



INTERNSHIP OFFER

EC-2025-USFQ-036

Cumbayá, Ecuador

ON-SITE

INTERNSHIP HOST

Name of Company
USFQ Universidad San Francisco de Quito

Website
www.usfq.edu.ec

Address of Company
Quito
Ecuador

Number of Employees
1000

Business or Product
University

STUDENT REQUIRED

General Discipline
Material Engineering and Sciences; Mechanical Engineering

Field of Study

Completed Years of Study
3

Language Required
English Good (B1, B2) Or
Spanish Good (B1, B2)

Required Qualifications and Skills
Teamwork | Critical Thinking | Creativity
Knowledge of Materials processing, materials engineering, solid mechanics. SEM basic knowledge (optional)
Data processing and analysis with MATLAB (optional)
Knowledge of Finite Element Analysis (i.e. ABAQUS)(optional)
Organized and responsible.
Ability to work in teams.
Ability to communicate effectively
Good working habits (work under pressure and meeting deadlines)

Student Status Requirements
Required when nominated

Other Requirements/Information
Laptop

INTERNSHIP OFFER

9 - 9 weeks

460 USD per Month

250 USD per Month

Latest Possible Start Date
01-Oct-2025

Within Months
May-2025 - Nov-2025

Company Closed Within
27-Jul-2025 - 11-Aug-2025

Deductions Expected
0

Payment Method
Cash

Arranged by
IAESTE

Estimated Cost of Living including Lodging
460 USD / Month

Working Environment: Office work;Field work

Working Hours / Week: 30.0

In this project, we use additive manufacturing techniques to deposit overlays of Inconel 718 alloy over cast iron substrates to allow 1) reusing exhaust components in heavy crude-oil engines and 2) reclaiming worn-out surfaces of stages in electro-submersible pumps (ESP). The techniques used to coat the substrate are Laser Cladding, High-Velocity Oxy-Fuel Spraying -HVOF, and Twin Wire Arc Spraying -TWAS. To determine the performance of the coating and the substrate, microstructural characterization, erosion, and corrosion tests are carried out over both materials. The microstructural characterization includes SEM, EDS, and XRD analysis before and after each erosion and corrosion test. Different temperature parameters will be used to study the erosion behavior of the Pump Stages (200°C) and the exhaust systems (650°C) -temperatures correspond to the actual application. Two different corrosion tests will evaluate the resistance of the overlays: 1) immersion corrosion tests to mimic the corrosion in stages of ESPs based on NACE 1D182 standard, and 2) high temperature corrosion using molten salts in an oven to mimic the corrosion in heavy engine exhaust system followed by ISO-17248 standard. Once the research is completed, results will be shared with the two local companies' part of this research project: Repsol YPF and Schlumberger, to implement these solutions in actual equipment. The main objective of this project is to determine the performance of Inconel 718 overlays deposited by three different technologies subjected to particle erosion and corrosion tests. Results are benchmarked to the substrate materials (gray cast iron). Once the research is completed, results will be published and shared with the two local companies. Part of this research project to implement these solutions in actual equipment.

Job Description:

- Carry out experiments in the lab (sample preparation, erosion/corrosion tests, microscopy analysis, XRD)
- Running computer simulations (Abaqus)
- Writing reports in English – technical writing.

ADDITIONAL INFORMATION

As a student you will be enrolled at Universidad San Francisco de Quito , therefore your legal status in Ecuador will be as a student doing a cultural exchange program , in order to complete your studies. Despite of the fact that Ecuador allows almost every country to come as a tourist, you must to request an extension of permanence in Ecuador if you stay longer than 90 days. It is mandatory to apply a visa before coming to Ecuador for the following countries: Afganistan, Angola, Bangladesh, Republic of Cameroon, Cuba, Egypt, Eritrea, Etiopia, Gambia, Ghana, Guinera, Haiti, Ivory Coast, India, Irak, Kenia, Libia, Nepal, Nigeria, Pakistán, Philippines, Democratic Republic of the Congo, North Korea, Senegal, Siria, Somalia, Sri Lanka, Venezuela, Vietnam, Yemen.

Students must have Health Insurance. Accommodation will be arranged by IAESTE ECUADOR in the case that student will want our help. We will pick you up from the airport and take you to your Guest House.

Deadline for Nomination - 15-Mar-2025

