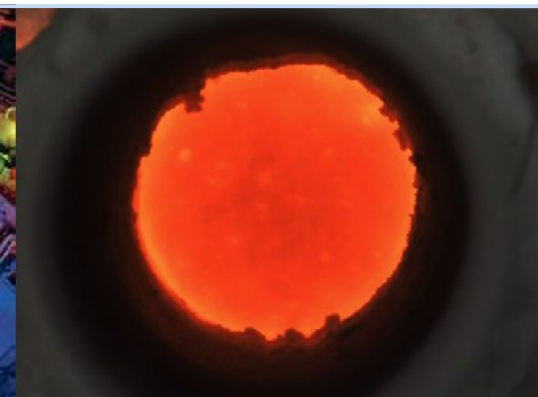


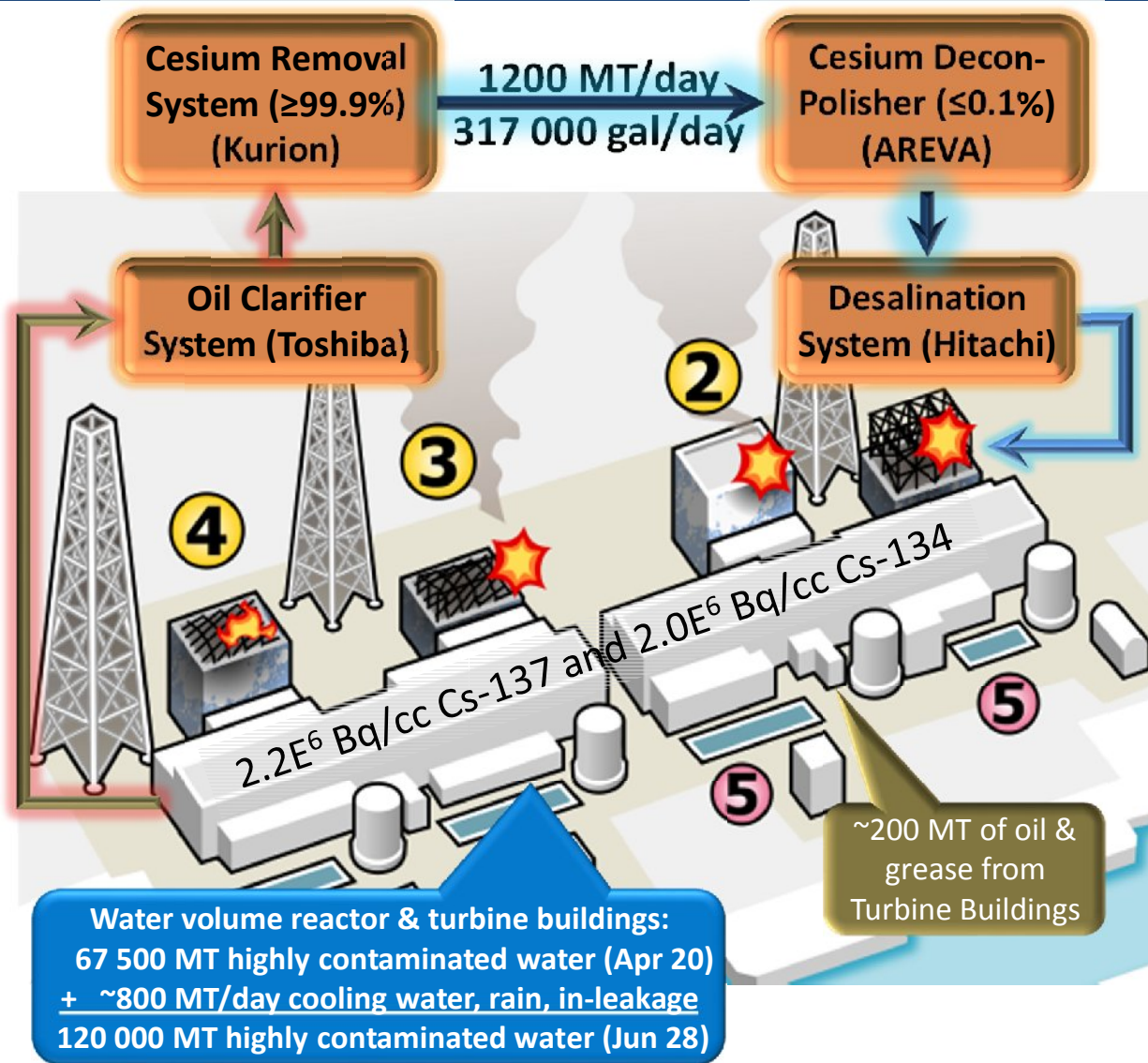
KURION

Matching Capabilities to Needs, Creating a Timely Solution for an Emergency Water Cleanup

John Raymont, President and CEO



Challenges: Contaminated Saline Oily Water, Volume, Schedule, & Mother Nature

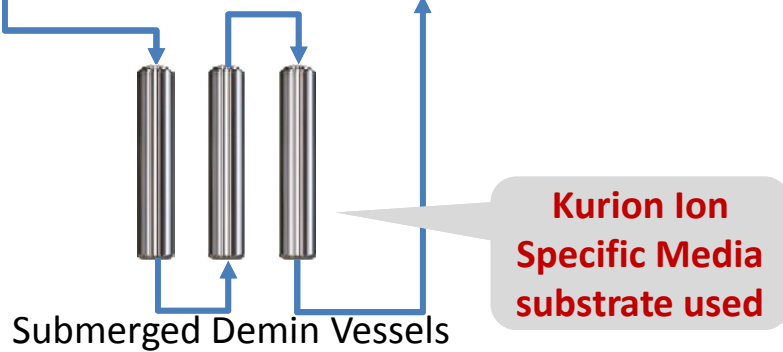
