

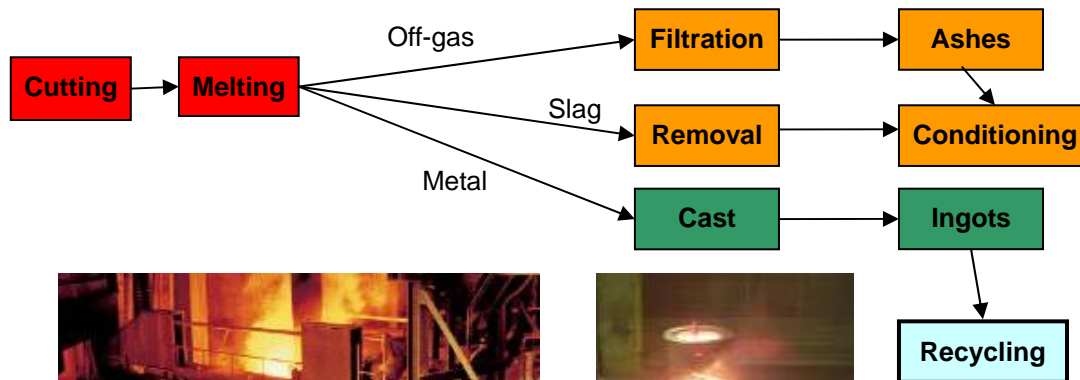
Form 2

Technology Information	
Area	1 – Accumulation of contaminated water 1. 汚染水の貯留 (4)ボルト締め型タンクの撤去作業の円滑化
Title	Tanks steel decontamination and recycling in melting furnace 溶融によるタンクの除染及び鋼鉄のリサイクル (AREVA 1-4-1)
Submitted by	AREVA

1. Overview of Technologies

Functions

Decontaminating the tanks and others metallic equipments by melting them.

Summary Descriptive

Electrical Arc Furnace in French Facility



After onsite decontamination, the tanks will be removed and stored for dismantling. The melting furnace can allow reaching a higher decontamination level, and important volume reduction of this secondary waste.

In this process, tanks are cut in parts for melting, and put in a furnace. Contamination migrates to the slag and ashes. High efficiency filters capable of operating at high temperature trap contamination in the off-gas.

Remaining metal is then cast into ingots ready to be sent in a steel plant for re-use as containers or shielding. It can also be directly cast in a mould of the desired shape.

Remark: In addition to the tanks, other kind of metallic waste generated on site or off site by the tsunami can be processed through this unit, after preparation by cutting.

The dismantling work to be performed before the melting of metal scrap could be performed by ATOX, combining both the experience of AREVA and ATOX in the field of cutting and dismantling.

Features & Specifications

- Electrical Arc Furnace (EAF).
- Decontamination of more than 98% of the Caesium. Contamination retrieved in:
 - Dust trapped in off gas system,
 - Slag to be conditioned by cementation or any other process.
- Volume reduction from 3 (without recycling: steel produced is considered as a final waste) to 10 (with recycling steel).
- Throughput: More than 40 t/day of input steel scrap.
- Catch of volatile radionuclide and of main alpha emitters from contaminated scrap metal.
- Unclogging (backwash) bag filters and HEPA filters.

Advantages of our Technology

- High efficiency Decontamination for Cs, transuranic nuclides and main volatile fission products.
- Reduce metal scrap volume by melting them without any impact on metallurgical properties of end products.
- Recycling and Direct reuse of steel (Production of container for waste packaging or steel shields).
- No activity release (contamination trapped in ashes and slag). Contaminated smokes treated by gas filtration unit

2. Notes

Technology readiness level

Proven industrial melting technology: 20 years experience in CEA Nuclear site Marcoule (G3 Facility for UNGG reactor dismantling). Over 5000 tons of scrap melted in G3 facility.

Challenges

- Implementation at Fukushima NPP:
 - Layout of facilities
 - Utilities such as electrical power, which can be supplied for instance by a Biomass Power Plant (AREVA is also ready to design such plant) burning wood and waste
- Process adaptation to metal shape and composition.
 - Cutting unit to be designed accordingly
- Define waste management strategy:
 - Filtering process optimization
 - Final waste composition
 - Recycling options

Energy feeding

Energy needs of such facility can be provided by a nuclearized biomass power plant (with a power generation unit), burning accumulated waste on the Fukushima 1 NPP site and tsunami burnable waste. AREVA has skills to develop such a nuclearized technology.

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