

Low Energy X-Ray (LEEX) Is Expanding

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It is estimated that contract sterilization service centers utilize x-rays for less than 10% of their product treatment. Gamma, EO and Ebeam are all presently utilized more than x-rays. Yet market forces are driving the use of x-rays at these facilities to a faster growth rate than the other three technologies. Typically high energy x-ray systems have been installed, in the 5-10 MeV range. However LEEX has new opportunities for medical and industrial applications.

X-ray dose rates to 10 Gy/sec can now be achieved in zones as long as 90 inches (2.2 m) using a single 300 kV electron accelerator. X-rays from a 300 kV source enable penetration of products up to 30 inches thick (depending on density and product presentation), while allowing the device to be fully Self-shielded. Doserate uniformity across the full x-ray zone, as well as dose-uniformity ratios (DUR), were measured at various gaps from the x-ray source, allowing correlations to wide varieties of products. Throughputs in the range of greater than 100 lbs/hour have been shown to be possible for a 25 kGy (sterilization) dose, while greater than 1 ton/hour have been confirmed for 1 kGy (non-sterilization) doses. LEEX use will continue to expand, especially for in-company and in-line use.