

BCE APPLICATION NOTE

ELECTRIC HEATING
ELEMENTS

VACUUM
FEEDTHROUGHS

CUSTOM THERMAL
SYSTEMS

CERAMICS
ENGINEERING

LASER DRILLING AND
ETCHING

BCE'S OPTIC CABLE FEEDTHRU: THE SOURCE FOR ACCURATE SPECTROMETER DATA COLLECTION

Collecting data from a spectrometer has always presented unique challenges. Now, couple that with data collection in an ultra-high vacuum environment and intermittent pressures. This is precisely what a leading national laboratory focusing on American defense asked BCE to supply. This client was concerned with data collection across an ultra-high vacuum chamber using a unique feedthrough that would be easy to install, prevent damage to expensive equipment, and maintain employee safety.

SCOPE:

The feedthrough needed to meet the following specifications:

- Ultra-high vacuum compatible to 1×10^{-9} cc/sec of He @ 1 ATM
- Ease of installation into vacuum chamber wall
- Offer a high coupling efficiency into spectrometer
- Compatible connection with computing devices
- Remain operable under 100 psi of static pressure
- Be able to sustain pressures ranging from 500 to 1000 psi
- Adapt quickly, within milliseconds, to varying pressures
- Fit easily into restricted spaces
- Prevent release of contaminants via outgassing

OUTCOME:

BCE proposed its Optic Cable feedthrough as the ultimate solution to this design conundrum. The flexible stainless steel conduit of the fiber optic cable along with its connectors coupled easily with the spectrometer and company devices. The CF flange of the feedthrough mounted effortlessly into the vacuum chamber wall and BCE's proprietary epoxy seal meeting NASA ASTM E595 allowed for less than 0.1% of volatiles to emanate into the environment and with less than 1% of mass loss. Further testing of BCE's optic cable feedthrough at the client facility revealed that it remained operable at varied, high pressures while ensuring an ultra-high vacuum seal.

For more information and drawings click [here](#).



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