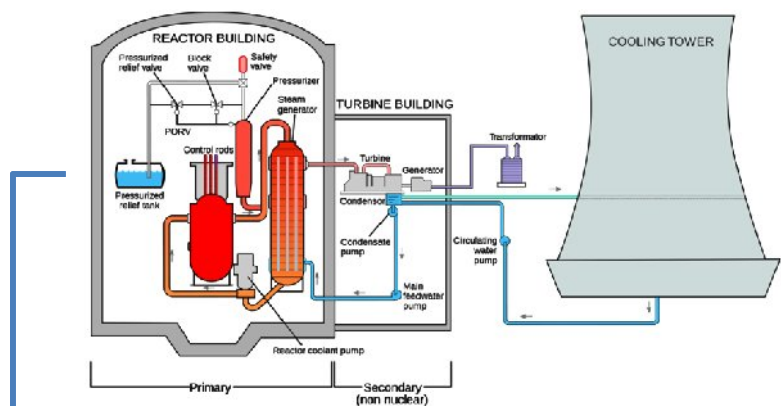


- Challenges:**
- Cs-contaminated, saline, oily water & huge volumes
 - Near continuous aftershocks to > Magnitude 7
 - Summer Rainy Season adds water volume
 - Many unknowns about site conditions
 - Protestors, police, camera crews on streets
 - **Water forecasted to overflow buildings end-June**

