professional team, this division is responsible for the integral control of a contract, both in the initial phase of construction and development.

We comply and adhere to the stipulated terms of the contract. This applies and includes construction and operation stages, compliance with the bidding bases, legal and contractual provisions, administrative and technical obligations, quality of works, problem identification, risk prevention, coordination of modifications, monitoring of progress and review of payment statements.

Pablo Fuenzalida A.
Civil engineer
25 years of experience
Manager
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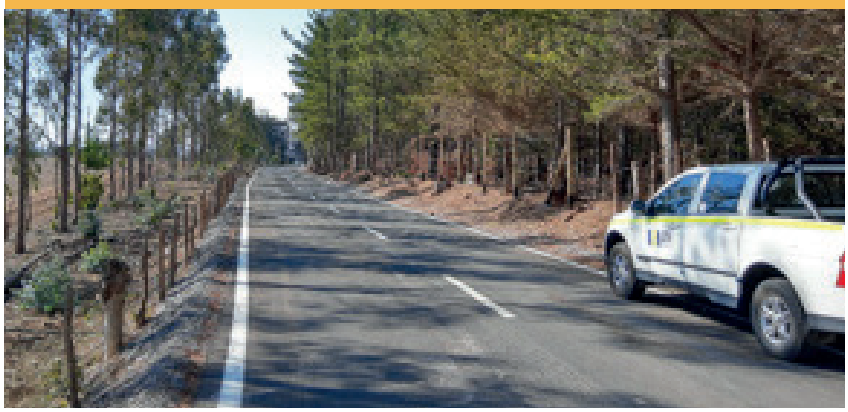
PROJECTS:

Inspección Técnica de Obra para el Proyecto: "Construcción Foso Colector y Piscina Drenante para el Sistema de Transporte de Concentrado de Cobre y Agua desalada (Pipeline)", ubicado en Cruce bajo Ruta 5. Cliente Teck QB2.



Technical Work Inspection for the Project: "Construction of Drainage Pool and Moat Transport System Collector Copper Concentrate and Desalinated Water (Pipeline)", located at Cruce bajo Ruta 1. Teck QB2 client.

Inspección Técnica de Obra para el Proyecto: "Construcción Muro Boca para empalmar con el Sistema de Transporte de Concentrado de Cobre y Agua desalada (Pipeline)", ubicado en Cruce bajo Ruta 1. Cliente Teck QB2.

Technical Work Inspection for the Project: "Construction of Collector Pit and Drainage Pool for the Copper Concentrate and Desalinated Water Transportation System (Pipeline)", located at Junction under Route 5. Customer Teck QB2.

Mining and Industrial Processes Division

This business unit focuses on the development of consulting projects, conceptual studies, basic and detail engineering, all of which include technical specifications and CAPEX analysis. In addition, our experienced teams allow us to provide management services and advice in contractual models for projects.

Services we offer:

1. Mining infrastructure and other processes

2. Mining process buildings

3. Tailing and dam system designs

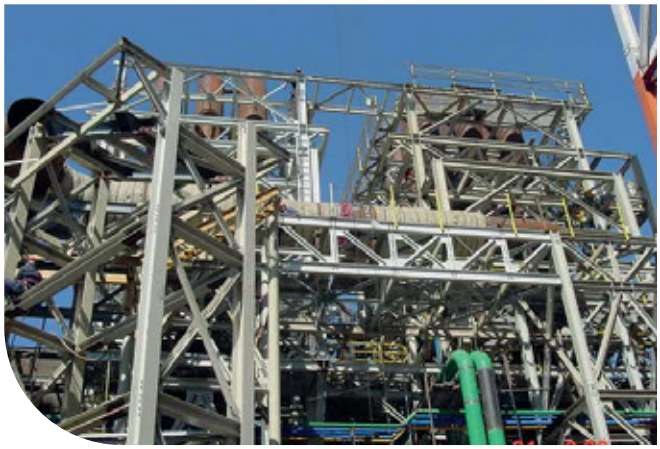
4. Pipe transport

5. Cellulose plant buildings

6. Railway lines and chip stockpiling

7. Electric rooms

8. Cellulose plant peripheral services



Our participation can be at different stages of project development, such as:

