Nuclear Power Plant Waste Management - LLW Processor Issues

Waste Management 2011 – Session 47
A worldwide leader in the nuclear waste industry, providing innovative services and products to improve each client’s operating efficiency.

Business Areas

- Waste Treatment
- Decommissioning
- Engineering and Services
- Operating Efficiency
Studsvik’s Markets

Distribution, net sales 2010

- Sweden
- Europe excl. Sweden
- North America
- Asia
- Office
- Facility

Filled Areas: Market/Office/Facility
Striped Areas: Market

Global Services and Other
Innovation Timeline

1947
Founded Atomenergi to develop nuclear power stations in Sweden

1954
First Swedish reactor completed

1970s
Privatization process begins

1987
Changed name to Studsvik

1998
Acquires Scandpower. Enters German and USA markets.

2001
Listed on Nasdaq OMX Stockholm

2005
Acquires Environmental Remediation Services Ltd. Enters UK market

2008
Implemented Class B/C waste program

2000
Opened Studsvik Processing Facility Erwin.

2001
Created TTT joint venture with URS

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Created TTT joint venture with URS

2005
Acquires Environmental Remediation Services Ltd. Enters UK market

2006
Acquires RACE LLC (Studsvik Processing Facility Memphis)

2008
Implemented Class B/C waste program

2010
Created SEMPRASAFE joint venture with EnerySolutions
Waste Treatment Offerings

- Thermal Organic Reduction (THOR®)
- Thermal Conversion Reformer
- T-Spray
- Large Component Processing
- Bulk Survey For Release (BSFR)
- Advanced Material Processing (AMP)
THOR Process

- Patented thermal technology
  - Pyrolysis/steam reforming system
  - Reduces wet organic waste to a non-reactive waste form
- Waste streams processed
  - Bead resins, powdered resins, sludges
  - Activated charcoal
  - Non-Metal Filter Cartridges
  - Dry Active Waste (DAW)
- Benefits
  - Volume reduction
  - Creates a safer, more stable, inorganic waste form
  - Controllable for specific waste classifications
Large Component

- Process and recycle large components
- Turnkey services
- Waste streams processed
  - Nearly any component
  - Examples
    - Steam generators
    - Reactor heads
    - Feed water heaters
- Benefits
  - Volume reduction
  - Recycling
  - Up to 97% release
Bulk Survey For Release (BSFR)

- **Process and dispose medium or high density solid waste materials**
  - ISOCS gamma spectroscopy system used to survey waste
  - Controlled disposal to specific Subtitle-D disposal facilities

- **Waste streams processed**
  - Soils, rubbles, scrap metal, equipment
  - Dry Active Wastes (DAW)
  - Bulk liquids, oils, sludges (absorbed)

- **Benefits**
  - Cost effective alternative to direct LLRW disposal
Advanced Material Processing (AMP)

- Sort and process waste materials
  - Bulk Survey for Release (BSFR)
  - LLRW Disposal
  - Free Release

- Waste Streams Processed
  - Dry Active Waste (DAW)
  - Metals

- Benefits
  - Conservation of LLRW landfills
  - Recycling
  - Lower disposal costs
Engineering and Consultancy Services

• Custom solutions to problematic waste streams
  – Fluidized bed stream reforming
  – Other proprietary thermal treatment solutions

• Services
  – Testing
  – Design
  – Equipment supply
  – Start-up and technical assistance
  – Turn key solutions

• Example projects
  – DOE Idaho
  – DOE Savannah River
  – Multiple projects internationally
    • UK
    • France
    • Japan
DOE Idaho Sodium Bearing Waste (SBW)

• THOR treatment of 3.8 million liters of SBW generated from the spent nuclear fuel solvent extraction processes

• Status
  – Plant start-up
  – Online Fall 2011
DOE Savannah River Tank 48

- THOR treatment of 1 million liters of high-level radioactive liquid tank waste
- Status
  - Integrated pilot plant tests complete
  - Detailed design for full-scale plant underway
Risk-Informed, Performance-Based
Studsvik
Safe. Stable. Sustainable.