Internship Program

Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

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Internship Program

Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Index

01
Introduction
p. 4

02
Why Study an Internship Program?
p. 6

03
Objectives
p. 8

04
Educational Plan
p. 10

05
Where Can I Do the Internship Program?
p. 12

06
General Conditions
p. 16

07
Certificate
p. 18

01

Introduction

The development of High Voltage Power Infrastructures represents a crucial pillar for the operation of the global power system. The need to improve the reliability and security of supply, together with the integration of renewable energies, has driven a significant technological evolution in this field. Faced with this, engineers face the challenge of designing and building Power Infrastructures that not only meet current demands, but are also flexible and adaptable to future changes in the grid. For this reason, TECH launches an innovative degree consisting of a 3-week practical stay in a reference institution, where professionals will learn about the latest advances in Project, Construction and Maintenance of High Voltage Electrical Infrastructures and Substations.

Through this revolutionary Internship Program, you will use disruptive technologies such as SCADA systems to monitor the power grid in real time"

A recent report prepared by the International Energy Agency shows that the global demand for electricity has increased significantly due to population growth and the electrification of sectors such as transportation. This increase highlights the need to develop robust and efficient electrical infrastructures to ensure a reliable energy supply. In this regard, power substations and high-voltage lines play a key role in both the transmission and distribution of energy, ensuring the stability of the power system.

In this context, TECH presents an innovative and eminently practical program consisting of a stay in a reference entity in the field of Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations. In this way, during 3 weeks, the graduates will be part of a team of top level experts, with whom they will work actively in tasks such as the transport of electrical energy, maintenance of Electrical Substations or maintenance of Infrastructures.

In addition, throughout this practical stay, students will have the support of an assistant tutor, who will be in charge of ensuring compliance with all the requirements for which this Internship Program has been designed. On this basis, graduates will work with total guarantee and security in the handling of the most sophisticated technology. Therefore, graduates will live an enriching experience that will allow them to experience a significant improvement in their professional performance.

02

Why Study an Internship Program?

Electrical infrastructure is fundamental for economic and social development. With the growth of cities and energy demand, as well as the transition to renewable energies, there is a growing demand for professionals specialized in High Voltage and Electrical Substations. Therefore, it is essential for experts to keep abreast of the most innovative techniques in this field, in order to develop efficient projects. In this context, TECH has designed a unique and disruptive academic product in the current educational panorama, which will allow specialists to enter a real working environment where they can put into practice the latest procedures in Project, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations.

> *You will mitigate the environmental impact of Electrical Infrastructures by applying principles of sustainability and energy efficiency in project design"*

1. Updating from the latest technology available

The advent of Industry 4.0 has had a significant impact in the field of Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations; by incorporating new technologies that bring improvements in efficiency, safety and sustainability. For example, smart grids allow managing the flow of energy, balancing generation and consumption. For this reason, TECH has created an Internship Program that will allow engineers to handle the most cutting-edge technological tools for their professional practice.

2. Gaining in-depth knowledge from the experience of top specialists

During the course of this Internship Program, the graduates will join a work team integrated by the best professionals in Project, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations. In addition, they will be guided by a tutor who will accompany them during their on-site stay, ensuring the maximum benefit from the academic experience.

3. Entering first-class professional environments

TECH rigorously chooses all the centers available for its Internship Programs. Thanks to this, engineers will have guaranteed access to a prestigious environment in the field of Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations. In this way, students will be able to experience the day-to-day work of a demanding, meticulous and exhaustive area, always applying the latest postulates in their work methodology.

4. Putting the acquired knowledge into daily practice from the very first moment

In the academic market there is a great lack of university programs that allow students to develop their knowledge in a practical way. Faced with this, TECH has designed a disruptive teaching model, which will enable graduates to access a real work environment for 3 weeks to expand their skills significantly.

5. Expanding the boundaries of knowledge

TECH offers engineers the opportunity to carry out this Internship Program in international reference entities. Therefore, graduates will be able to update their knowledge together with cutting-edge professionals, with extensive professional experience in the field of Project, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations.

