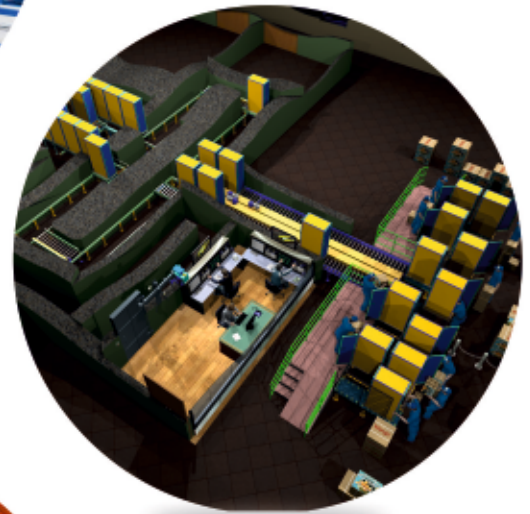




SYMEC
ENGINEERS
(INDIA) PVT. LTD.

GAMMA IRRADIATION PLANTS for Industrial & Research Applications



WHO WE ARE

Established in 1989 in Mumbai India,
by Kadaba Champak Vas, a former scientific officer at
Bhabha Atomic Research Centre, Mumbai.

Built India's first indigenous gamma irradiation plant
at Kidwai Memorial Hospital, Bangalore in 1990

**Symec specializes in delivering
state of the art, custom designed
equipment and automated systems for
Nuclear, Defense, Medical & Food
Processing Industries**



SYMEC ADVANTAGE

Quality oriented mind-set with passion
for engineering excellence

Specialized in building mission critical
systems operating in hazardous environments

Focus on fundamentals and design-based culture

Agile and flexible design philosophy

PRODUCT RANGE

Gamma Irradiation Plants:

Design and manufacture of fully automated Industrial Gamma Irradiation Plants for treatment of Medical, Agro and other products.

In over three decades, Symec has built Gamma Irradiation Facilities for different applications all over India & other countries.



Automation Systems:

Design and manufacture of custom automation systems for Nuclear, Defence & Pharmaceutical industries.

Deep domain knowledge in building fault-tolerant systems with safe shut-down capability in all situations.



Process Systems:

Design and manufacture of High Temperature and High Pressure Process Systems for Materials testing and other R&D applications. Pressures of upto 350 bar and Temperatures of upto 760 degrees c available.

GAMMA IRRADIATION MILESTONES



1990

Symec commissions India's first Indigenous high dose Irradiation plant

2002

Symec commissions India's first low dose agro Irradiation plant

2005

Symec commissions India's first Industrial Batch type Irradiation plant

2012

Symec commissions India's largest Irradiation plant of 5 Million curies capacity for Nipro India Corporation in Shirwal

2013

Symec commissions its first International Plant in Sri Lanka

2014

Symec commissions a Blood Irradiator for IAEA in Ethiopia for the Sterile Insect Technique

2015

Symec commissions an agro gamma irradiator for the Maharashtra State Agricultural Marketing Board

2016

Symec becomes first company in India to achieve USDA-APHIS approval for its plants

2017

Symec commissions India's first bulk sewage sludge Irradiation plant for Ahmedabad Municipal Corporation

2018

Symec commissions India's first Mega Food Park Irradiation plant (Avantee Mega Food Park Pvt Ltd)

2021

Symec commissions India's second bulk sewage sludge Irradiation plant for Indore Municipal Corporation

2022

Symec commissions a dedicated Rubber Latex Glove Irradiation Facility for Ansell India Pvt Ltd



TYPES OF GAMMA RADIATION PLANTS

Multipurpose plants (low, medium & high dose):

Can be used to process the full range of products commonly treated in the industry, from potatoes and onions to medical disposables.

SYM-1: Carrier-type continuous gamma irradiator



SYM-5: Tote box type continuous gamma irradiator



Agro-irradiation plants:

Dedicated agro-irradiation plants capable of treating low and medium dose products.

SYM-8: Agro-product continuous gamma irradiator



Irradiation Plants for Special Applications:

Dry Sewage Sludge Irradiation Plant:

Fully Automated Bulk Handling Facility for Pre-processing, Gamma Irradiation & Enrichment of Dry Sewage Sludge enabling it to be used as a Bio Fertilizer.

