



## A major advance in filter/cartridge change-out technology

The more than 450 light water reactor nuclear power plants worldwide all face the same continuing challenge: removing and disposing of the highly radioactive deposits — commonly referred to as CRUD — that accumulate inside the piping, fuel pools, fuel transfer canals, and other areas of their systems and plants. At some point, CRUD will pose a very serious problem for each of them.

### The source of the problem

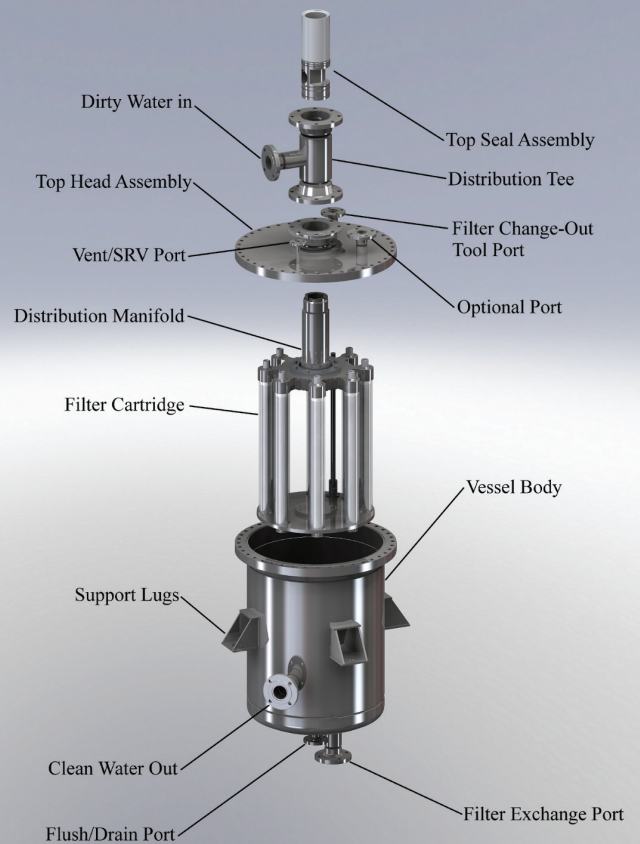
Arguably the most troublesome problem is the radiation that emanates from the CRUD deposits and serves as the primary source of occupational radiation exposure in the typical plant. As regulatory agencies continuously reduce the allowable exposure dose to station personnel, utilities are constantly looking for new and better ways to more effectively comply with regulations.

### The source for the solution

That search for a major advance in cartridge change-out technology is over thanks to Nuclear Filtration LLC. The company's patented Apparatus for Radioactive Particulate Filtration system enables unimpeded use of innovative technology without the severe radiological penalties associated with other cartridge change-out systems currently on the market. This new filtration system enables the plant to:

- Eliminate excessive hours of cartridge change-out time and the possibility of high related exposure expense
- Employ filter cartridge change-out procedures including draining of the system, filter change-out, refilling of system and repressurization that are completed in one hour or less
- System efficiency will help reduce background radiation levels and worker dose accumulation and measurably improve overall water chemistry
- Eliminates the high cost of cleanup resulting from spillage of radioactively contaminated fluids during the change-out process
- Minimizes initial switch-over and startup costs because installation requires minimal changes to the stations permanent piping systems in most instances
- Has undergone hundreds of hours of BETA testing and is ALARA compliant

**Dramatic improvements in time, cost, and radiation exposure**



### See for yourself. Learn more.

The ease, efficiency, and effectiveness of this new change-out system have been proven in hundreds of hours of testing. See for yourself in the real-life video demonstration available for viewing now at [www.nuclearfiltration.com](http://www.nuclearfiltration.com)

Learn more about how Nuclear Filtration can help your facility meet one of its most challenging issues and achieve extraordinary savings. Call us today at **(814) 372-1500** or email [draybuck@nuclearfiltration.com](mailto:draybuck@nuclearfiltration.com)

## Design Data

### Apparatus for Radioactive Particulate Filtration

Height ( <i>flange to flange</i> )*	66.75 in
Width ( <i>outside flange</i> )*	39.75 in
Weight	1,705 lbs
Number of Filters*	8
Filter Type	Cartridge
Metal	304
Design Pressure	150 psig
Design Temperature	250°F
Design Flow	250 gpm
External Pressure Range	0 psig
External Temperature Range	50°F to 104°F Max
Fluid Type	Reactor Water
Pressure Drops @ Design Flow and Fluid Temperature between: Clean Filter ( <i>Max</i> ) Fouled Filter ( <i>Max</i> ) — ( <i>with design amount on filter</i> )	140°F and 250°F 5 psid 20 psid
Without Loss of Filter Efficiency ( <i>Max</i> ) — ( <i>with additional material on filter</i> )	20 psid
Without Mechanical Damage — ( <i>with additional material on filter</i> )	150 psid
Maximum Operating Temperature @ Design Flow and Design Trapped Material without Damage to the Filter Media	140°F
Filter Element Size in Microns	2 micron (TBD)
Smallest Particle Size	5 micron for 90% Retention
Min. Amount of Trapped Material	8.25 lbs
Limiting Dose Rate in Contact with Exposed Media	100,000 rad/year
Limiting Dose Rate 30 cm from Housing Surface	500 Rem/hr

\*Other sizes and filter counts available



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Nuclear Filtration LLC was established in early 2008 to market equipment to the nuclear industry under United States Patent # 6,254,774 which applies to the Apparatus for Radioactive Particulate Filtration covered by this Patent. The Patent was issued on July 3, 2001.