Goal: 1st Ever External Reactor Water Cooling System in Two Months

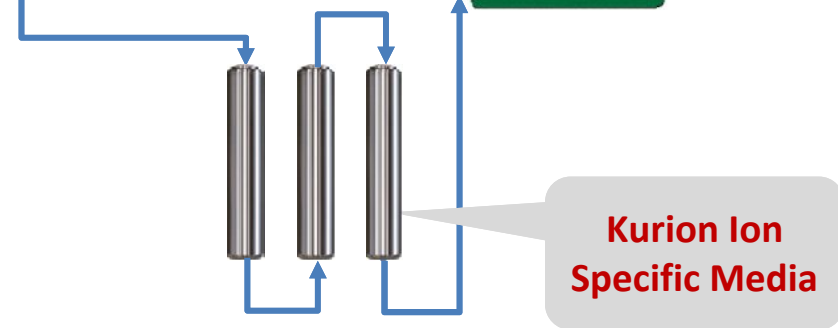
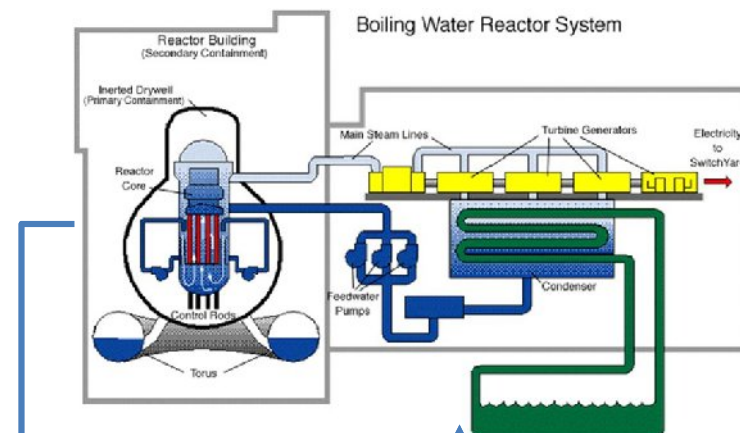
Kurion's Recommended Process Followed TMI

Demineralization Filtration Used Inorganic Media for Isotope Separation



Three Mile Island

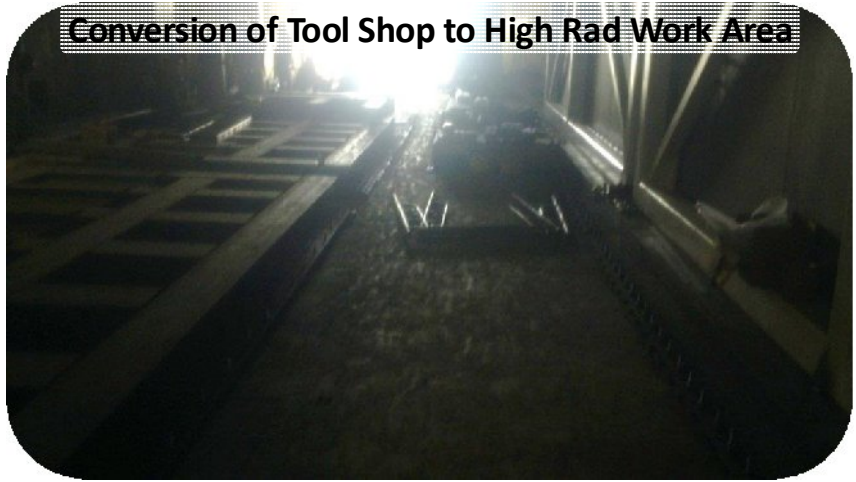
Kurion Ion Specific Media Used For Removal of Cesium and Other Isotopes



Fukushima Daiichi NPP

Kurion Had 100 MT of Salt Water Resistant Cesium Removal Media Available

Real Time Balancing Goals w/Site Limitations/Unknowns



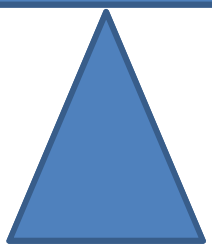
Conversion of Tool Shop to High Rad Work Area



Work Area Limitations Drives Vessels

Site Conditions

- Urgency to implement
- Multiple unknowns
- Tight working conditions
- Overhead crane limitations
- Floor loading limitations
- Lack of facility shielding
- Coordination under high stress

