

Curriculum Vitae
Electrificación y Estudios Ferroviarios

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ELECTRIFICACION y
ESTUDIOS
FERROVIARIOS



DENOMINATION

- ❖ **ELECTRIFICACIÓN Y ESTUDIOS FERROVIARIOS S.L. e2f**
- ❖ **COMPANY NUMBER:** B-02353639
- ❖ **FISCAL MANAGEMENT:** 27,CRISTOBAL LOZANO 1ºC
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OUR COMPANY

Electrificación y Estudios Ferroviarios S.L. is an engineering company dedicated the railway sector.

It is highly specialized in: overhead contact system design for tramway system, conventional trains, high-speed trains, both DC (0.75 kV, 1.5 kV and 3 kV) and AC (1x25 kV and 2x25 kV) systems, sizing and design of traction substations.

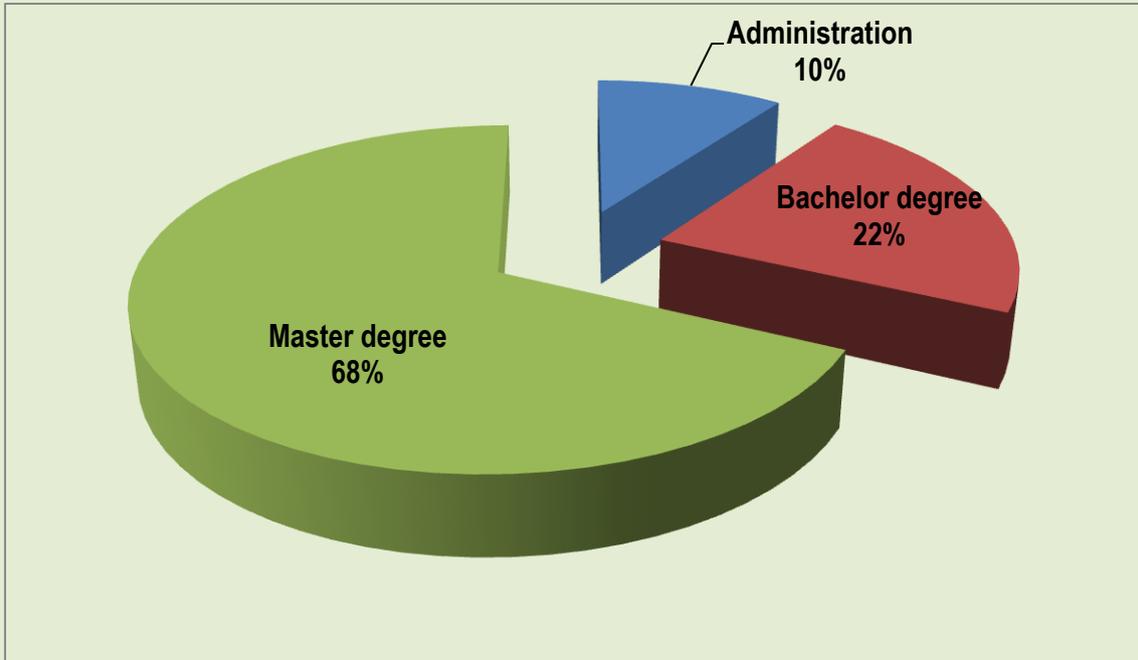
The targets of e2f are to make an effective consultancy and engineering works providing our customers all our knowledge to can offer the best performance, greater effectiveness and reduction of exploitation costs.

The company philosophy is based on innovation, e2f, works in its R & D department in the creation and improvement of different homemade software. Besides, we design specific software solutions according to the customer requirements (automatic plans creation, poles and foundations design, capacitive and inductive conditions between conductors etc).

COMPANY ORGANIZATION



STAFF



CLIENTS

Among the most important customers, we present the following companies:

- EPYPSA
- GTP
- COMPYPA
- AYESA
- ELECTRÉN
- COBRA
- CYMICO
- GRUPO AMS
- GUIA CONSULTORES
- EMTE
- FCC INDUSTRIAL
- NEOPUL
- ECISA
- VIALOBRA
- ATISAE
- SIEMENS
- VIMA
- ALDESA
- TECSA
- TELICE
- BALFOUR BEATTY
- BECSA
- OHL
- COMSA
- SEMI
- INABENSA
- KV CONSULTORES
- EPTISA
- ACCIONA
- ALSTOM

OUR PROJECTS. PROFESSIONAL EXPERIENCE

PROJECT	COMPANY
▪ Traction Simulation Study, stray currents and calculation of induced currents in the conductors, Tram of Constantine (Algeria).	EYSER
▪ Traction Simulation Study and analysis of load charges and short-circuits, Monterrey Metro, (Mexico).	AYESA
▪ Traction Simulation Study and analysis of the operation viability between using direct current or alternating current in the railway installation. Howrah-Calcutta (India).	AYESA
▪ Traction Simulation Study, rectifier stations placement and analysis of the system. Marmaray, Bosphorus Tunnel (Turkey).	OHL
▪ Design collaboration and sizing of a CRM-220 overhead contact system between Rabat-Casablanca (Morocco).	AYESA
▪ Tram extension of Murcia (Spain).	EPYSA
▪ Review of the construction project of Málaga Tramway (Spain).	ESPELSA
▪ Study of installed capacity at the substation Enllaç (Mallorca, Spain)	AYESA
▪ Study design an expansion of the electric tramway Valencia. Airport-line Ribarroja del Turia (Spain).	CYMICO
▪ Development project of Valencia traction substation (Spain).	ELECTREN
▪ Review of the Murcia tramway project construction, Electrification (Spain).	EYSER
▪ Consideration of the draft construction of the station - pumping station Llanera de Ranés (Spain).	UTE TRASVASE JÚCAR - VINALOPÓ

