

Decommissioning of Nuclear Power Plants: The Current Position and Requirements

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Abstract : Undoubtedly from construction's perspective, the use of explosives will remove a large facility such as a 40-storey building, that took almost 3 to 4 years for construction, in few minutes. Usually, the reconstruction or decommissioning, the last phase of life cycle of any facility, is considered to be the shortest. However, this is proved to be wrong in the case of nuclear power plant. Statistics says that in the last 30 years, the construction of a nuclear power plant took an average time of 6 years whereas it is estimated that decommissioning of such plants may take even a decade or more. This paper is all about the decommissioning phase of a nuclear power plant which needs to be given more attention and encouragement from the research institutes as well as the nuclear industry. Currently, there are 437 nuclear power reactors in operation and 70 reactors in construction. With around 139 nuclear facilities already been shut down and are in different decommissioning stages and approximately 347 nuclear reactors will be in decommissioning phase in the next 20 years (assuming the operation time of a reactor as 40 years), This fact raises the following two questions (1) How far is the nuclear and construction Industry ready to face the challenges of decommissioning project? (2) What is required for a safety and reliable decommissioning project delivery? The decommissioning of nuclear facilities across the global have severe time and budget overruns. Largely the decommissioning processes are being executed by the force of manual labour where the change in regulations is respectively observed. In term of research and development, some research projects and activities are being carried out in this area, but the requirement seems to be much more. The near future of decommissioning shall be better through a sustainable development strategy where all stakeholders agree to implement innovative technologies especially for dismantling and decontamination processes and to deliver a reliable and safety decommissioning. The scope of technology transfer from other industries shall be explored. For example, remotely operated robotic technologies used in automobile and production industry to reduce time and improve efficiency and safety shall be tried here. However, the innovative technologies are highly requested but they are alone not enough, the implementation of creative and innovative management methodologies should be also investigated and applied. Lean Management with its main concept "elimination of waste within process", is a suitable example here. Thus, the cooperation between international organisations and related industries and the knowledge-sharing may serve as a key factor for the successful decommissioning projects.

Keywords : decommissioning of nuclear facilities, innovative technology, innovative management, sustainable development

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