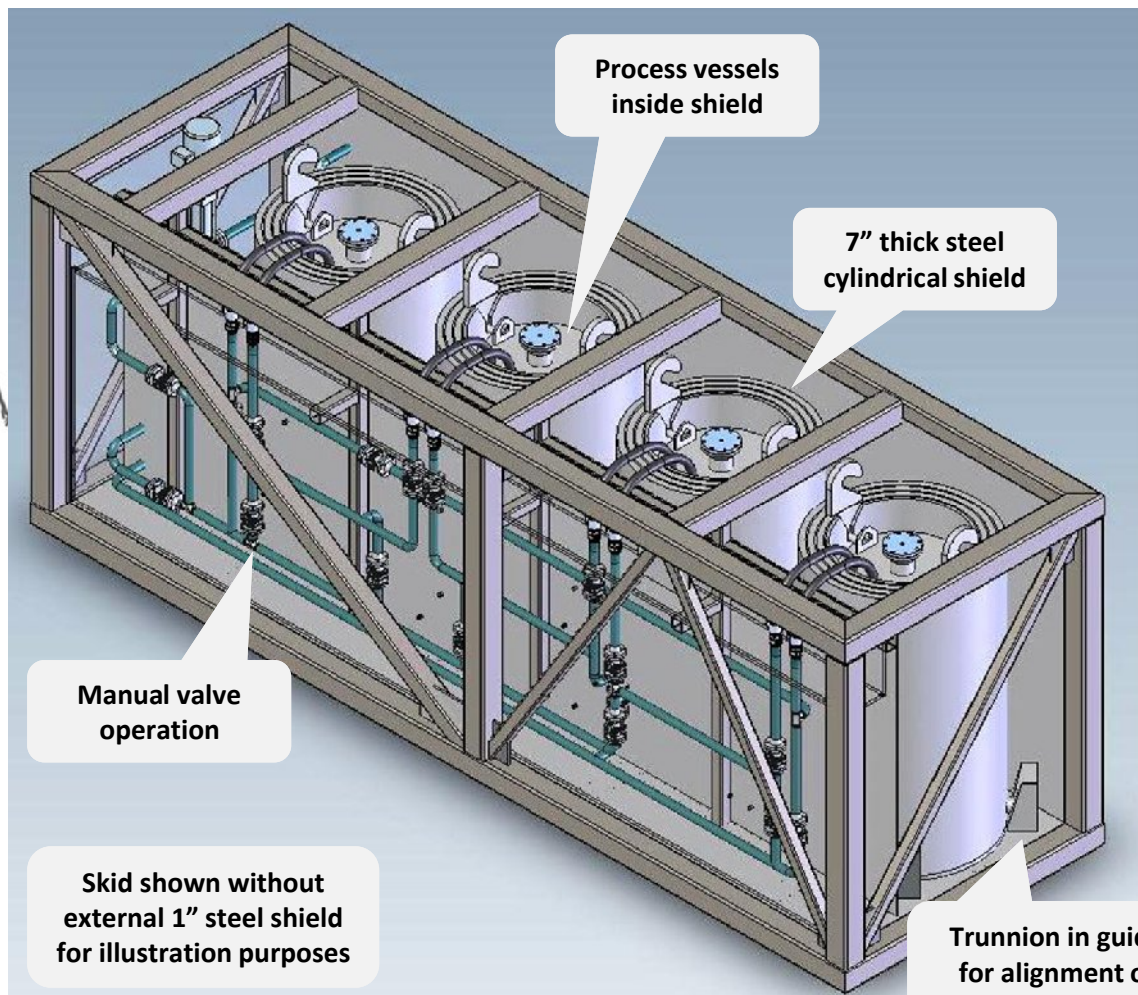


Media/System Capabilities

- Redundancy to offset lack of timely nuclear grade components
- Plug-n-Play to speed installation
- Lack of full remote operation
- System Removal Capabilities
- Vessel Loading Limits
- Number of Depleted Vessels

