Spanske Forskere i Norge
Investigadores Españoles en Noruega

CONVENIO UCLM/SFNO 2022

PROYECTO 1

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Full Professor, https://www.ntnu.edu/employees/nuria.espallargas

Título del Proyecto/ Project Title
Environmentally Acceptable Lubricants (EAL) for the maritime industry of Norway

Perfil preferencial del estudiante
Materials engineering, mechanical engineering

Fechas orientativas/Available Dates
August to January (flexible)

Programa/ Detailed program of the traineeship period (aprox. 100-200 palabras)
Did you know that massive oil spills continuously happen in the world's oceans? These spills are invisible to the eye because they leak drop by drop from a hundred thousand transport ships spread across the globe. If concentrated in one single area, they would form an oil sheet equal to Norway's total area each year!

This project is funded by the Norwegian Research Council with Brunvoll AS as thruster producer for ships. The goal is to provide an optimized EAL-seal-counterpart system with increased lifetime for maritime applications to avoid oil spills to the oceans. The verification of the goal will be performed by both lab and full-scale testing of the actual seal and EAL tribological performance and degradation mechanisms in operation.

In this project you will study the frictional response of a set of seal materials compositions sliding against different metal surfaces (coated and uncoated) in the newly developed EAL. You will test all materials under different loading and sliding speeds at lab-scale using a tribometer to build up Stribeck curves to understand thruster operation conditions. However, there might be possibilities for participating in a larger scale testing at the company site. You will participate in a project with potential to become a big innovation for the Norwegian maritime industry.

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Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes) (aprox. 100 palabras)
In this project the student will acquire competences in tribology (friction, wear, lubrication). The student will understand the relationship between lab scale testing and real operation. The student will also acquire knowledge in materials used in thruster systems for the maritime industry. The compatibility of seals with lubricants and the proper choice of metal alloys and coatings is crucial to avoid wear and maintain a good lubricating operation. The student will also acquire training and knowledge of the most advanced tribometers and microscopy techniques.

Seguimiento/ Monitoring Plan (aprox. 50 palabras)
The student will be closely supervised by the responsible of the project and by a postdoc working in the project. Weekly meetings and follow up of the work will be performed. The student will receive the necessary training and tools to perform his/her work in our labs.

Evaluación/ Evaluation plan (aprox. 50 palabras)
The work performed in this Project can be presented as master thesis since it will be equivalent to 30 ECTS.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
Language competence required: Good oral and written English skills.
It will be an advantage if the student is familiar with the field of tribology.

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

N/A

Disponibilidad para evaluar informes de convalidación de créditos (Si/No) / Availability to evaluate credit convalidation reports (Yes / No)
Yes

Otra información relevante / Any additional important information