DOSE INSIGHT
39655 Eureka Drive, Newark, CA 94560-4806, phone 510-384 7374

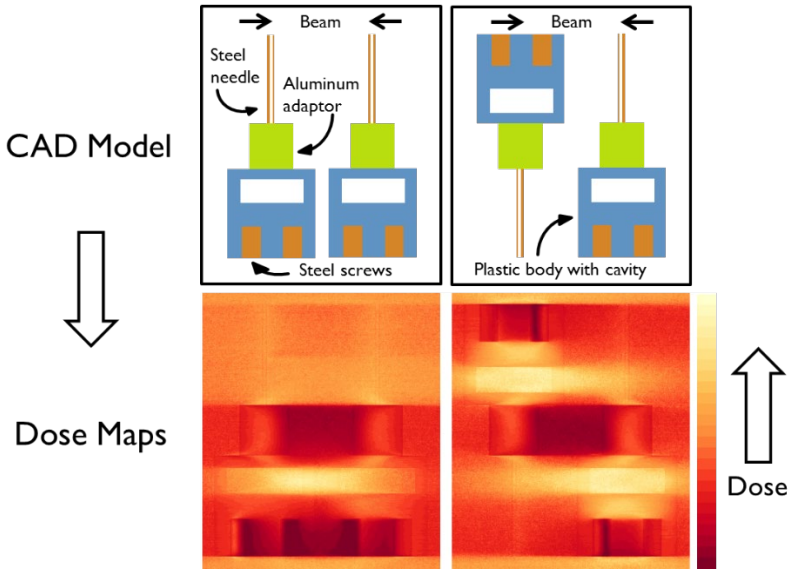
Simulation of Radiation Sterilization:
Choosing the Best Packing Configuration

Tobias Funk, PhD, and Daniel Badali, PhD

For cost reduction, it is beneficial to choose a packing configuration that allows for the highest throughput. Typically, the ideal arrangement is found through experimental trial-and-error. In addition to being expensive and time-consuming, such an approach might miss the packing configuration that finds the perfect balance between throughput and sterility.

Our solution

The process of choosing the ideal packing configuration can be guided by testing any potential packing configuration in silico, which removes the need to perform time- and cost-consuming sterilization measurements. To do so, powerful computer simulations can be used to estimate the dose distribution received by the product.



The power of this approach is demonstrated in the figure above, which shows the simulated dose distribution of a prototypical medical device phantom packed with the devices in the same orientation or in alternating orientations. The relative placement of the devices has a large impact on the dose distribution, and this effect can be systematically and efficiently studied using simulations.

How do we do it?
Dose Insight has developed a powerful software tool capable of realistic simulations of radiation sterilization. The physics in the simulations is powered by the Geant4 toolbox; developed at CERN, Geant4 is the most sophisticated and accurate physics library in existence. Our tool can simulate the full three-dimensional dose distribution received by any product from gamma, electron-beam, or x-ray sources

For more information visit us at www.doseinsight.com or email us (info@doseinsight.com)