

Bugs I

Applied Energy Devices, LLC

13 October, 2015

•Progress in the Development of "Bugs 1"*

*An In-line, Low Energy X-ray Irradiator for Phytosanitary Treatment of Certain Fresh Fruits or Vegetables Before Export or Quarantine Release

Randol Kirk

- 1997 Rad Source Technologies, Inc.
- 2000 Applied For. Patent on 4 Pi X-ray Emitter
- 2012 Retired from Rad Source
- 2013 Discussion with Peter Follett of USDA regarding the suitability of the 4 Pi Emitter for inline processing

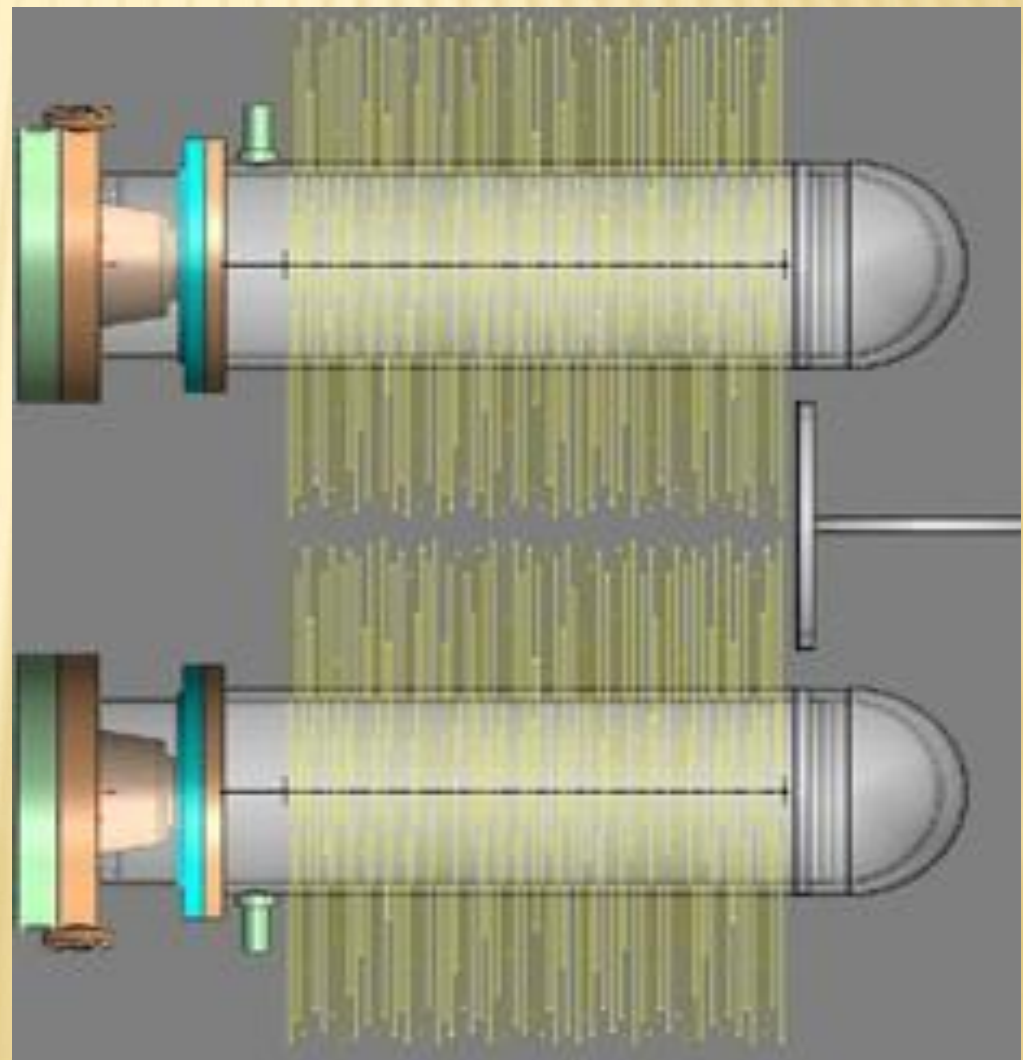
- Advantages of an Irradiator using a 4 Pi Geometry