Design, Iteration and Fabrication 24/7 for 5 weeks

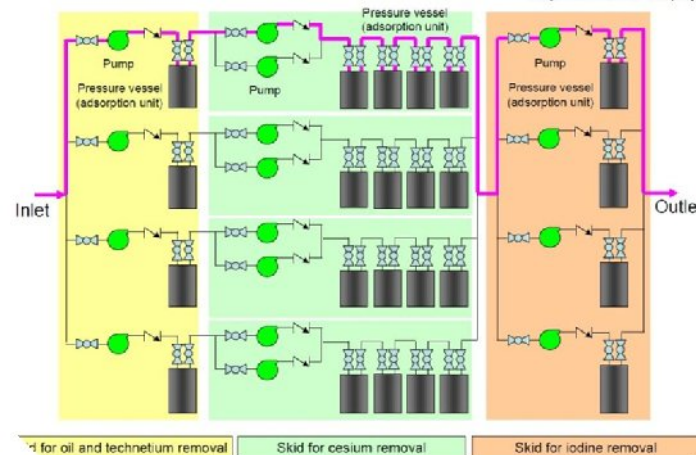
Kurion Processing Skid Design



System diagram of cesium adsorption Instruments

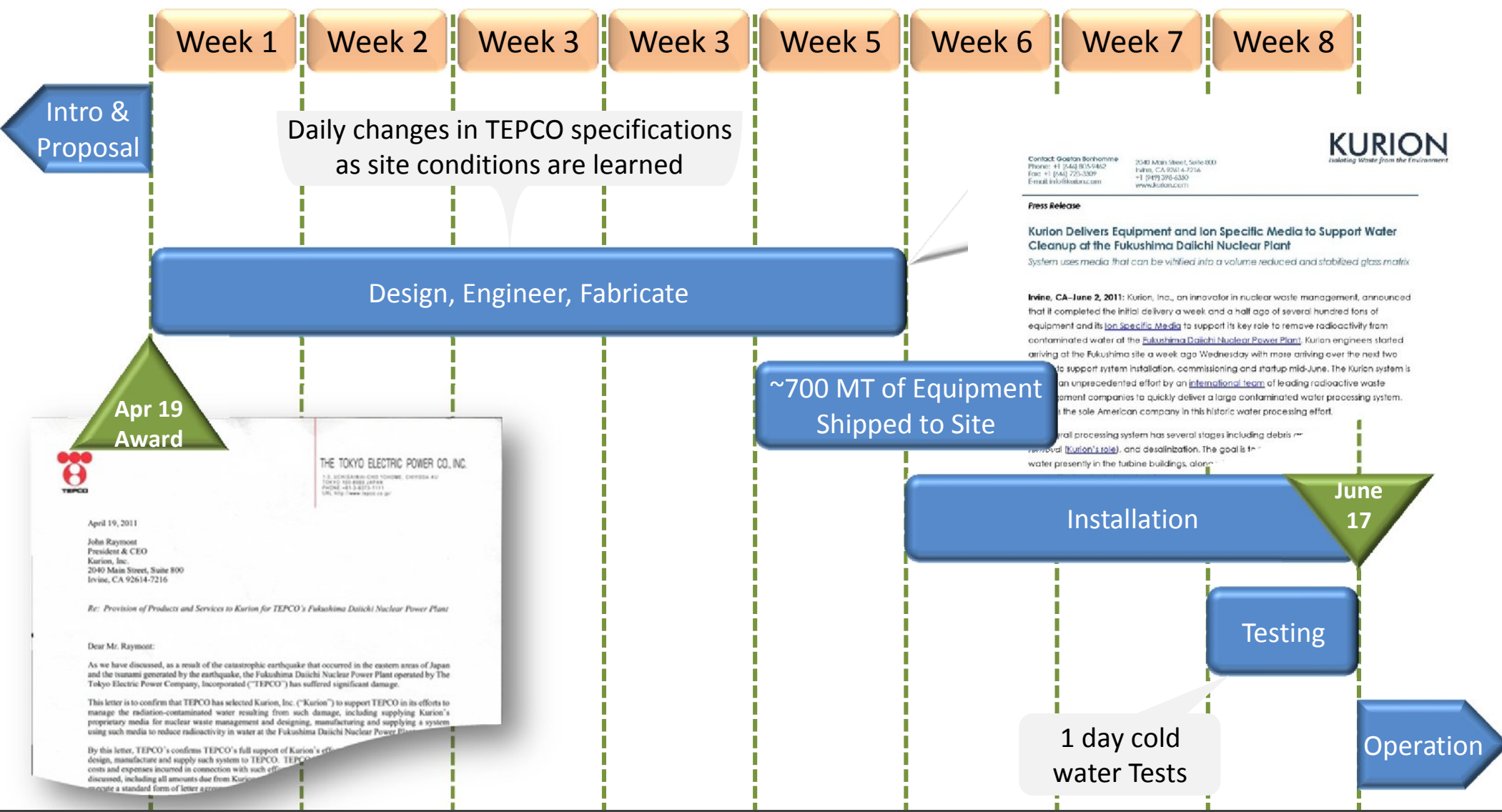
June 17, 2011

Tokyo Electric Power Company



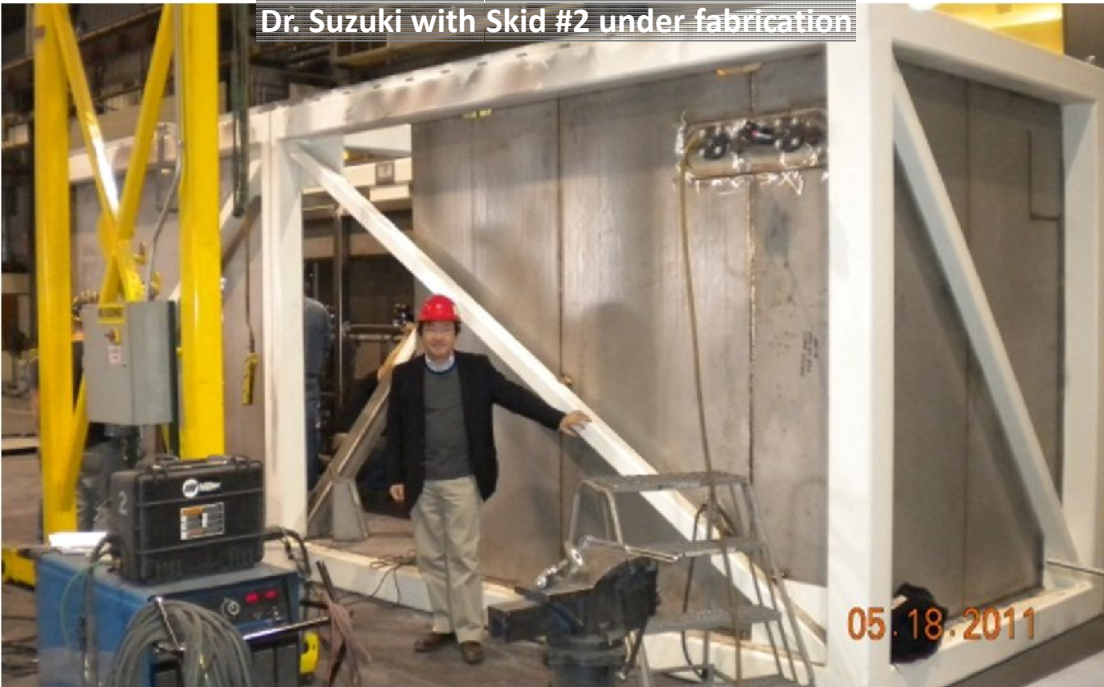
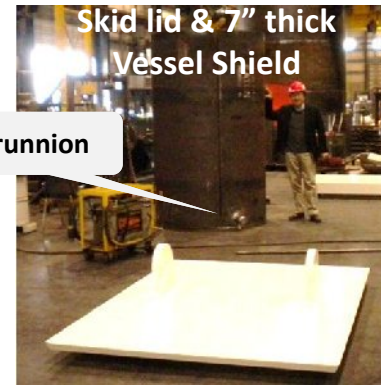
Each of four fully loaded Cesium Removal Skids weighs 90 MT; other two weigh 65 MT each

Project Timeline/Historic Delivery



5 Weeks From Award to System Shipment/8 Weeks From Award to Startup

Kurion Ships 700 Tons of Equipment & Media 5 Weeks ARO!



Contact: Gaetan Bonhomme
Phone: +1 (646) 805-9462
Fax: +1 (646) 723-3309
E-mail: info@kurion.com

2040 Main Street, Suite 800
Irvine, CA 92614-7216
+1 (949) 396-6350
www.kurion.com

Press Release

Kurion Delivers Equipment and Ion Specific Media to Support Water Cleanup at the Fukushima Daiichi Nuclear Plant

System uses media that can be vitrified into a volume reduced and stabilized glass matrix

Irvine, CA—June 2, 2011: Kurion, Inc., an innovator in nuclear waste management, announced that it completed the initial delivery a week and a half ago of several hundred tons of equipment and its Ion Specific Media to support its key role to remove radioactivity from contaminated water at the Fukushima Daiichi Nuclear Power Plant. The equipment is scheduled to arrive at the plant in the next few weeks to support system installation, commissioning and startup mid-June. The Kurion system is part of an unprecedented effort to clean up the Fukushima Daiichi Nuclear Power Plant. Kurion is the sole American company in this historic water processing effort.