1. Consultancies

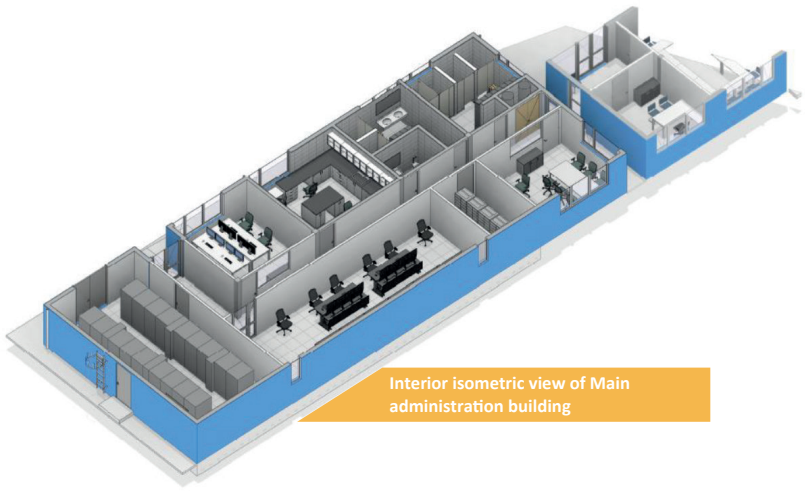
2. Pre-investment phase

3. Investment phase

4. Start-up phase

Our featured project:

Advanced basic engineering for a desalination plant using BIM technology.



Interior isometric view of Main administration building

LEN was responsible for designing the civil works specific to the plant and the intake and download.

The project considers the supply of desalinated water from the port sector with a nominal production capacity of 1,575 L of desalinated water, which includes works permanently at sea as on land.

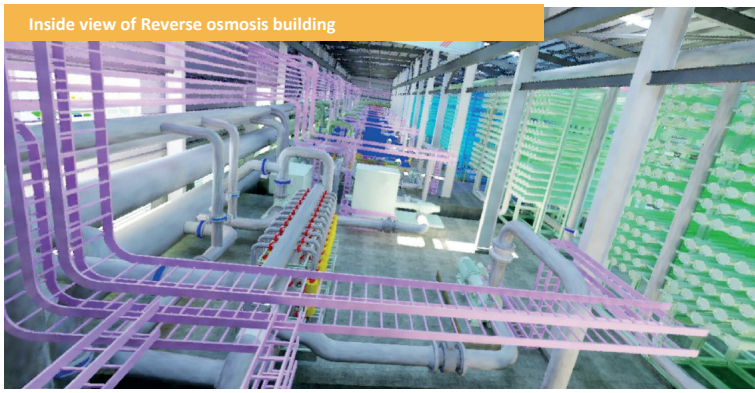
Marine works include the collection and impulsion of seawater and the discharge of saline effluent. For its part, desalinated water production occurs in the industrial area, which considers pre-treatment systems, reverse osmosis, and post-treatment system that results in obtaining water for human consumption and industrial use.

This plant has a nominal production capacity of 1,575 L of desalinated water.

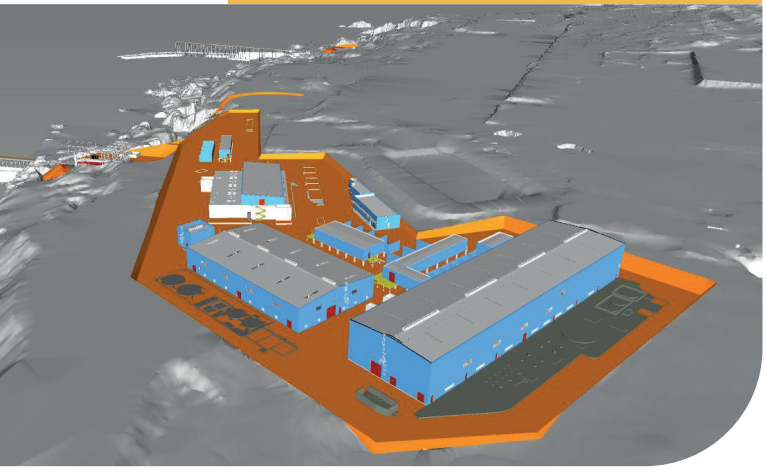
Included designs:

- General Platform (90,000 m3 of excavation and 11,600 m3 of massive fill).
- Capture on the seabed of up to 3,900 l/s.
- HDPE inlet DN 2000 mm of 290 m in length.
- Civil works in the bilge to gain 15.5 m depth in the desalination plant.
- Impulsion from the bilge to the plant, with a double FRP pipe of 1400 mm diameter and 180 m long each.
- Civil works of the DAF Flotation Building design on flotation ponds with 818 m2.

Inside view of Reverse osmosis building



General view Desalination Plant



The project used BIM methodology in the disciplines of Architecture and Structures, which generated their plans in complete 3D programs. It included obtaining volume measurements and assigning codes by items and materials.

The coordination was carried out in Navisworks Manage, integrating equipment and mechanical designs. The rest of the specialties worked in 2D.

Energy Division

By including high-level engineering in Sustainable Energy, in aspects of Energy Efficiency (EE), Non-conventional Renewable Energy (ERNC) -especially Photovoltaic Solar and Wind Energy- and Carbon Footprint, this Business Unit seeks to contribute to the value chain of our customers.

Energy Efficiency: Includes consultancy, diagnostics and energy efficiency studies, opportunity detection, strategy design, action plans and projects, investment considerations, operational scope, and implementation assistance for ISO 50001.

Non-conventional Renewable Energy: Advice and consultancy on project development, including resource assessment, design, conceptual engineering (basic and detail), logistics, economic assessment, and project management, among others.

Carbon Footprint: Includes carbon footprint measurement and life cycle inventory determination, following Greenhouse Gas Protocol by WRI & WBCSD, assistance in developing Sustainability Reporting (GRI), and energy, among others.

Rodrigo Cristi T.
Civil engineer
26 years of experience
Manager
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PROJECTS:

Interactive Museum Mirador

Photovoltaic park "Esperanza"

Floating photovoltaic plant in tailings dam

Environment and Territory Division

This business unit concentrates its efforts in both the private and public sectors, ensuring sustainability while minimizing the negative impact on the environment and its costs.

LEN's accumulated experience in diverse projects ensures pinpoint accuracy with a guarantee of quality and satisfaction.

René Tobar Q.
Civil engineer
31 years of experience
Manager
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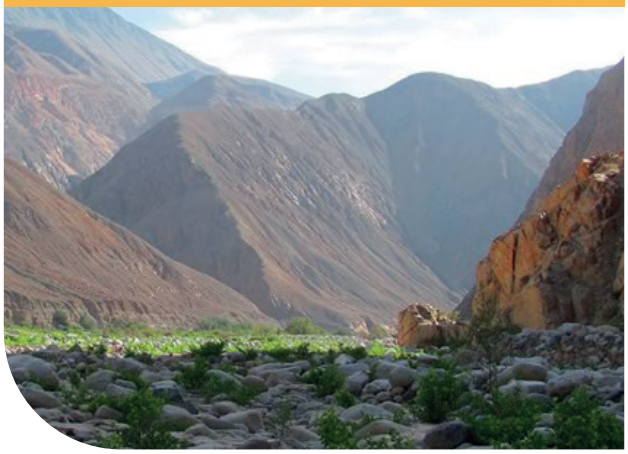
Our services assist in the following:

- Project Management in the environmental assessment system.
- Environmental impact studies.
- Declaration of environmental impact.
- Environmental relevance analysis.
- Environmental baselines.
- Environmental and territorial impact studies.
- Compliance audits and environmental monitoring.
- Environmental management plans.
- Environmental due diligence.
- Equator Principles (EP).
- International Finance Corporation (IFC) policies.
- World Bank Policies.
- Environmental legislation and compliance verification.
- Sectoral permit management.