Very High dose Rate

Low Manufacturing Cost

Very Small footprint

Excellent size, cost, weight for
Shielding



•Objectives



- 1) Evaluate dosimetry on fruit boxes using low energy x-ray
- 2) demonstrate to stakeholders product viability after treatment
- 3) Demonstrate compliance with appropriate radiation standards for the process
- 4) Modify existing technology to improve throughput and reduce cost
- 5) determine specifications and selling price or disband the project

•New Prototype Features

Inline Dosimetry

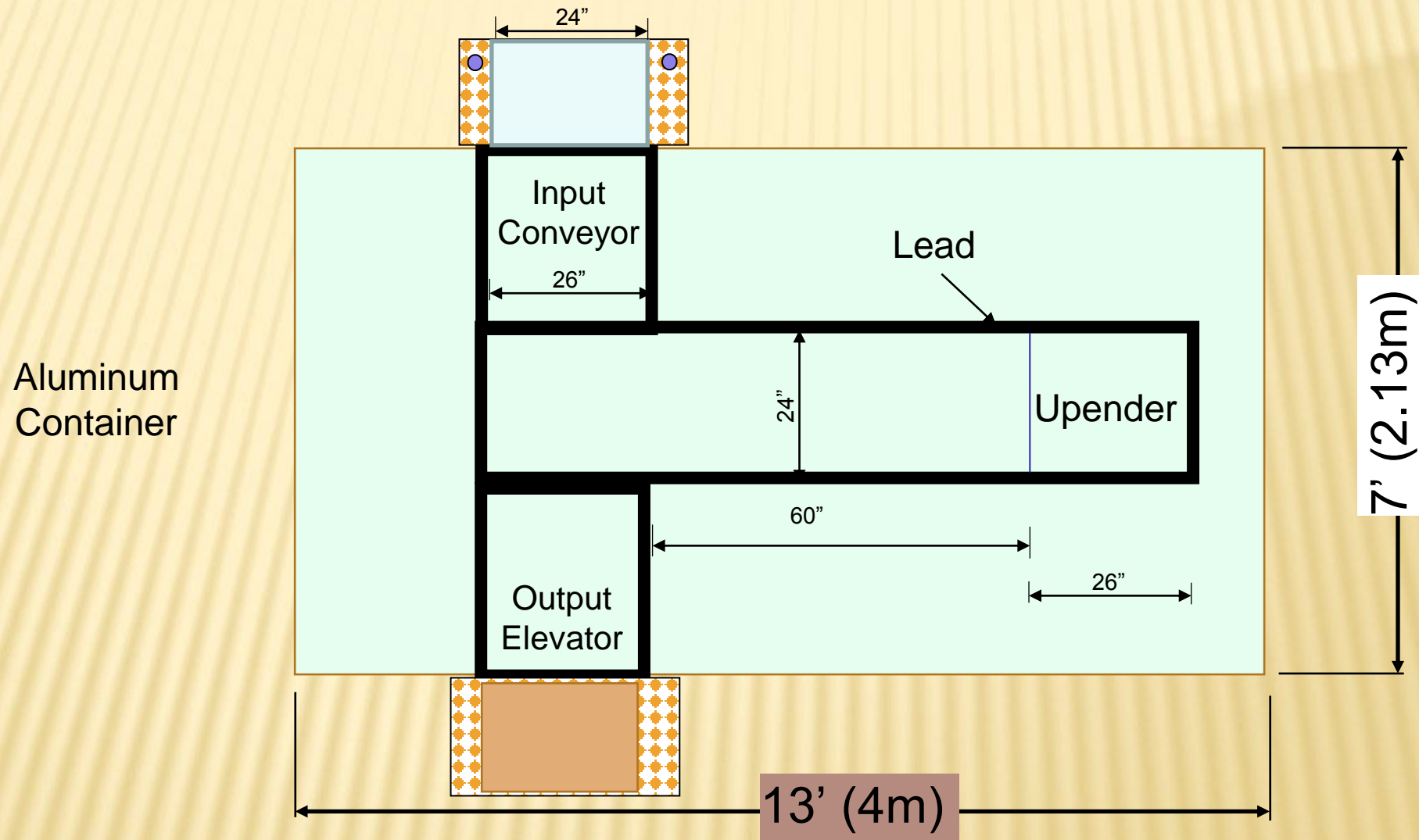
- Internet monitoring and record keeping
- Radiation field balancing to improve DUR
- Wider radiation field
- Self Contained Module