Kurion Ships Equipment & Media May 22

The overall processing... removal (Kurion's)... water presently in... the purified water... second radioactiv...

Kurion CEO John... hour/day 7 day p... modified repeate... evolving specific... extraordinary sha... project and level... Mile Island Nucle... indicators should be...



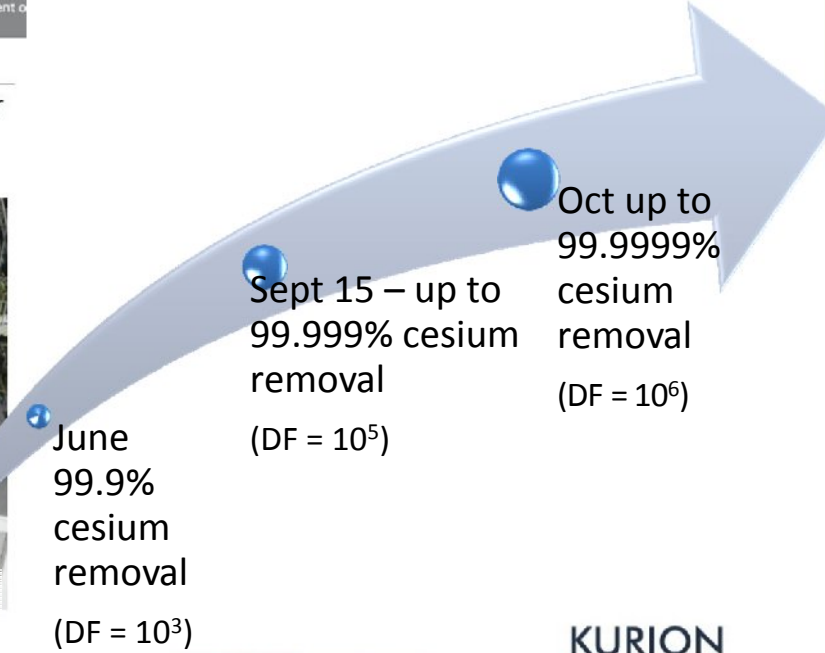
Result: Reactor Shutdown Ahead of Schedule



Editor's Note: John Boyd is an IEEE Spectrum contributor reporting from Kawasaki, Japan. This is part of IEEE Spectrum's ongoing coverage of Japan's earthquake and nuclear emergency. For more details on how Fukushima Dai-1's nuclear reactors work and what has gone wrong so far, see our explainer and our timeline.

Coping With Radioactive Water
After a number of frustrating setbacks in testing out the water decontamination system, Tokyo Electric Power Co. (TEPCO) announced on Monday morning, having treated over 6,000 tons of radioactive water stored in the waste water system, that it had achieved a significant milestone: the cesium levels in the system were reduced to 2.2E6 Bq/cc.

Improved operations and reduced salinity raised Decontamination Factor



KURION
Isolating Waste from the Environment

Press Release
Kurion Announces Fukushima Daiichi Nuclear Plant Contaminated Water Cesium Levels Reduced by More than 40%
System Achieving Performance Goals for Throughput and Cesium Removal
By mid-Aug Cesium Levels Reduced 40% to 1.3E6 Bq/cc

The reliability, safety, and robustness of the Kurion system was recently confirmed by a 16th analysis of Water Treatment Facility operations that identified operational missteps regarding incorrect valve settings that caused a temporary shutdown of the first skid.



