

Pressurizer Heater Power Cables

Superior Design and Supply of Specialty Cabling for Nuclear Applications

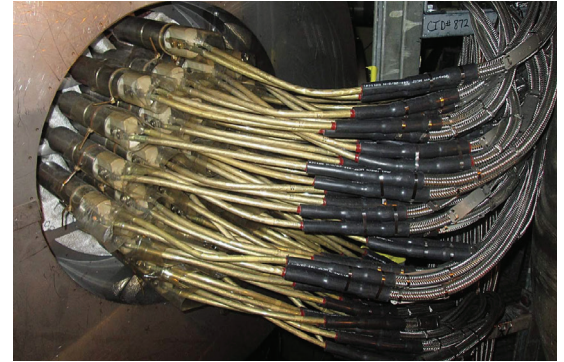
Challenge

Plants upgrading their systems or components may need cabling upgrades due to obsolescence, end of qualified life or a transition to a new system. Framatome can assist with engineering the right cabling solution to meet specific needs. We can design a solution that accounts for various specifications including configuration, radiation resistance, length of conduit, number of conductors and diameter of cabling. Framatome works with manufacturers to source and procure cabling.

Solution

Framatome is uniquely qualified and has extensive experience with the design and supply of specialty cable assemblies for the nuclear power industry including power cables for pressurizer heaters. We have supplied pressurizer heater power cables as original equipment for many nuclear power plants, and have actively supplied replacement specialty cable assemblies for various plant designs since the mid-1980s. We have recently completed the design, fabrication and supply of 126 pressurizer heater cables for a nuclear power plant located in the southeastern United States.

Framatome can ensure the cable-to-heater interface is compatible and meets the overall plant requirements for the pressurizer heater circuitry.



Customer benefits

Leveraging our experience with the design and manufacture of pressurizer heaters, Framatome can:

- Perform the design process to optimize the heater cable assembly design to provide the required heater interface, power requirements, and meet the plant environmental design and operating conditions
- Collaborate with our cable suppliers to utilize their extensive expertise with specialty cable applications for the nuclear power industry
- Work with our customers to define the plant interface requirements and required cable configuration and sizing
- Upon request, develop cable design requirements documents for customer specific heater applications, design change packages, and heater cable installation and testing

Features

- 40-year thermal life expectancy at 250°C (minimum 5 years at 400°C)
- Radiation resistant (up to 1,000 megarads)
- Class 1E rated with full traceability (non-LOCA)
- Flame retardant
- Extremely flexible for installation ease
- Easily stripped for termination ease
- Nickel-coated copper conductors for improved corrosion resistance and temperature endurance

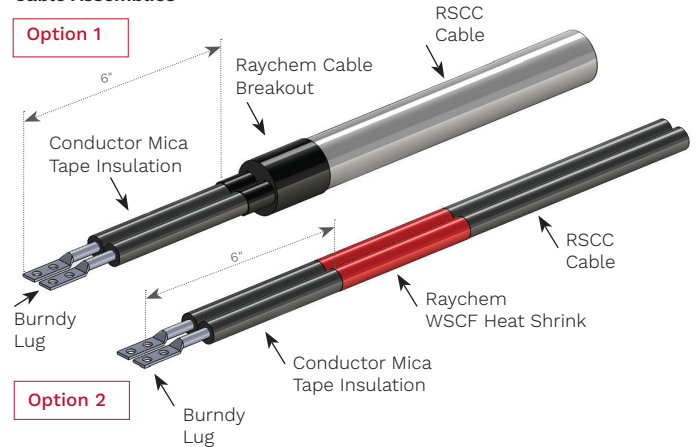
Technical Design

The cable recommended for the pressurizer heaters is an inorganically insulated cable specifically designed for use as a pressurizer heater power lead in nuclear reactors. This Class 1E (non-LOCA) rated cable has superior high temperature performance and is capable of withstanding extremely high radiation exposures. The cable has flexible strand, nickel-coated copper conductors, high-grade Mica tapes and has an overall glass braid with a high temperature finish.

The cable has a 40-year thermal life expectancy at 250°C and meets IEEE-383 1974 70,000 BTU/hr vertical flame test. Optional construction can include a stainless-steel over braid for additional abrasion resistance. Final configuration would be developed in conjunction with plant requirements and the assembly drawings would be submitted for customer approval.

RSCC (Rockbestos Surprenant Cable Corporation)

Pressurizer Heater Cable Assemblies



Performance Standards

- UL listed for AWM Style 5107
- Passes IEEE-383 1974 70,000 BTU/hr vertical tray flame test
- Quality Assurance program in accordance with 10 CFR 50 Appendix B

Construction

- **Conductor:** Flexible strand, nickel-coated copper
- **Insulation:** High-grade reinforced MICA tapes
- **Overall Covering:** Glass braid with high-temperature finish



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