Aluminum Container



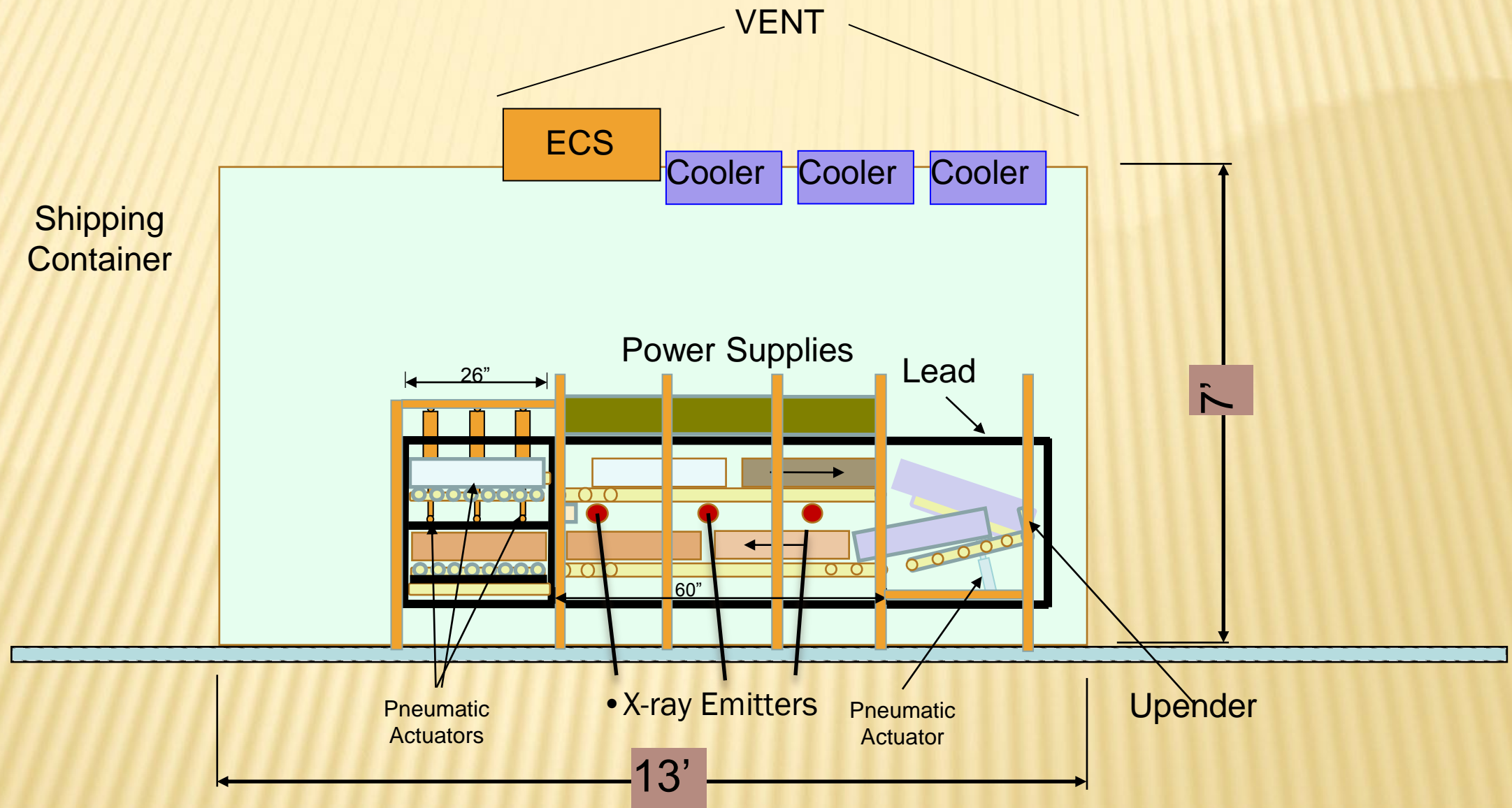
X-Ray Irradiation Device

Top View

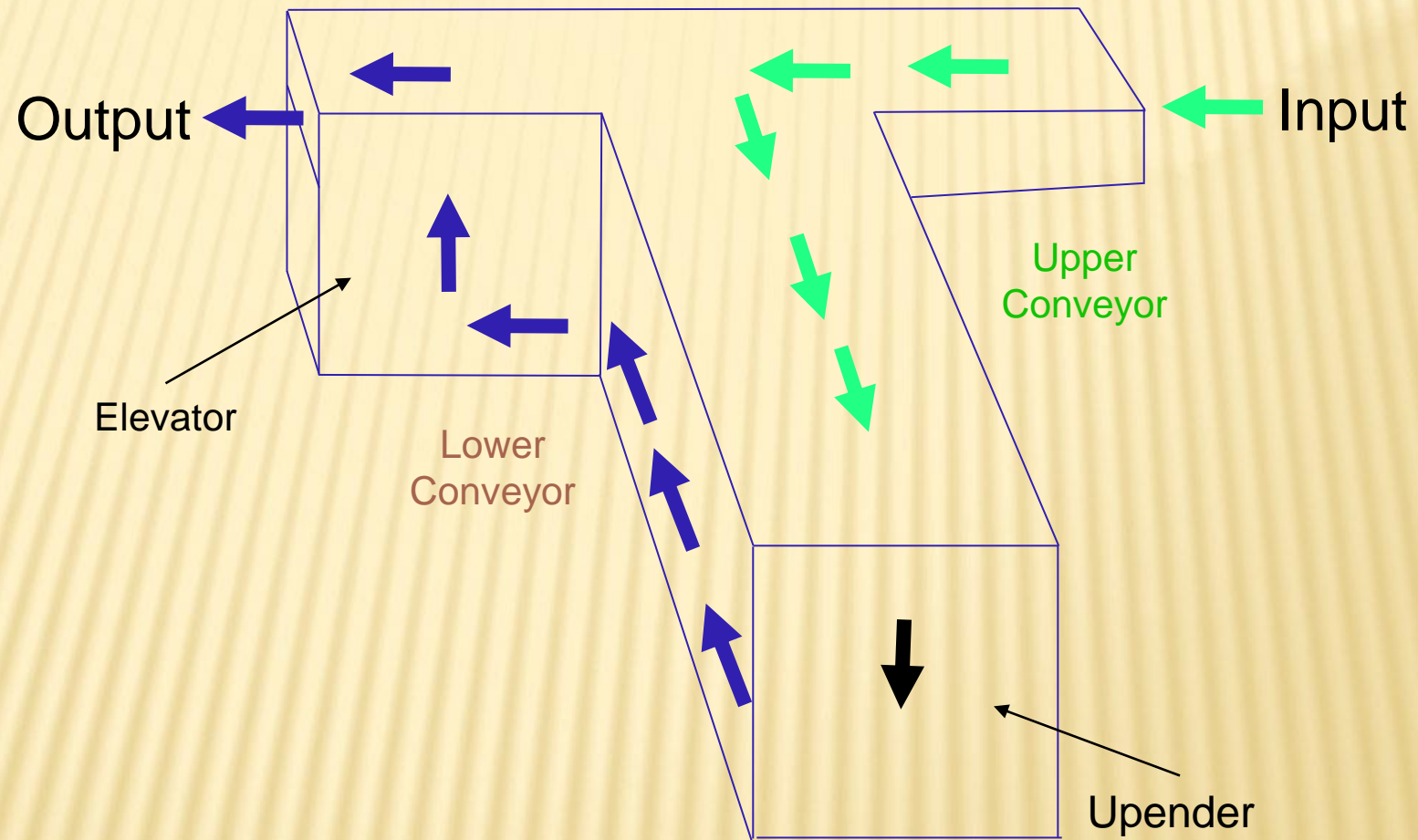


X-Ray Irradiation Device

Left Side View



Product Flow Through Lead Enclosure



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- Throughput

Throughput

Bugs 3

Bugs 2

Bugs 1

