

## **Efficient and environmentally sound treatment of radioactive waste streams from maintenance, upgrade and decommissioning**

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### **ABSTRACT**

Power generation of today struggle with many challenges and as global warming effects becomes obvious many countries seek alternatives to fossil fuel. Resurrecting interest in nuclear technology is based on many advantages but the technology also offers challenges in how to cope with prolonged lifetime support and sustainable waste routes. This becomes obvious as capacity in long time repositories is designed on estimated need and as such being limited and perhaps inadequate for extended nuclear power plant lifetime.

Studsvik have been processing Low Level Waste (LLW) at its licensed facility in Studsvik, Sweden since the mid-1970s. The process not only enables the volume of waste to be significantly reduced but also produces a stable residue suitable for final disposal in most cost effective manner.

The facility has historically processed metallic and incinerable waste from both Swedish and international industry and in the last decades demonstrated a well defined, cost effective and robust waste volume reduction route. This route offers clear benefits with reduced demand of required space in final repository and for that reason prolonged life time at reduced over all cost.

Effective waste treatment is also about a responsible engagement in environmental aspects as recycling of valuable raw material and energy and how this helps to further reduce the carbon footprint from the energy industry.

The energy industry is often a multinational, global industry and in this paper Studsvik will present sustainable ideas how the Nordic countries can cooperate in the effort to minimize cost of waste treatment and at the same time utilize experience to jointly expand capabilities in dealing with the waste treatment challenge.

The paper will in more detail discuss;

- How early cooperation at power plant can help minimize cost in dismantling preparation and subsequent treatment of waste
- Standard praxis of volume reduction and conditioning of Low Level Waste at Studsvik site, including recycling of metal back into the open market as valuable raw material
- Preparation of volume reduced waste and package conditioning for final repository
- Regulatory aspects from a Swedish and international perspective including transportation challenges between power plant, treatment centre and final repository in country of waste origin
- Concept for extended capability to handle waste with higher radioactive contamination levels including technologies for preparation and conditioning of packages for final repository