

RESEARCH LINE 3A	
COMPANY	Repsol
PhD THESIS SUPERVISOR (UPM)	Prof. Dr. Manuel Rodríguez Hernández <i>Industrial Engineering School Chemical and Environmental Engineering Department</i>
PhD THESIS CO-SUPERVISOR (COMPANY)	Dr. Rafael Roldán Mesa <i>Repsol S.A.</i>
DESCRIPTION OF THE PhD THESIS PROJECT	Simulation model for the Syngas Generation process in an e-fuels production scheme. Hybridization with SMR models, SMR H2 with the complete scheme. The thesis project will be focused on the development of a rigorous model of the whole Syngas Generation Unit (SGU) including the CO2 conversion in RWGS, recycles of Tail Gas from FT and purifications of streams. This model can be used for the design of a pilot/demo/industrial unit or facility in a future as well as for monitoring the unit operation. In fact, it will be a digital twin of the actual physical process that will allow to optimize the operation parameters in order to minimize carbon emissions and production costs. Basically, the thesis project will have two main phases, the first one devoted to the development of the process model and the second one devoted to the lifecycle assessment.
TRAINING ACTIVITIES	Webinars and conferences related to: <ul style="list-style-type: none"> - Synthesis of fuels and chemicals using syngas as raw material, - Purification and gas separation technologies. - Chemical engineering software simulation tools
SECONDMENT(S)	Tentative. External institutions with experience in: <ul style="list-style-type: none"> - simulation and optimization (like Imperial College of London) - syngas production, and F-T (like Norwegian University of Science and Technology – Norway) A (at least) three months stay in (at least) one external institution is expected
REQUIREMENTS FOR CANDIDATES	Degree (MSc, ...): MSc in Chemical Engineering, Industrial Engineering or Chemical Skills: <ul style="list-style-type: none"> - Languages: English: B2+ minimum. C1 will be valued. - Teamwork - Alliances generation - Proactivity and initiative - Flexibility - Leadership - Simulation, Catalysis and Chemical Engineering fundamental. - Interest to develop an R&D career. - Public communication & presentation skills Background <ul style="list-style-type: none"> - 1 or 2 years of experience will be valued