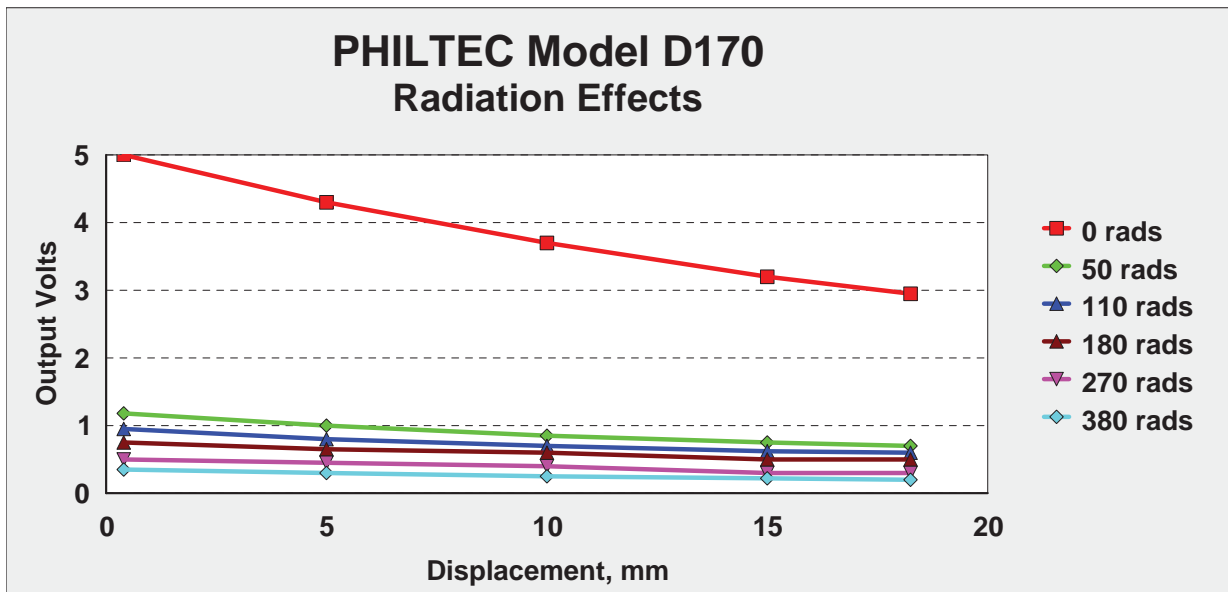


Gamma Radiation

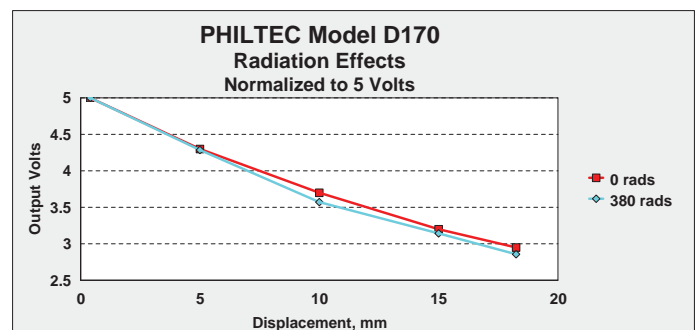
Radiation doses at the levels encountered in radiography can cause significant degradation to the glass fibers used in Philtec's fiberoptic displacement sensors. The radiation acts by darkening the fibers and thus lowering the amount of light transmitted.

The chart below shows reduction in sensor output voltage with increasing cumulative dose. Note the large initial reduction with 50 rad exposure. Subsequent increments have increasingly smaller effect. Others report that glass fibers go completely dark by 1000 rads.



When the sensor output is reset to 5 volts peak after exposure, we find the slope remains relatively unchanged. Therefore the sensors remain usable once correction factors for the loss in output have been applied.

Presoaking the fibers with radiation prior to actual use may have an advantage.



RADIATION RESISTANT FIBERS

Philtec can provide sensors with radiation resistant fibers. Fibers made from synthetic fused silica on silica optical fiber with high OH will withstand radiation of 10^8 rad. These are much more expensive than borosilicate glass fibers. Sensor systems can be connectorized to minimize the length of the high cost fibers. Contact the factory for design help or a quotation.