

CONVENIO UCLM/SFNO 2022

PROYECTO 2

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
Wear study of the wheel-rail interaction in the Flåm line

Perfil preferencial del estudiante
Materials engineering, mechanical engineering

Fechas orientativas/Available Dates
August to January (flexible) or January to June

Programa/ Detailed program of the traineeship period (aprox. 100-200 palabras)
Poor friction management in the railway system (including heavy rails, metro and light rail) is causing not only huge maintenance costs due to wear and degradation of wheels and rails, but also energy losses due to high friction and poor air quality caused by the release of metallic particles to the environment. This project will develop new environmentally friendly lubricants (greases) and lubricant delivery systems having an impact on society by contributing to a greener railway system.

In this project you will investigate the wear rates and mechanisms of real railway wheels used in the Flåm line and will contribute to improve the materials and lubricants used to minimize maintenance costs. In addition, this project aims at minimizing noise and developing environmentally friendly alternatives to current wheel-rail lubricants.

This project is funded by the research council of Norway with SINTEF as main research partner and different Norwegian railway companies.

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 the railway industry. The choice of the proper lubricant for the wheel-rail interaction is crucial to avoid wear and noise and therefore to keep a healthy and green ground transportation that allow us to depend less on the air. 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