Circunvalación Oriente a Calama
Environmental Impact Study

PROJECTS:

Modification of the "RCA" of the Chironta Irrigation Reservoir.



Spill of sulfuric acid on the railway infrastructure to the inside the terquim unloading terminal land.

Civil Projects Division

Its objective is to deliver support services in pre-feasibility, feasibility, and detail engineering phases to projects in industrial, mining, road infrastructure, railway, energy, ports, and other areas.

Pedro Villablanca C.
Civil engineer
39 years of experience
Manager
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Services are oriented in the following areas:

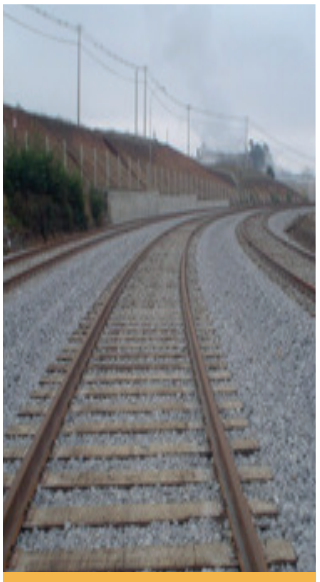
Early works: Movement of land platforms, waste deposits, emergency pools, access roads, and contour channels.

Infrastructure: Industrial facilities urbanization, roads, railways, rainwater sanitation, pavements.

Permit: Modifications, regularization, and preservation of water courses, parallelism and transversal studies, EFE road splices, feasibility accesses, gas services interference, high voltage lines, miner ducts, etc.

Private infrastructure initiatives: Support and follow-through, from the beginning of a project in conceptual engineering to basic engineering and detail.

Industrial flooring



Railways industrial plants

PROJECTS:

QB2 Project: QB Access gatehouse early works project

San Ramon Photovoltaic Plant
Project: Electric line crossing below Troncal Sur railway line

Hydraulic Works and Irrigation Division

LEN provides solutions to the challenges posed by engineering hydraulics that allow, among others, the best use of the water resource, territory security, and better quality of life for people. This way, it contributes to the harmonious and sustainable development of the environment in which its projects are inserted through advice, engineering consultancy, management, and inspection for the following areas:

Irrigation: through the design of reservoirs, main and distribution channels.

Drainage of cities: with the design of rainwater collectors.

Alluvium control: through solids retention works in streams upstream of the cities and fluvial defense works.

Drinking water: for rural towns and villages in the country.

FIA Review and Validation of Studies of Small Reservoirs in the North and South Macrozone, Phase II

PROJECTS:

FIA Review and Validation of Studies of Small Reservoirs North Macrozone

FIA 3 Review and Validation of Studies of Reservoirs in La Ligua and Petorca Basins, Valparaíso Region

South Zone Engineering Division

Wladimir Morales S.
Civil engineer
29 years of experience
Manager
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It has a permanent office in the city of Concepción, the capital of the Biobio region. The purpose of this Division to meet the requirements of LEN Engineering clients in the projects developed in the Regions of El Maule, Ñuble, Biobio, La Araucania, Los Rios, and Los Lagos.

The services addressed by this Division correspond to all the specialties of LEN Engineering in a collaborative manner with the different specialists of the company.

Urbanization Projects: Road access studies, allotments, urbanization developments, and projects in paving, drinking water, sewerage, and other services.

Energy Projects: Development of feasibility studies, both for photovoltaic and wind energy, development of preliminary projects, road design, rainwater sanitation works, crossings, bridges, reinforcement of structures, access to public roads, platforms, design of foundations, modification of affected services, among others. We can also verify the transport of special loads to evaluate route alternatives, changes to facilities and/or services that might be necessary, etc.

Ministry of Public Works (MOP): The company has developed projects for the Biobío Regional Road Administration to design multiple structures, such as caissons and bridges. In addition, it has developed consultancy contracts for the MOP Fiscal Inspection in global road maintenance contracts.

