



Hybrid Zircex Hydrochlorinator

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Changing the World's Energy Future

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Hybrid Zircex Hydrochlorinator Loader

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Organization: C410, AQUEOUS SEPARATIONS & RADIOCHM Requirements

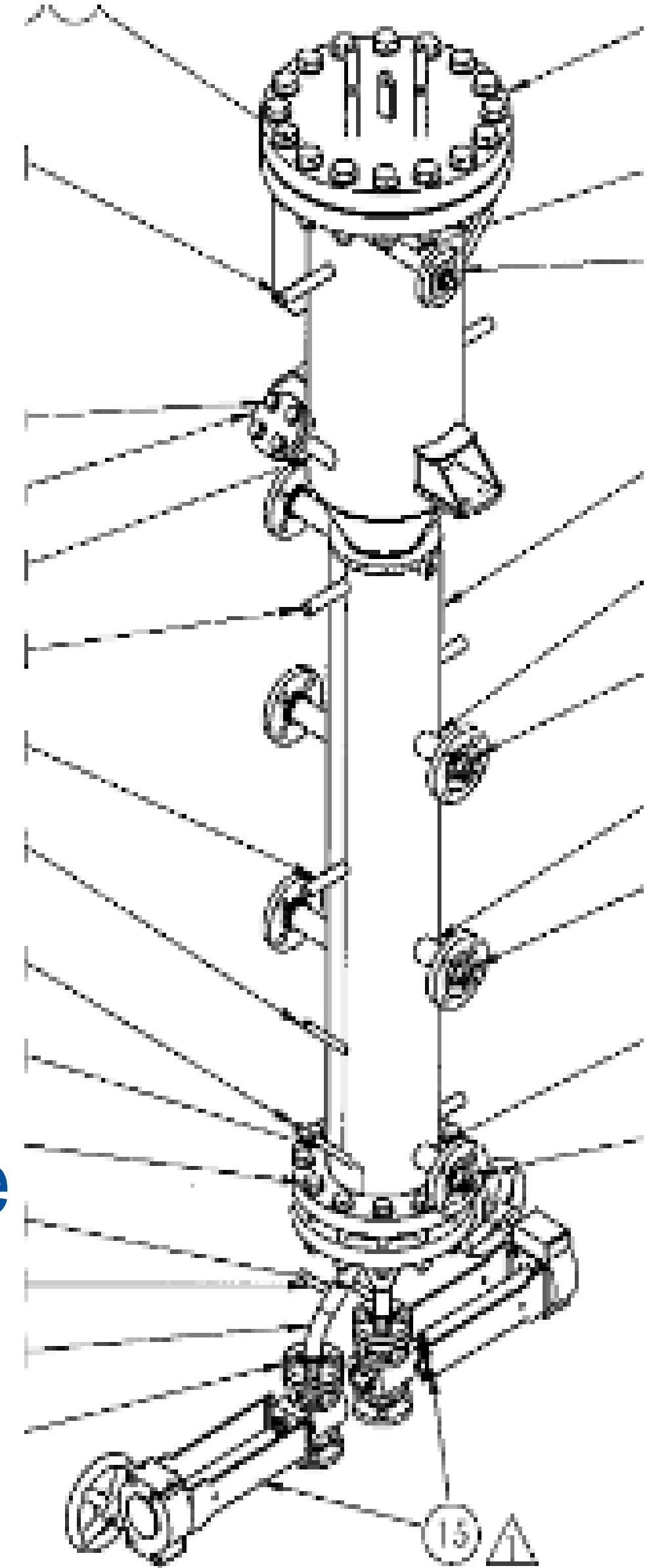
- The loading of a single Advanced Test Reactor (ATR) fuel element into the hydrochlorinator shall minimize the potential release of radioactive contamination.
- The loading method shall minimize maintenance operations to replace or remove the lid seal.
- The loading method shall provide the capability for remote handling of radioactive material to keep dose rates as low as reasonably achievable (ALARA)

