

# SUSTAINABLE MATERIALS, PROCESSES AND SYSTEMS FOR ENERGY TRANSITION

## MUR DM 117/NEW CLEO - Development of protective coatings on structural steels for Lead Fast Reactor (LFR) applications

<b>Funded By</b>	NEWCLEO S.R.L. [Piva/CF:12517780016] MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [Piva/CF:97429780584] Politecnico di TORINO [Piva/CF:00518460019]
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<b>Context of the research activity</b>	<p>The corrosion of structural steels (316LN) by liquid lead is a challenge for designing LFRs. Protective coatings that resist lead corrosion are required. This study aims to qualify the most developed coating processes for nuclear codes (e.g. RCC-MRx). Aluminizing, welding overlay or thermal projection, and Zr or FeCrAl coating will be studied. New technologies like AM (Additive Manufacturing), HIP (i.e Near-Net Shape Hot Isostatic Pressing) and Laser Welding will be also investigated as multi layers deposition technique. Microstructural and mechanical characterization, as well as lead corrosion and irradiation experiments, will be conducted. The goal is to improve the design of LFRs.</p> <p>Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP: E14D23002050004</p>
<b>Objectives</b>	<p>Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP: E14D23002050004</p> <p>Scientific responsible: Giovanni Pastore, giovanni.pastore@newcleo.com</p> <p>Main seat to carry out the reserach activity: Politecnico di Torino / NEW CLEO</p>
<b>Skills and competencies for the development of the activity</b>	<ul style="list-style-type: none"><li>• Preferably, Master degree or equivalent in Materials Science, Metallurgy, or electrochemistry</li><li>• Knowledge and/or experience in testing mechanical properties of materials (tensile, creep, fatigue, toughness...)</li><li>• Knowledge in phases equilibrium thermodynamics</li><li>• Knowledge and/or experience in software relevant for materials science (python, matlab, thermocalc...)</li></ul>

- Knowledge in corrosion is an advantage