You will have full practical immersion at the center of your choice"

03
Objectives

Through this program, engineers will master the latest advances in the design of High Voltage Infrastructures and Substations, ensuring a high level of efficiency. In line with this, graduates will be highly qualified to lead Electrical Infrastructure projects, from the planning phase to their execution and commissioning. Likewise, students will develop advanced competencies for the implementation of predictive, preventive and corrective maintenance strategies in High Voltage systems, guaranteeing the reliability of the electrical supply.

General Objectives

- Interpret the regulatory framework of electric power distribution and transmission infrastructures
- Discover the potential business opportunities offered by high voltage infrastructures in the generation and sale of electricity
- Address the particularities to correctly manage the design, project, construction and execution of high voltage installations and electrical substations: human and material resources, quality and environmental management; and the financing of this type of constructions and installations
- Learn the latest trends, technologies and techniques in high voltage Infrastructures and electrical substations

Specific Objectives

- Interpret the operation and regulation of the electricity system, its main actors, the regulations applicable to the purchase/sale and transportation of energy
- Understand the policy for interconnection of high voltage grids between different countries, the appropriate financial instruments and the horizon of the power grid up to 2030
- Acquire knowledge of the technology and current trends in the construction of high-voltage overhead lines
- Correctly manage the construction of electrical substations in all its phases: civil works, hoisting, buildings, etc.
- Coordinate the insulation system of high voltage infrastructures to avoid interference, overlapping and malfunctioning caused by them
- Plan, select and implement computerized maintenance management systems
- Control and prepare the work environment for the execution of maintenance work and assign the tasks to the professionals who are to perform it
- Plan and predict in advance the shutdown of the substation to perform scheduled maintenance operations, as well as to stockpile critical spare parts to optimize the continuous operation of an electrical substation
- Evaluate and classify the workers of the Electrical Substation based on their specific knowledge in installation and maintenance
- Coordinate safeguards on lines, cables, transformers, busbars and bus couplings
- Parameterize the admissible Setting limits on the Safeguards

04

Educational Plan

The Internship Program in Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations consists of a 3-week practical stay in a prestigious center, from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist. During this itinerary, the graduates will be able to work in a highly demanding work environment, integrating into a multidisciplinary work team that will transmit the latest advances in this field.

In this training proposal, of a completely practical nature, the activities are aimed at developing and perfecting the skills necessary for the provision of Project, Construction and Maintenance services for High Voltage Electrical Infrastructures and Electrical Substations, and are oriented towards specific knowledge for the exercise of the activity.

This is an ideal opportunity for engineering professionals to broaden their knowledge while working in a field of great potential, which requires continuous updating in order to offer high quality services.

The practical education will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow students who facilitate teamwork and multidisciplinary integration as transversal competencies for engineering praxis (learning to be and learning to relate).

The procedures described below will be the basis of the practical part of the program, and its realization will be subject to the center's own availability and workload, being the proposed activities the following:

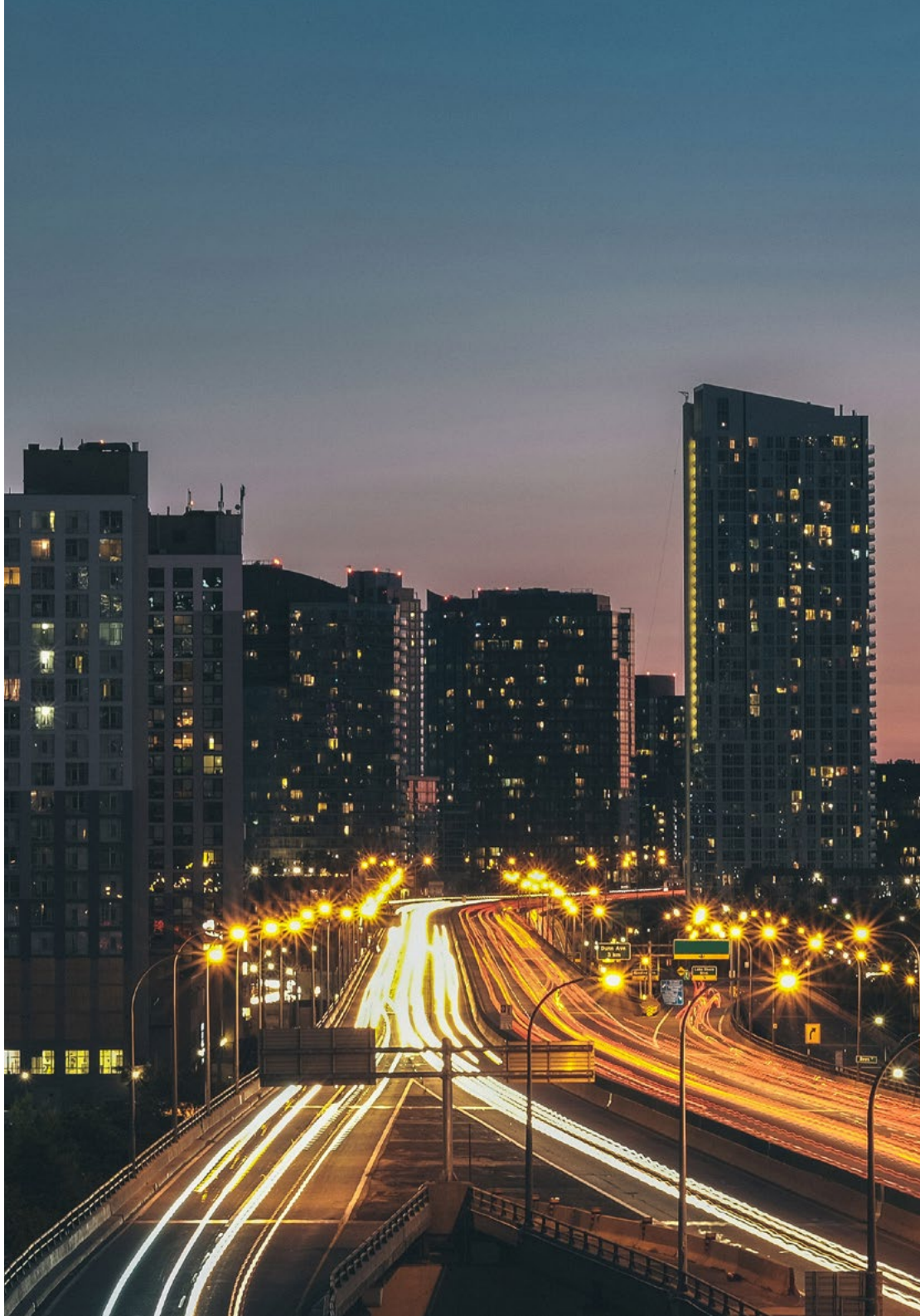
Module	Practical Activity
Power Transmission System and Resource Management	Design high and very high voltage transmission lines, ensuring the efficiency of the electrical system
	Guarantee the availability and correct allocation of resources for the efficient execution of projects
	Develop budgets, financial planning and management of contracts with suppliers
	Monitor the condition of assets to plan their replacement or upgrade according to their life cycle
Electricity Transmission	Determine optimal routes for transmission lines, minimizing impacts and costs
	Conduct technical and economic studies to assess the feasibility of new electricity transmission infrastructure projects
	Real-time monitoring of the operation of lines and substations
	Implement maintenance programs to prevent failures and make timely repairs
Electricity Distribution	Plan distribution network structure including transformer design
	Determine technical specifications for cables, switchgear and control equipment
	Quickly identify faults in the network, coordinating actions to restore power supply in the event of interruptions
	Apply measures to reduce losses in the distribution network, improving system efficiency
Electrical Substation Maintenance	Measure electrical parameters such as voltage, insulation resistance and oil level in transformers to ensure they are within specified values
	Use thermal cameras to detect hot spots in connections and equipment, detecting possible faults before they become critical problems
	Perform insulation resistance tests to analyze the condition of transformers
	Evaluate the functionality of protection systems such as relays, circuit breakers and disconnectors

05

Where Can I Do the Internship Program?