Industrial and Project Management: LEN's extensive experience allows it to address the design of different industrial works such as large-span sheds, overhead cranes, desalination plants, repair projects, and structural evaluations.

In addition, we provide project management service, which allows the client to have technical support from the conception of the project, starting with an evaluation of land, pre-designs, cost evaluations, design, bidding, and construction supervision, up to the complete reception of the work and start-up.

High friction seal junction Route 126 S (Coelemu) - Junction 0-274 (Tomé)

Replacement of wearing course of asphalt concrete crossing Route 126 S (Coelemu)

BIM Unit

Adrián Hernández
Civil engineer
8 years of experience
Chief
a.hernandez@len.cl

With the firm conviction of offering solutions at the forefront of technology, LEN created its BIM (Building Information Modeling) Unit in 2018, which has contributed transversally to all divisions of the company and our clients, with high-quality deliverables that reduce uncertainty in construction stages and through a georeferenced database of the design which facilitates decision making during the Construction, Operation, and Maintenance of the asset.

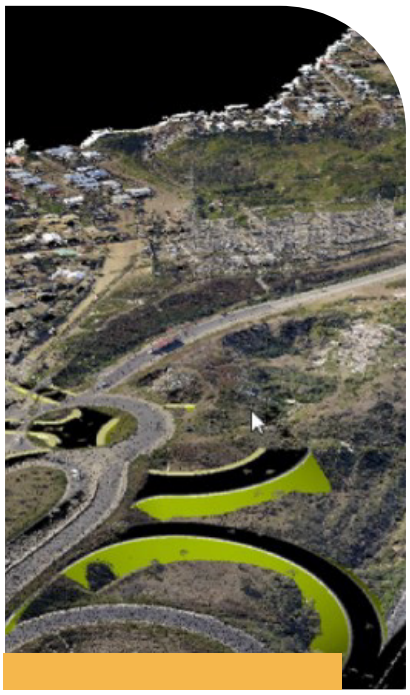
Services

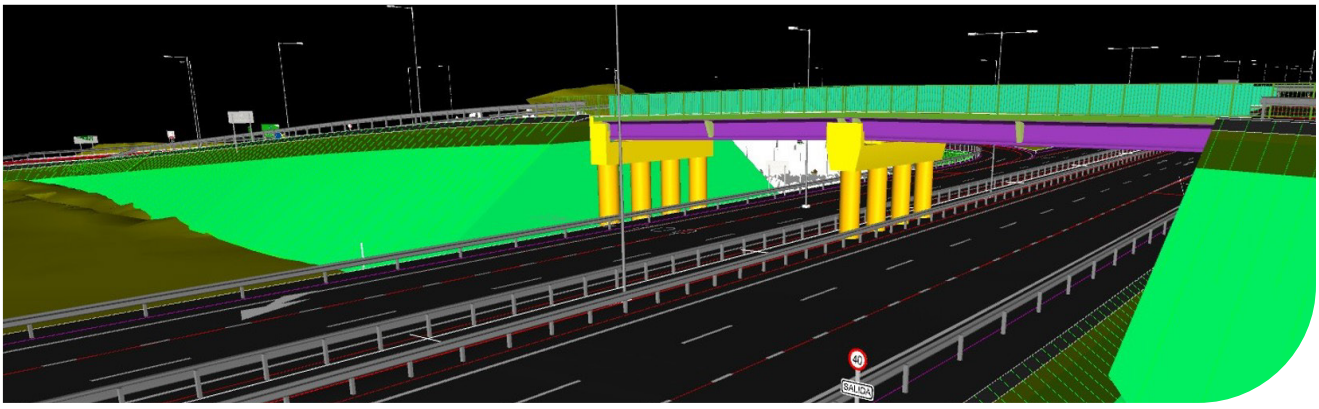
BIM modeling of infrastructure and building projects, following the recommendations of the PlanBIM National Standard and the particular requirements that may arise in each project.

Interdisciplinary coordination, which is done through automated detection of interferences and also through a visual inspection carried out by our BIM Coordinators.

