Radioactive Decontamination from Low Pressure Turbines and Related Stationary Equipment

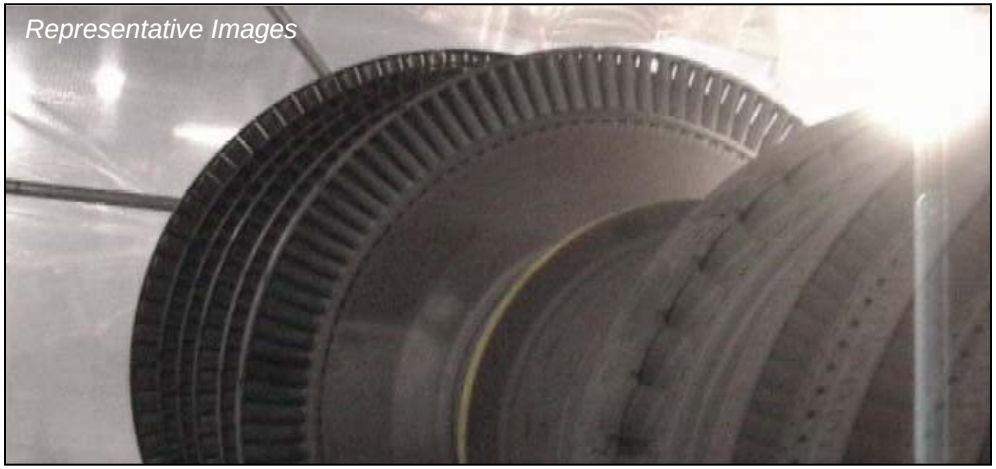
Project 836

Overview:

- Leading provider to power generation, transmission and distribution products; servicing steam turbines, steam valves and electric generators
- Radioactive turbine parts need cleaning and decontamination prior to conducting maintenance

Objective:

- Maintain radiation protection to surrounding personnel
- Remove as much low-level radiation on turbines and related stationary equipment as possible



Representative Images

Radioactive Decontamination from Low Pressure Turbines and Related Stationary Equipment

