



## Brief description of the training project

- ❖ **Company name:** Raffineria di Milazzo ScpA  
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- ❖ **Title:** Asset Integrity Management and its techniques in critical refinery items
- ❖ **Description of the scientific and training objective:**

Over the years, international best practices have been developed in the oil sector, aimed at optimizing the management of the constituent elements of the plants (asset). These practices merge with the Asset Integrity Management Systems (AIMS). One of the practices under development in RAM, among the AIMS techniques, is the Operating Windows (IOW) one, which tends to develop the planning of plant controls according to the real operating conditions: these can be heavier than those foreseen by the project design, for example due to the presence of more corrosive treated fluids, or higher presence of sulfur in the treated crude oil, or to the achievement of more severe process conditions (for example temperatures). In these cases it may be appropriate to intensify the inspection controls and/or to use more sophisticated control techniques. The use of other AIM techniques involves the installation of probes in the system to verify the operating conditions with respect to those of the project, so that it is possible to visualize the presence of deteriorating conditions and identify the priorities in inspection and maintenance interventions. A specifically dedicated unit, to asset integrity management, has been set up in RAM which deals, among other things, with the commissioning of the Asset Management system. In 2019 the IOW study of all system components was completed and the implementation phase at DCS was started. AIMS will ensure greater reliability of the plant, therefore more operational continuity which indirectly determines greater safety, less waste of resources and less environmental impacts.

The research and training project of the industrial doctorate is part of a context for the improvement of the safety and the asset integrity of systems at significant risk of refining plants through the improvements generated by digital transformation.

In this way, we set out to achieve an improvement in the safety of people, an increase in the safety and integrity of assets, and an improvement in the efficiency and effectiveness of industrial and commercial performance, thus achieving:

- Optimization of production and increase of operational efficiency along the entire value chain through the diffusion of digital solutions
- Improvement of the retail business, commercial performance and expansion of the customer base
- Improvement of internal company processes through the analysis of digital solutions to support the processes

The improvement of asset integrity through digital transformation is also part of a path of decarbonization and circular economy of great interest for the company aiming at:

- a process of progressive activities decarbonization through the use of predictive algorithms that allow the reduction of CO<sub>2</sub> emissions, maximizing energy efficiency and reducing discontinuous flaring
- search for digital solutions to support the development strategy of the circular economy, in terms of facilitating and activating the processes of recycling, reduction, reuse and sharing of Innovation resources and human capital.

❖ **Company Supervisor:** D'Antonio Fabrizio

❖ **Training and research activities methods:**

The company, in addition to the academic path that the doctoral students will follow in the three-year period, will administer a highly applicative path divided into 2 modules that will be distributed over the three years taking into account the time that the student will spend in the company, including the training period abroad:

I year

- Regulatory/economic and safety module: sector regulations, regulations on emissions, controls and verifications, obligations, tasks of regulatory bodies

II year

- Asset management and operational safety: complete overview of the management process of operating and production infrastructures, also with a necessary focus dedicated to the different categories of infrastructures and machinery (e.g. plants, piping, instrumental parts, rotating machines, etc.), in order to enrich the knowledge on the method tools and the management criteria of the asset integrity management of “mature” plants at significant risk.

The modules will be held by the technical staff of the Milazzo SCpA Refinery

❖ **Effects and expected results with particular emphasis on promoting the economic development and the production system:**

In a complex and sensitive industrial sector such as the one in which the Milazzo Refinery operates, the maximum efficiency of the structures and the goods - the assets - and the continuous improvement of their performance are the best way to safeguard the health of people and the community, as well as protecting goods, resources and environment while obtaining better production results.

The primary objective of the Company is, in fact, the "Zero accidents" achievement. The Company approach to the continuous improvement and our investments in innovation are also reflected in the practices and methods of management. For many years, the company has adopted a structured approach - the so-called asset integrity - and we have integrated into our HSE (Health, Safety and Environment) management system, innovative practices and management methods, based on the most updated international standards.

After years of intense investments for the improvement of the plants, the Milazzo Refinery has reached high standards from the point of view of safety at work, of reliability of plants and of equipment and energy efficiency. These investments have been accompanied by a massive training program to support the continuous improvement culture.

The outstanding agreement, in addition to offering a further opportunity for cultural exchange and enrichment, continuing on the aim of optimization and high levels performances research,

will allow the high-level training of a professional figure of great interest to the Company. This figure well merges with the promotion of a continuous improvement of the personnel quality and preparation that the Milazzo Refinery has been supporting already for some years.

❖ **Period in company**

The proposing company (Refinery of Milazzo ScpA) will host the PhD student beneficiary of the scholarship financed on the Ministerial Decree 352/2022 for No. 18 months during the PhD program.

❖ **Period abroad:**

Period abroad of No. 6 months at the following institution:  
TU Delft, Faculty of Technology, Policy and Management, Jaffalaan 5, 2628 BX Delft, The Netherlands

We also declare that this program complies with the principle "not to cause significant damage" (DHS) pursuant to art. 17 of regulation (EU) 2020/852 in coherence with the technical guidelines prepared by the European Commission (Communication of the European Commission 2021/C58/01) and guarantees compliance with the horizontal principles of the PNRR (contribution to the climate and digital target so-called tagging, the principle of gender equality and the obligation to protect and enhance young people).