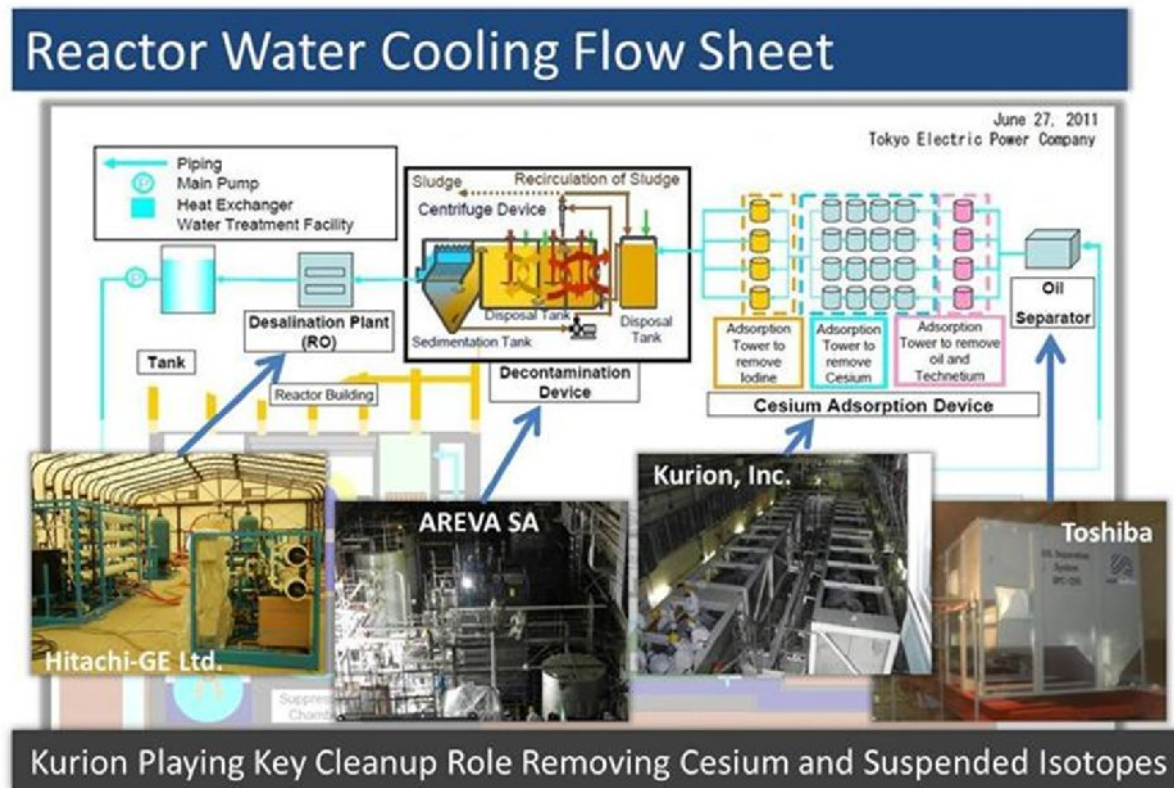
DOUBLE CHECKED: Workers at Fukushima Dai-ichi reactor 1 check a water level indicator. Injected water has cooled the cores, but it has also created contamination at the site.

Editor's Note: This is part of the IEEE Spectrum special report, Fukushima and the Future of Nuclear Power.

This past April, when the Japanese government and Tokyo Electric Power Co. (TEPCO) jointly unveiled their plan to shut down and gain control of the release of radioactive materials from the Fukushima Dai-ichi nuclear power plant to a cold shutdown and gain control of the release of radioactive materials, the system was reduced to 7.2E5 Bq/cc.

Matching Capabilities to Needs/Timely Solution

- Feb 2012 system inlet cesium level $\sim 1.7E5$ Bq/cc, a $\sim 90\%$ reduction from mid-June levels with $DF \geq 1.0E5$; cold shut down not possible without this success
- Delivered a reliable, proven, and defensible technology roadmap to ensure success
- Delivered quality under high time pressure (media testing + redundancy approach)
- Experienced team delivering technologies for applications at operating and decommissioning sites



Source: [TEPCO Flow Sheet](#) and [TEPCO Photos for Press](#)

Kurion System to Continue to Operate for Foreseeable Future