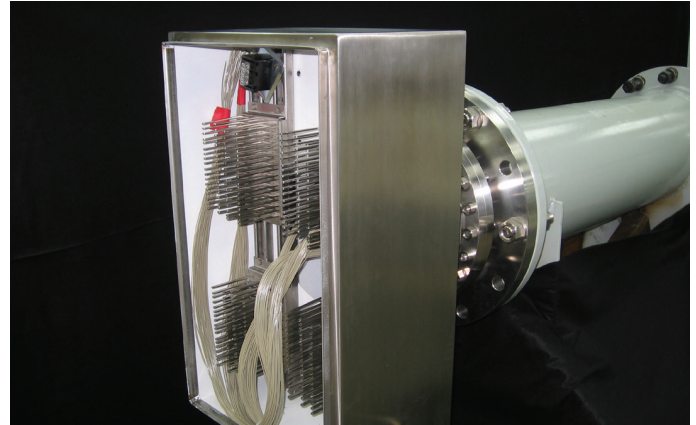
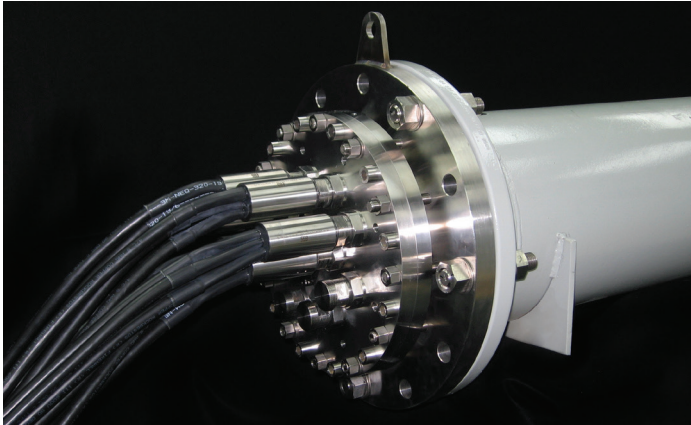


EGS Electrical Penetration Assemblies

Containment Solutions

**CURTISS -
WRIGHT**

Nuclear Power Products and Services



Product Description

Electrical Penetration Assemblies (EPAs) transfer electrical power and signals through the NPP containment wall and ensure the containment pressure boundary is maintained during design basis accident conditions. This dual function, as a safety-related electrical and mechanical device, makes the EPA a unique nuclear component.

EPAs are configured with individual feedthrough modules that are mounted to a bulkhead flange, header plate, or canister. Feedthrough modules are constructed with electrical conductors to pass electrical signals or power, insulators, and seals in a stainless steel housing. Feedthrough modules and the bulkhead flange aperture are supplied with double redundant seals and internal nitrogen gas containment space for leakage monitoring.

Application Design Options

- Low voltage power
- Control and instrumentation
- Coaxial and triaxial instrumentation
- Medium voltage power
- Fiber optic

Available Configurations

- Bulkhead flange (header plate) with removable feedthrough modules
- Canister design with removable or fixed feedthrough modules
- Double bulkhead flanges with feedthrough modules

Penetration pipe size (inches)	Module Diameters (inches)	Typical Conductor Range	Typical Wire Insulation Type
4 - 24	1, 1.25, 1.5, or 2	18 AWG to 1500 MCM	PEEK, Polyimide or XLPE

Design Features

The Curtiss-Wright EPA can be supplied as a single feedthrough module or as an entire assembly, including:

- Feedthrough modules with integral lead wires
- Flanges, canisters, or header plates
- Junction Boxes (both inboard and outboard)
- N2 pressure gauge and shut off valve

Qualification Levels

- Qualified life: 60 years
- Thermal Aging
- Radiation
- Seismic
- Thermal Cycling
- High Current Testing
- LOCA/MSLB
- Flooding and Severe Accident

Qualification Standards

Successfully qualified by test for applications in harsh PWR/BWR environments, in accordance with:

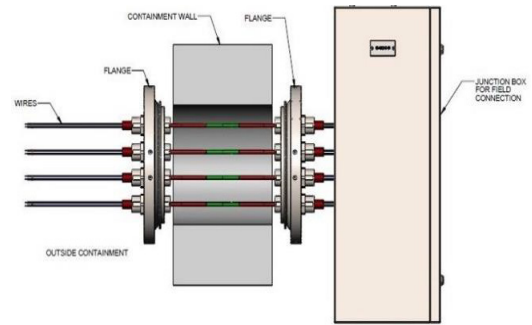
- ASME NPT Certification
- IEEE 317-1983/2013
- IEEE 323-1974/1983/2003
- IEEE 344-1975/1987/2004
- KBE EP-146
- KBE EP-154
- Equivalent to RCC-E, K1
- 10CFR50/Appendix B
- 10CFR21
- NQA-1
- ISO 9001

EGS Electrical Penetration Assemblies

Containment Solutions

EPA Designs

Curtiss-Wright's approach is to develop purpose built Electrical Penetration Assemblies to fit user's needs. Whether it is working with a utility on a like-for-like replacement that minimizes installation time and expense, or designing EPAs for new reactor applications, this unique approach allows Curtiss-Wright to design, test, and manufacture to customer specific standards and performance requirements.

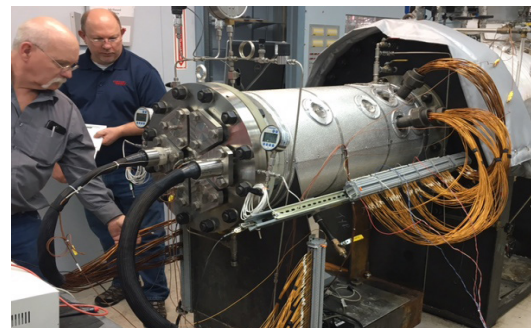


EPA Modeling

Engineering, Analysis, Inspection & Test

Curtiss-Wright offers a wide range of services to evaluate and analyze existing EPAs. These range from in-situ walkdowns to full EQ test program development, performance, and reporting. Our engineers work with customers to assess the current state of their systems, determine the best path forward, and develop practical and economical solutions.

Whether it's life extension testing, replacement of existing operating plant EPAs, or development of new designs for future generation, Curtiss-Wright can provide the customer service, engineering support, and quality hardware demanded by the unique environments of nuclear power.

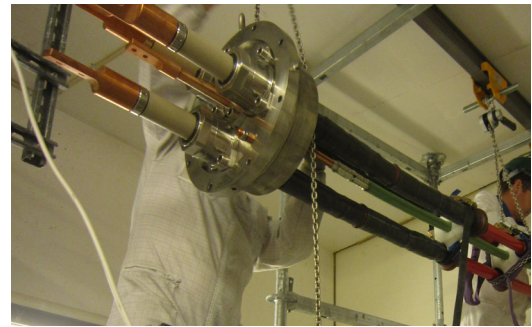


Low Voltage EGS EPA under Test

Customer Support

In addition to design engineering and qualification services, our experienced engineers support our customers through the entire EPA replacement process.

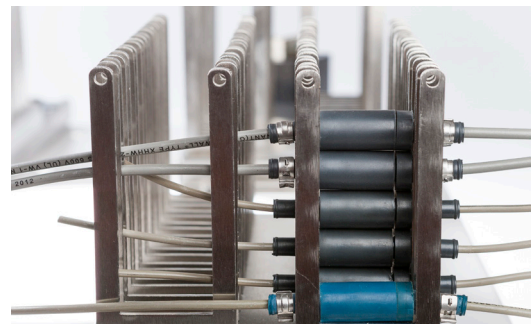
Curtiss-Wright can provide pre-job walkdown evaluations, project management assistance and real time on site installation consultation.



EGS Medium Voltage EPA Installation

Value Added Appurtenances

The EGS Brand Electrical Penetration Assembly (EPA) can utilize industry recognized electrical connection devices to mate to existing plant wiring for ease of installation. We offer integrated electrical enclosures that can include mounting racks for splice applications, including heat shrink and GRAYBOOT series reusable splices.



EGS Grayboot Splice and Mounting Rack

CONTACT INFORMATION:

18001 Sheldon Road, Middleburg Hts., OH 44130
electricalconnections@curtisswright.com | +1.216.267.3200