Reports, quantities, and graphic documentation, which allow analysis and decision-making, both in the early stages and later stages (Especially in construction).

Analysis of alternatives in preliminary stages by quantifying existing elements intervened using process automation tools.





Tools

Istram: Geometric design of roads, earthworks and associated designs.

Revit: Designs of specific projects sucha as sanitation, road safety, traffic lights, structures, among others.

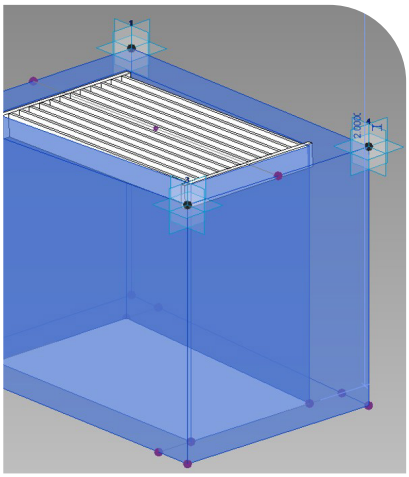
Tekla Structures: Design of structure projects such as bridges, walkways, viaducts, among others.

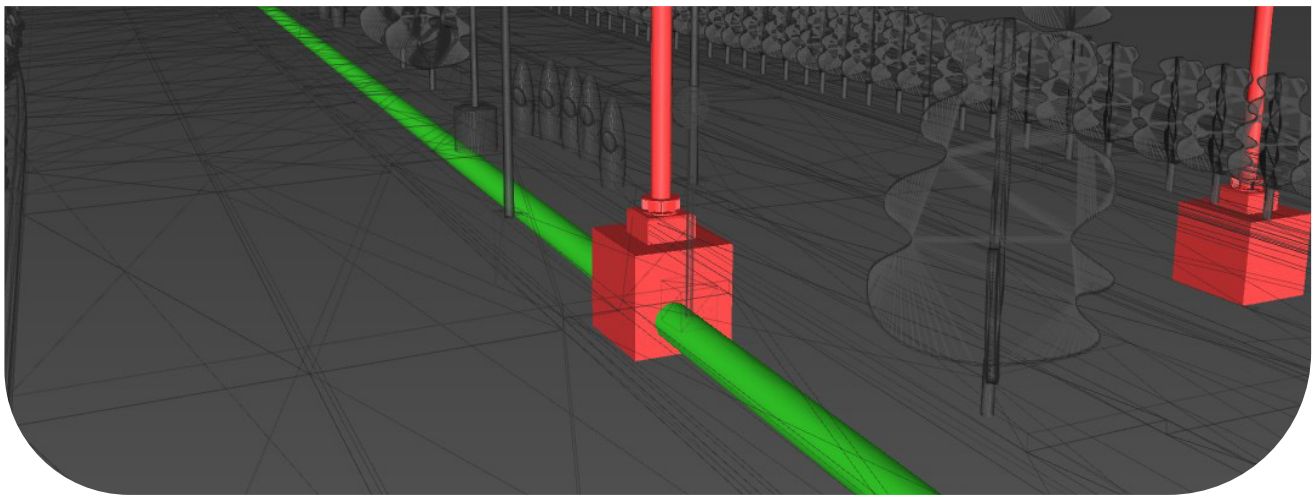
Navisworks Manage: Interdisciplinary coordination and validation of designs. Interference reports and interventions on existing conditions.

Autodesk Construction Cloud: LEN has experience using Common Data Environments. ACC is the most used to this date for its benefits in document coordination and management, and for being the preferred environment for most of our clients.

Projects

- Road Concession Study for Improvement of Route G-21 at the level of Definitive Project for Construction, commissioned by the “Sociedad Concesionaria Ruta G-21” for the MOP Concessions Department.
- Road Concession Study Route 66, Camino de la Fruta, commissioned by SACYR Chile SA. for the MOP Concessions Department.
- Road Concession Study Route 78, Metropolitan Region – Valparaíso Region, commissioned by SACYR Chile SA. for the MOP Concessions Department.





