

Proven concepts for LLW metals Treatment for waste minimization and recycling

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ABSTRACT

This paper describes STUDSVIKs technical concept and experience related to treatment of metals for volume reduction and recycling after clearance.

The Studsvik Melting Facility began operation in 1986 and during the more than 25 years of operation many turbines, heat exchangers and other LLW components as well as several hundred containers loaded with from retired components, pipes, vessels and structures have been treated in Studsvik melting facility,

This also includes development of techniques and tools, especially our latest experience gained during the projects for treatment of full size PWR steam generators. The ambition of all projects is to minimize the waste volumes for final disposal and to maximize the amount of material that can be recycled. Another objective, respecting ALARA, is the successful minimization of the dose exposition to the personnel.

The treatment concept comprises the whole sequence of preparations from road and sea transports the management of the metallic LLW by segmentation, decontamination and sorting using specially devised tools and shielded treatment cell, to the decision criteria for recycling of the metals, radiological analyses and conditioning of the residual waste into the final packages suitable for customer-related disposal.

Also a variety of the decontamination techniques using blasting cabinet or blasting tumbling machines keeps secondary waste production to a minimum. Decontamination of uranium contaminated materials can take place during melting.

Experience shows that the amount of material possible for clearance for unconditional use is between 95 – 97 % for falling metallic scrap. For large components like BWR turbines, heat exchangers and steam generators the recycling ratio can vary significantly more related to the initial weight. The volume reduction is in most cases 90% or higher.

Technical results and details will be given in the paper and during the presentation.