Turbine Manufacturer:
Siemens

Substrate(s): stainless steel

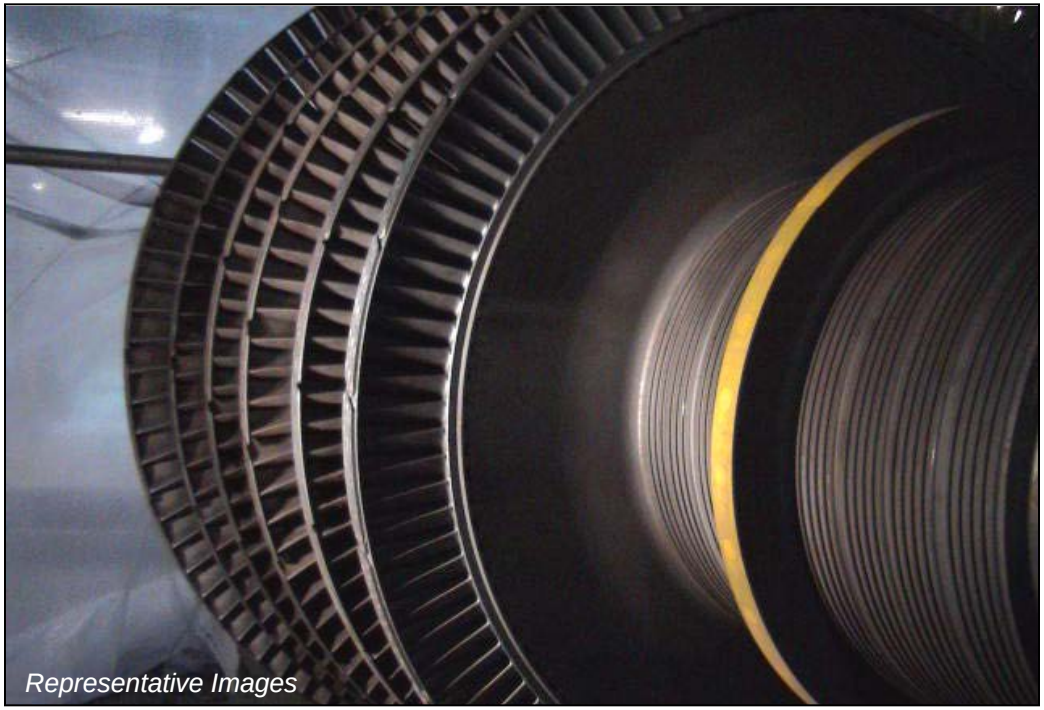
Used: White Glass Bead Sponge Media™

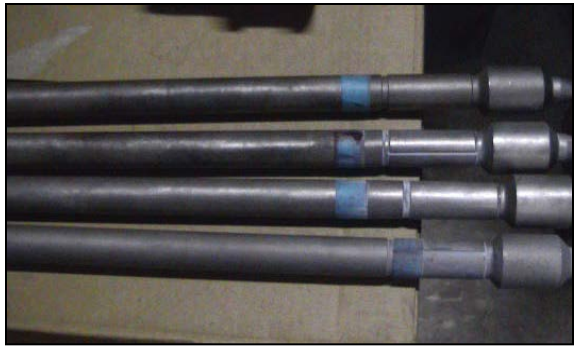
Considered Using:

#60 Aluminum Oxide

Chose Sponge-Jet Because:

- Media absorbs contamination without re-depositing it
- Dust suppression at the source of generation protects operators and staff inside containment from additional exposure





Radioactive Decontamination from Low Pressure Turbines and Related Stationary Equipment

Low-Level Radioactive Decontamination "Before and After" Data – **Turbine 1**

Item	**Fixed** (Counts Per Minute) Before	After	**Decon Factor**	**Loose** (Distintegrations/Min/100cm²) Before	After	**Free Release**
Rotor	300	<100	**3**	<1000	<1000	√
Inner Cylinder Upper Half	300	<100	**3**	<1000	<1000	√
Lower Cylinder Half	300	<100	**3**	<1000	<1000	√
Gen End L/H Carrier #1	500	<100	**5**	<1000	<1000	√
Gen End RS Carrier #1	400	<100	**4**	<1000	<1000	√
Gen End Bracket	120	<100	**1.2**	<1000	<1000	√
Gov End Bracket	120	<100	**1.2**	<1000	<1000	√
TE RS Carrier #1	400	<100	**4**	<1000	<1000	√
RS Gov End L/H Flow guide	400	<100	**4**	<1000	<1000	√
Gov End RS Flow guide	200	<100	**2**	<1000	<1000	√
Gen End RS Flow guide	200	<100	**2**	<1000	<1000	√
LS Gen End Flow guide	400	<100	**4**	<1000	<1000	√
Gov End Blade Carrier #1	500	<100	**5**	<1000	<1000	√
Gen End Blade Carrier #2	400	<100	**4**	<1000	<1000	√

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Low-Level Radioactive Decontamination "Before and After" Data – **Turbine 2**

Item	**Fixed** (Counts Per Minute) Before	After	**Decon Factor**	**Loose** (Distintegrations/Min/100cm²) Before	After	**Free Release**
Rotor	800	<100	**8**	<1000	<1000	√
Inner Cylinder Lower Half	800	<100	**8**	<1000	<1000	√
Diffuser	200	<100	**2**	<1000	<1000	√
Upper Cylinder Half	400	<100	**4**	<1000	<1000	√
Gen End RS Carrier #1	500	<100	**5**	<1000	<1000	√
Gov End Bracket	120	<100	**1.2**	<1000	<1000	√
Gov End Bracket	120	<100	**1.2**	<1000	<1000	√
TE RS Carrier #2	400	<100	**4**	<1000	<1000	√
Gov End Carrier #1	1100	<100	**11**	<1000	<1000	√
TE RS Flow Guide	400	<100	**4**	<1000	<1000	√
Gen End L/H Flow guide	400	<100	**4**	<1000	<1000	√
TE L/H Flow guide	400	<100	**4**	<1000	<1000	√
#69 Cross-over Diaphragm	700	<100	**7**	<1000	<1000	√
#70 Cross-over Diaphragm	500	<100	**5**	<1000	<1000	√

Radioactive Decontamination from Low Pressure Turbines and Related Stationary Equipment

Outcome:

- Radiological engineer reported a “100% success rate”
- Reported all breathing air samples as “clean”
- All blasted turbines and parts were tested and then designated as “free release”
- Sponge Media did not “migrate out” of the containment structure

“The biggest reward, from my point of view, (radiation protection) is the manner in which the Sponge-Jet Blast Media absorbs the contamination without re-depositing it on the material or floor or walls of our containment structure…”

Radiological Engineer