Integrated Management Systems Policy

Quality, Environment, Occupational Health and Safety

LEN Engineering is a multidisciplinary company that conducts Engineering Studies and Technical Inspection services at all stages of the project lifecycle for public and private sector customers, ensuring sustainable solutions with technical and human quality, reflected in a continued commitment to excellence.

We are committed to the following:

• **Meet the needs of our customers and stakeholders**, ensuring resources for the proper development of our services, implementing operational controls to guarantee occupational safety and prevent health damage, and executing controls to reduce environmental impacts.

• **Ensure the quality of our services** throughout its value chain, involving employees, customers, suppliers, and other stakeholders.

• **Develop an excellence-driven culture** towards our society and environment, committed to providing occupational health and safety and contributing to the country's sustainable growth.

• **Comply with legal** and all other applicable requirements to the activities developed by LEN Engineering related mainly to quality, environment, and occupational health & safety.

• **Provide our teams with best-in-class working** conditions to eliminate hazards, reduce risks and prevent injuries or health deterioration of LEN's most valuable asset: our people, by ensuring the participation and consultation of our staff and their representatives.

• **Establish a continuous improvement system** throughout all our processes to contribute to environmental protection, pollution prevention, and resource sustainability, which mitigates climate change and threats for future generations.

By implementing an Integrated Management System, LEN Engineering guarantees compliance with ISO 9001, ISO 14001 & ISO 45001 standards, which is crucial to meet our customers' expectations and providing them with the highest standards. Our long-term commitment to our strategic partners and customers is based on fulfilling our vision, mission, and corporate values, pillars of LEN Engineering sustainability over time.


AENOR
Confía
Certificado del
Sistema de Gestión de la Calidad
ER-0413/2008
LEN Y ASOCIADOS INGENIEROS
CONSULTORES LTDA.

ISO 9001:2015 CERTIFICADO ER-0413-2008


AENOR
Confía
Certificado del Sistema de Gestión
Seguridad y Salud en el Trabajo
SST-0026/2020
LEN Y ASOCIADOS INGENIEROS
CONSULTORES LTDA.

ISO 45001:2018 CERTIFICADO SST-0026/2020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Certificado del
Sistema de Gestión Ambiental
GA-2019/0291
LEN Y ASOCIADOS INGENIEROS
CONSULTORES LTDA.

ISO 14001:2015 CERTIFICADO GA-2019/0291

Our clients


autopista
central


Dirección de
Aeropuertos
Ministerio de
Obras Públicas
Gobierno de Chile


autopista
vespucio
norte


BECHTEL


RUTA DEL MAIPO
isa
INTERVIAL


fcc


Hidroñuble
GENERANDO CONFIANZA


Dirección
General de
Obras
Públicas
Ministerio de
Obras Públicas
Gobierno de Chile


COSTANERA NORTE


Dirección
de Vialidad
Ministerio de
Obras Públicas
Gobierno de Chile


DRAGADOS


Enea
Negocios Mejor Conectados


icafal


T U N E L
SAN CRISTOBAL


enerplus
energía


Sacyr


HOCHTIEF


Teck


CONPAX


SMI Ltda.


SERVIU
Ministerio de
Vivienda y Urbanismo


HATCH


ferrovial


Coordinación
de Concesiones
Ministerio de
Obras Públicas
Gobierno de Chile

Registrations

LEN IS A CONSULTANT IN THE FIRST SUPERIOR CATEGORY OF THE MOP in important areas of Engineering:

- Roadworks
- Road safety
- Inspection of Road Works and Airports
- Transportation systems
- Economic, Financial and Tariff Studies
- Soil and Rock Mechanics
- Geomensuring and Topography
- Traffic Engineering
- Hydrological, Hydrogeological and Methodological Studies
- Structures (bridges, viaducts, walkways, retaining walls, etc.)
- Hydraulic and Irrigation Works
- Environment
- Inspection and Laboratory of Civil Works
- Cadastres
- River works
- Geology, Prospecting and Geophysics

In addition, it has records:

- REGIC
- SICEP
- PLAY
- SERVICE


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