Goals and Rankings

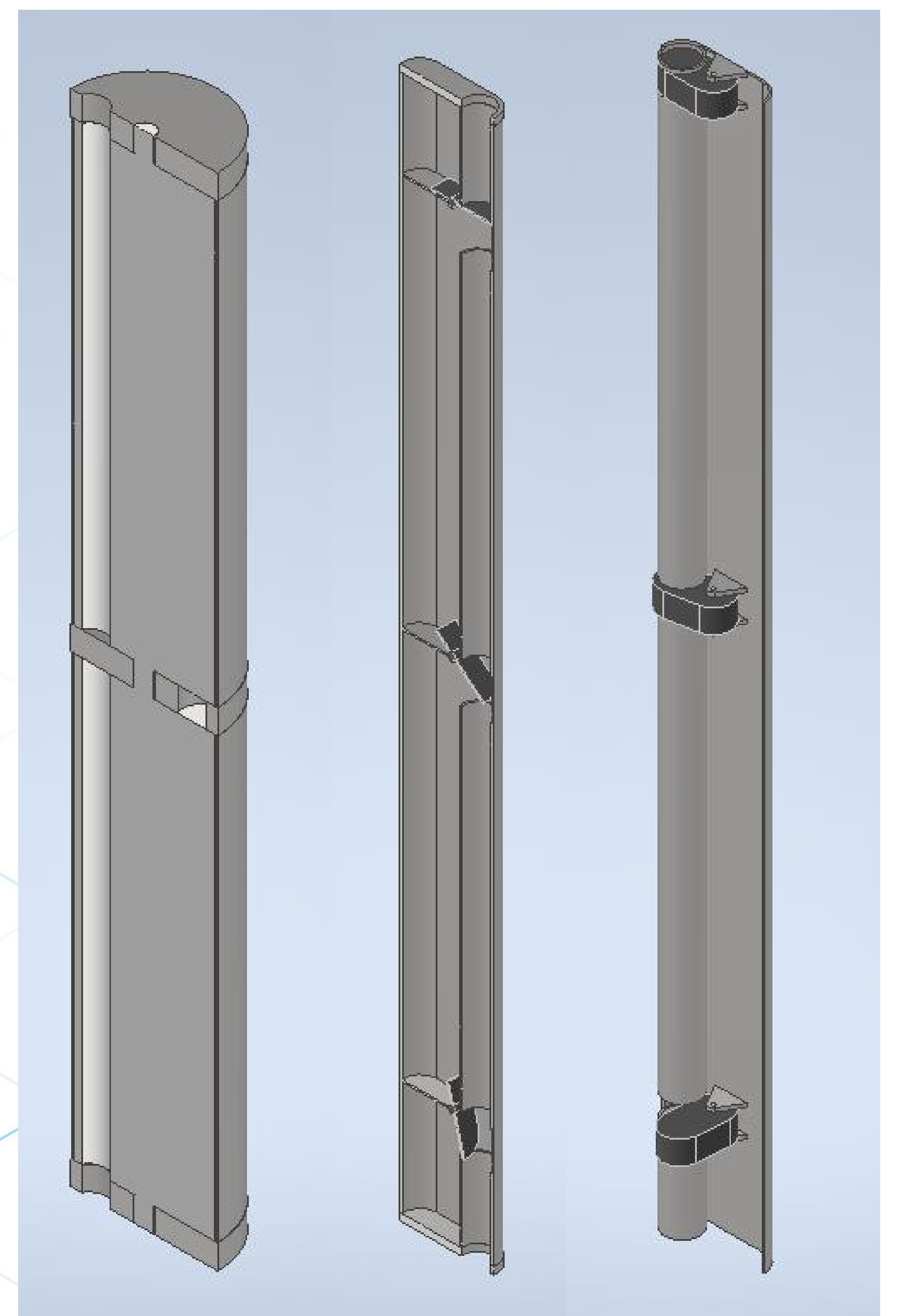
- Minimizing contamination is the primary objective and will carry the most weight in scoring the designs
- Minimizing lid seal replacement or removal is a key objective and will hold significant weight in the scoring process
- Remote usage of the loading method is heavily desired and will hold a large amount of weight in scoring each design

Designs

- The first design uses an inner cylinder that rotates about its center. There are holes in the inner cylinder where the fuel element will sit. As the cylinder rotates, the holes in the cylinder align with the holes in the plates. After the cylinder has rotated 360 degrees, the fuel element falls into the hydrochlorinator
- The second design uses multiple hinge mechanisms that will open when the fuel element falls onto the pivoting platform
- The third design features solid cylinders that rotate and open a path for the fuel element to fall through
- All designs utilize an airlock to minimize the potential release of radioactive contamination
- None of the designs require the lid seal to be removed when loading the fuel element. Each design will sit on top of the lid. A hole will be made in the lid so that the fuel element can fall through
- All designs allow for remote usage



Hydrochlorinator



Design 1

Design 2

Design 3