In its priority to offer high quality university programs, TECH carefully selects all available institutions for the Internship Programs of its students. This meticulous process has allowed the selection of internationally recognized companies, ensuring that the engineers carry out their on-site stay in a first class environment. Therefore, they will have the opportunity to be part of a multidisciplinary work team, made up of true experts in the Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations.

You will carry out your practical stay in a prestigious institution, where you will have the support of real experts in Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations"



The student will be able to do this program at the following centers:

Applus+ Bilbao

Country: Spain
City: Vizcaya

Address: Av. Lehendakari Aguirre, 9 - 5º izqda CP 48014

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Headquarters A Coruña

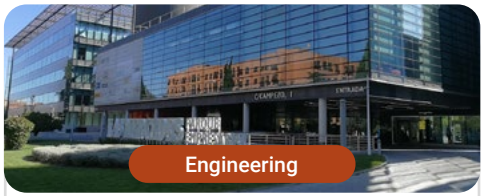
Country: Spain
City: Ciudad Real.

Address: Carretera Nacional VI Km.582 CP 15168

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations



Applus+ Headquarters Madrid

Country: Spain
City: Madrid

Address: Calle Campezo nº1 Parque Empresarial Las Mercedes, Edificio 3 CP 28022

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Headquarters Barcelona

Country: Spain
City: Barcelona

Address: Campus UAB Ronda de la Font del Carme, s/n CP 08193

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Valencia

Country: Spain
City: Valencia

Address: Ronda Auguste y Louis Lumiere, 23 Local 4, Parque Tecnológico Paterna CP 46980

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ San Cristóbal de la Laguna

Country: Spain
City: Santa Cruz de Tenerife

Address: C/ Presidente Adolfo Suárez González, 17 - Locales B1 y B2 38320

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Sevilla

Country: Spain
City: Seville

Address: EDIFICIO CARTUJA Avda. Américo Vespucio, nº 5, Bloque 5-3, locales C-4, C-5 y C-6 41092

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Toledo

Country: Spain
City: Toledo

Address: Plaza Holanda, 3 local 5 45005 Toledo

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Las Palmas

Country
Spain

City
Las Palmas

Address: Avda. Escaleritas 108, 1º, CP 35011

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

Applus+ Ciudad Real

Country
Spain

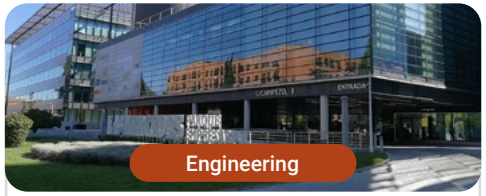
City
Ciudad Real.

Address: Calle Toledo 8 1 of. 1 y 2 Edificio Miró CP 13001

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations



Applus+ Valladolid

Country	City
Spain	Valladolid

Address: Miguel Angel Blanco nº 32 Piso 1º 47014

A company in the construction sector specialized in enhancing the quality and safety of infrastructures

Related internship programs:

- Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

You will learn firsthand the reality of working in the area, in a demanding and rewarding environment"

06

General Conditions

Civil Liability Insurance

This institution's main concern is to guarantee the safety of the students and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the Internship Program period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.

General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

1. TUTOR: During the Internship Program, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor, whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the students does not show up on the start date of the Internship Program, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: The Internship Program shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Internship Program. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

7. DOES NOT INCLUDE: The Internship Program will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

07

Certificate

This private qualification will allow you to obtain an **Internship Program's diploma in Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University, is an official European University publicly recognized by the Government of Andorra ***(official bulletin)***. Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University private qualification**, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Internship Program in Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations**

Duration: **3 weeks**

Attendance: **Monday to Friday, 8-hour shifts, consecutive shifts**

Accreditation: **4 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Internship Program in Design, Construction and Maintenance of High Voltage Electrical Infrastructures and Electrical Substations

This is a private qualification of 120 hours of duration equivalent to 4 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

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