

Innovative Sustainable Solutions to Treat Waste or Residual/Opportunity Feedstocks

M. Marchionna

Saipem, Technology Innovation, San Donato Mil., Italy

Abstract

Due to the changes in the global scenario regarding energy sources and increased exploitation costs, the Oil & Gas industry needs to focus on innovation in order to cope with challenges in the near future. The new Innovation model at Saipem is a synthesis between the urgency to implement concrete solutions in the short term, mostly driven by current commercial projects, and the need to develop novel solutions reflecting the evolving macro-scenarios and to face mid- long-term challenges such as the overall reduction of CO₂ emissions. By targeting progressive energy decarbonization, Saipem is pursuing several diversified actions to reduce its own CO₂ emissions and, most importantly, to enlarge the offer to its clients in less climate-impacting fields, acting as an innovative “Solution Provider”.

In this frame, and more specifically regarding Circular Economy concepts, the development of innovative solutions to ensure the sustainable treatment of waste or residual/opportunity feedstock from the O&G industry (or other industries, also including plastics recycling), with their consequent optimized application to energy and/or valuable products, is becoming an important asset. Special experience has already been matured in the past in the field of power generation, but the conversion to refinery or petrochemical products is also of great interest, and several technologies are currently under careful scrutiny, as will be more specifically discussed regarding oxy-combustion.

In this respect, Saipem has recently signed a License Agreement with ITEA (a company of the Sofinter Group) to produce, through ITEA's proprietary ISOTHERM Pwr® “Flameless” Oxy-Combustion Technology, steam, electricity and pure CO₂ by flexible use of low ranking fuels such as waste, heavy oils, pet coke and several other feedstock. The Agreement gives Saipem access to the technology for Oil & Gas applications, allowing the Company to offer original and circular sustainable solutions to its clients. The use of waste streams (including CO₂) as feedstock to generate energy and valuable products in the chemical industry may further contribute to this purpose, namely for the production of urea or methanol (the latter can also work to store energy), but also for the optimization of the hydrogen value chain.

Furthermore, the ITEA oxy-combustion technology is also being investigated with the aim to identify novel processes for the disposal of “difficult-to recycle” plastic wastes, such as Plasmix, and the integration of this step in a broader process with CO₂ capture and reutilization.