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poster

Strategies to optimize sustainable management of spent nuclear fuel from fission nuclear power plants

B. Yolanda Moratilla Soria^{1*}, Laura Rodríguez-Penalonga²

^{1,2} *Universidad Pontificia Comillas, Spain*

*: ymoratilla@comillas.edu, +34 91 542 28 00 Ext. 2363

Abstract {Max. 250 words}

Nowadays, the world is living an energy transition period due to the increasing concern about climate change and its consequences. Thus, renewable energies are being the main focus of attention in many countries to help reduce carbon dioxide emissions. Nevertheless, nuclear power may play an important role as well, due to its security of supply, its contribution to the stability of the electric grid and its low carbon emissions.

As nuclear power is surrounded with great controversy, every country that develops a nuclear strategy must consider and address every aspect and issue related to this type of energy production, such as proliferation resistance, sustainability, environmental friendliness, economics, and nuclear waste management.

The aim of this paper is to study the economics and sustainability of one of the key issues of nuclear power: spent nuclear fuel management. Therefore, a comparison of the different strategies that could be implemented, the technologies available and the future R&D trends is presented. Additionally, the costs associated to each strategy and their tendencies are analysed, taking into consideration the uncertainties surrounding new technologies.

The results show that, even though the open cycle (or once-through cycle) costs are currently lower than the closed cycle (or reprocessing) costs, their trends show that, eventually, reprocessing might become economically more viable. Additionally, the new reprocessing technologies have proven to be more sustainable by reducing the volume, radiotoxicity and decay heat of the final waste.

Biography: {Max. 100 words}

B. Yolanda Moratilla Soria graduated in Industrial Engineer from the Pontifical Comillas University in 1983. In the year 2000, she obtained her PhD with a « cum laude » distinction. Since 2013, she holds a degree in ecclesiastical studies.

Yolanda Moratilla is the director of the Rafael Mariño Chair of New Energy Technologies. She is also the president of the Energy and Natural Resources Committee at the Institute of

Engineering of Spain and, since 2016, she is a permanent member of the Royal Academy of Doctors of Spain.