

CONTAMINATED LARGE COMPONENTS MANAGEMENT

Cyclife Assets

Cyclife owns unique capabilities and expertise for the management of large components that saves final disposal costs for customers. Cyclife's offer integrates chemical and abrasive decontamination.

Large contaminated components are transported off-sites as one-piece :

- To save cost by shortening outages and decommissioning schedules
- To reduce waste for disposal throughout clearance and recycling

Cyclife's solution can reduce your total cost and schedule significantly. Our highly qualified teams are committed from project initiation to completion.

Process

1. Initial feasibility and engineering substantiation
2. Project management and transport
3. Initial decontamination
4. Segmentation using thermal and cold cutting tools
5. Supplementary decontamination and melting
6. Secondary waste management
7. Clearance and quality assurance of final product
8. Recycling of metal



Decontamination

Decontamination factors for steel

- Several critical nuclides are separated from the metal in the melting process
 - > Cs > 100 Bq
 - > Sr > 100 Bq
 - > Alphas > 100 Bq
 - > Co (in pre-treatment step) : 2-100 Bq
- The "clearance window" is significantly larger for melting than direct clearance. A factor 10 in theory, more like 100 in practice.



Specificities

Delivery Options

- Multi-modal transportation solutions by sea or by road
- Sealed (unwrapped), wrapped or in special pack, depending on the level of contamination and dose rate

Size

- Objects up to 30 meters long and 400 metric tons
- Larger sizes accepted but require additional studies

Objects Treated

- BWR and PWR large components (turbines, pressurizers, pumps, pipes, heat exchangers, re-heaters, steam generators, etc.)
- Boilers, tanks, ducts, etc.

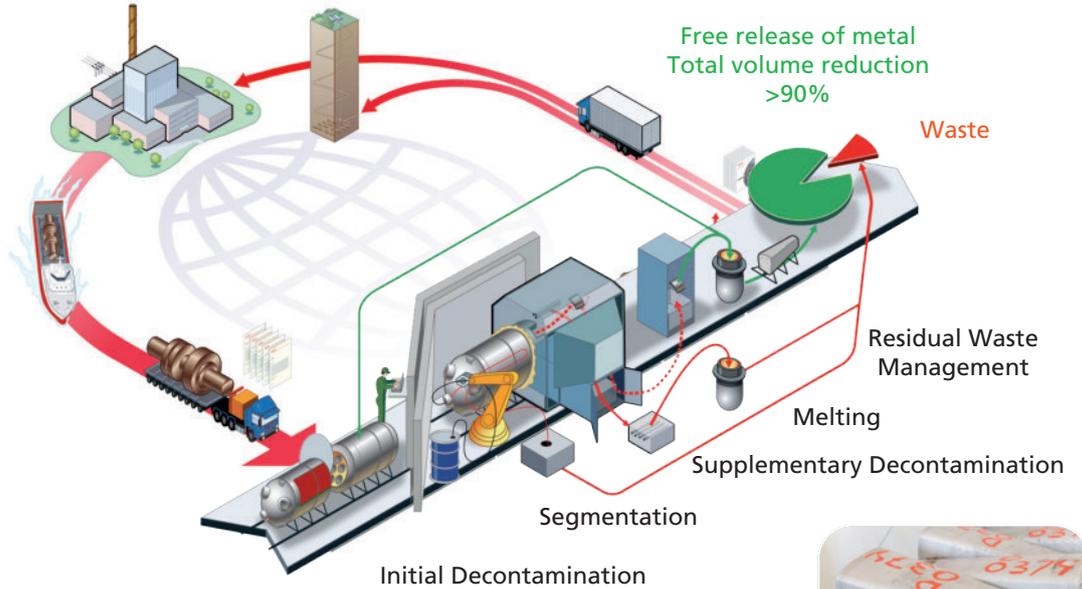
Enhanced Environmental Profile

- The metals are melted using CO2 free electric power
 - > Low-carbon footprint and high energy consumption
- NEW: Combination of direct clearance and melting followed by clearance
 - > Lower total energy consumption for treatment
 - > Higher requirements on characterization and nuclide vectors (fingerprint)
 - > A high decontamination factor is crucial for success

Recycling and Packaging

- Clearance using IAEA RSG-1.7 or EC RP89 Table 3-1 threshold values
- Recycling back to the conventional or nuclear industry for the manufacturing of new products
- Residues can be packed in drums or boxes as per customer request; returned loaded in ISO containers as standard

CONTAMINATED LARGE COMPONENTS TREATMENT CONCEPT



A Selection of References



800 t Re-Heaters TVO (FIN)



9 x 310 t Steam Generators Ringhals NPP (SE)



15 x 300 t Boilers Berkeley NPP (UK)



3500 t Turbine Components Swedish NPPs