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| ▪ Collaboration before construction of a cross rail axis in Andalucía (Electrification) | AYESA |
| ▪ Study of the power supply path Montequinto - Dos Hermanas (Sevilla Tramway, Spain) | AYESA |
| ▪ Project for the construction of the overhead contact (Alicante line tram line 2, Spain) | GTP |
| ▪ Technical assistance contractor for the Alicante Tram (Line 2 San Vicente, Spain) | GUÍA CONSULTORES |
| ▪ Study of the energy supply (Gran Canaria train, Spain) | EPYPSA |
| ▪ Electrification of the railway station Hermanos Maristas (Line 2. Tramway Valencia, Spain) project | COMAYPA |
| ▪ Project for the construction of Montequinto tram (Tram Sevilla, Spain) | AYESA |
| ▪ Technical assistance to the supervisor of Alicante tram (Route Benidorm – Altea, Spain) | AYESA |
| ▪ Construction project of electrification on the Costa del Sol (Spain) | AYESA |
| ▪ Technical assistance electrification studies (Regulations) | COMSA |
| ▪ Collaboration with the construction project (Sevilla, Spain) | INTRAESA |
| ▪ Electrification project. Railway to the Costa del Sol | AYESA |
| ▪ Legalization of the construction of a traction substation (Hospital - Tram Alicante, Spain) | AYESA |
| ▪ Legalization of construction of a traction substation (Terra Mitica - Tram Alicante, Spain) | COBRA |
| ▪ Technical assistance for the construction of the overhead contact line (Alicante tram, Spain) | COBRA |
| ▪ Technical Assistance to the work of Alicante tram (Archaeological Museum) Spain. | CLIF ALICANTE |
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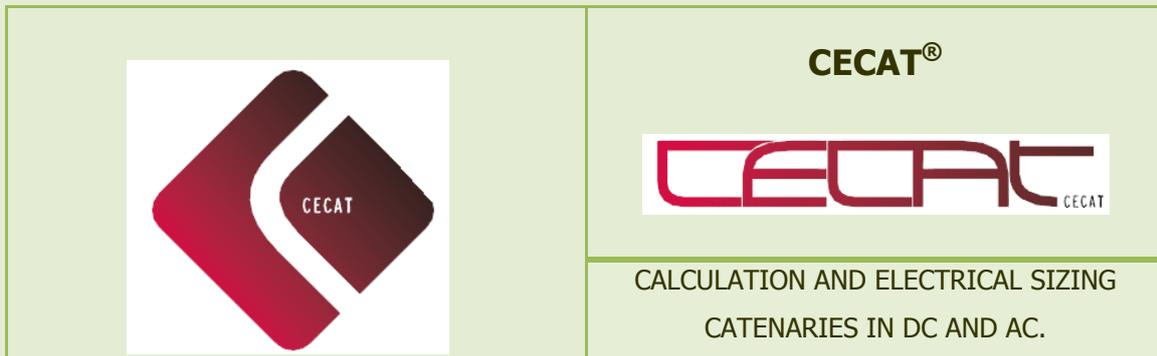
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| ▪ Electrification Project (Málaga Subway, Spain) | INITEC - INTRAESA |
| ▪ Technical Assistance to the implementation of the tram Valencia, Spain. | AYESA |
| ▪ Legislation of the construction of a substation traction (Manises - Valencia Tram, Spain) | UTE ALDESA - ROMINAR |
| ▪ Technical assistance in the commissioning of Trolebus (Castellón, Spain) | COBRA |
| ▪ Tram extension of Murcia (Spain). | COMAYPA |
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RESEARCH & DEVELOPEMENT PROJECTS

TITLE OF THE PROJECTS OR STUDIES
CeCAT[®] : Calculation of electric power overhead contact system
MAGNETO[®] : Calculation of induced currents on conductors
MvCAT[®] : Overhead contact system overturning moment calculation
VISTA DE LINCE[®] : Real-time detection of the integrity of slope and embankments
CmCAT[®] : Pantograph-OCS interaction

RESEARCH & DEVELOPMENT PROJECTS

ELECTRIFICACIÓN Y ESTUDIOS FERROVIARIOS S.L., e2f, works in its R & D department in the creation and improvement of different homemade software:



CECAT ® software performs electrical sizing of a railway line in terms of train mesh analysis, consumption and power necessary to power substations that supplies the overhead contact line, at both situations: normal and degraded situations for sizing the line.

This software was developed in collaboration with the Castilla-La Mancha University, in the research program HITO.

	<p>MAGNETO®</p> 
	<p>CALCULATION OF INDUCED TENSIONS ON CONDUCTORS</p>

Another application developed by e2f is **MAGNETO®**, which calculates the currents induced on other conductors located at a certain distance, as may be other next railway line.

	<p>VISTA DE LINCE®</p> 
	<p>REAL-TIME DETECTION OF INTEGRITY OF SLOPES AND EMBANKMENTS</p>

In order to assist in the reduction of derailment by landslides, Railway Electrification Studies has developed software and available for real-time detection of the integrity of slopes and embankments called **VISTA DE LINCE®**, which detects any movement not parameterized and uncontrolled land, sending a message to the control center to take appropriate action in a given time.



MVCAT® software is developed by Electrificación y Estudios Ferroviarios, to determinate the overturning moment of the overhead contact system, considering the effect of the cross wind as configuration of it. Once determined the overturning moment, the software selects the type of pole and the foundation sizing.

CmCat® is a software developed by Electrificación y Estudios Ferroviarios, the simulation aims evaluating the behavior of the proposed overhead contact system, flexible or rigid to ensure the correct installation operation at given speed and span length.