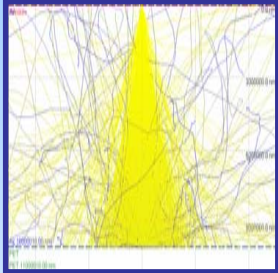


# Electron Beam Adoption Considerations

## Feasibility Testing

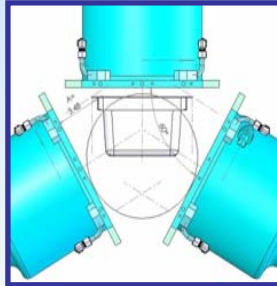
### Monte Carlo Simulation



Dose delivery can be modeled using Monte Carlo simulation

### Dose Mapping

Dose delivery across product geometry is directly measured in lab test stand

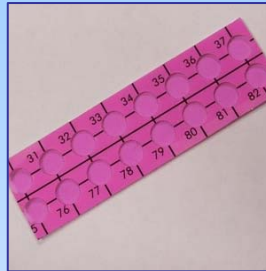


### Material Compatibility



Treated product is studied for adverse material effects and impact on organoleptics

## Dosimetry



Thin film, radiochromic dosimeters used to directly measure dose

## Bioburden Studies

Product samples can be inoculated and tested in rapidly engineered test stand.



Bioreduction in test stand is directly comparable to production system

## Validation



Guidance from internationally recognized **ISO standard** for radiation sterilization of health care products

- Consistent application in food & beverage, medical device, pharmaceutical industries

## Process Control

**Process control is simplified by:**

- Few process variables to validate and control
- Real time monitoring of key electron beam parameters (voltage, current)
- Thin film dosimeters are used for calibration and for periodic verification