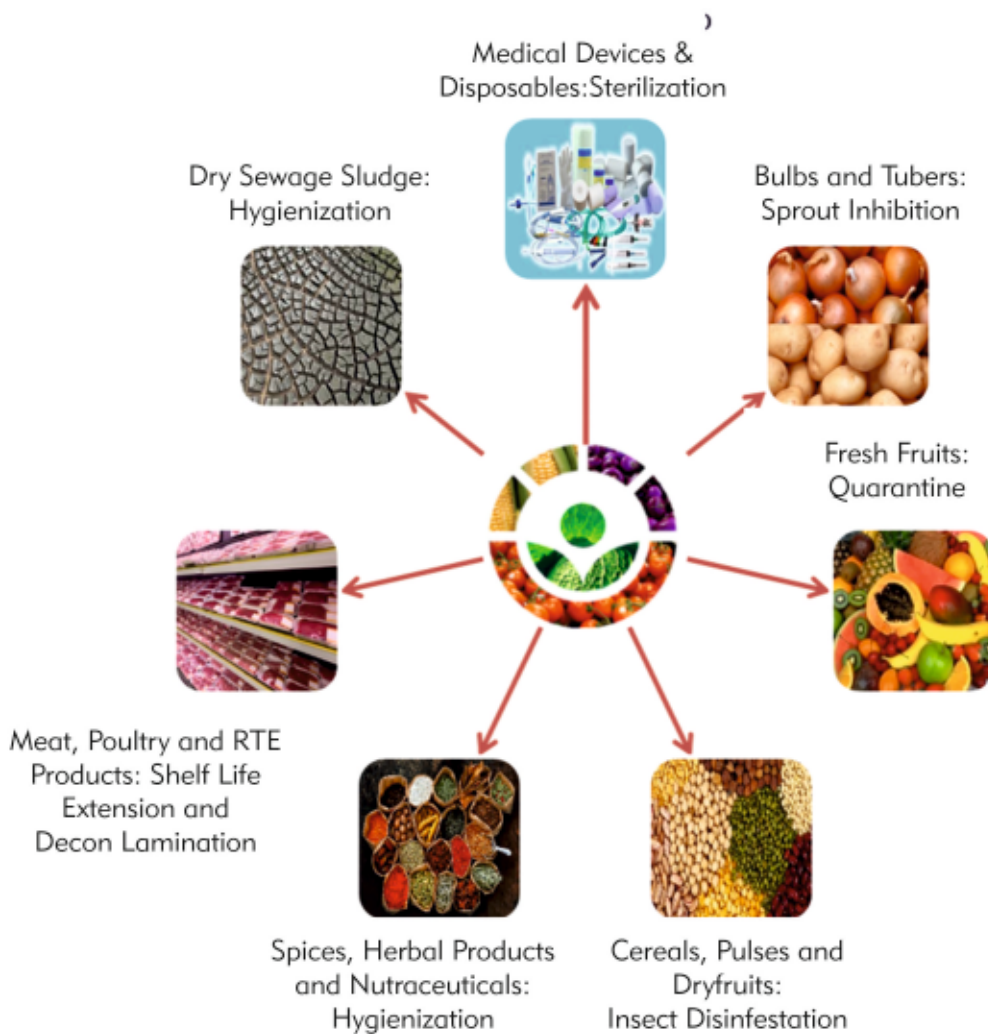


Semi-Commercial Gamma Irradiation Plant for Sterile Insect Technique Application:

Batch Turn Table type Facility for treatment of Animal Blood & Insect Irradiation



APPLICATIONS:



MEDICAL PRODUCT STERILIZATION

Sterility Assurance

Medical disposables

- Rubber Latex Gloves
- Surgical Sutures & Bandages
- Surgical Blades
- Surgical Needles

Other medical products

- Implants
- Kidney Dialysis Kits

Pharma Products

- Petri Dishes & Media Plates
- Vial Rubber Stoppers
- Centrifuge Tubes
- Blood Collection Sets
- Gowns & Sheets

APPLICATIONS: FOOD PRODUCTS

Spices & Dehydrated Vegetables:

- Fresh Ground & Whole spices
- Dehydrated Onion & Garlic Powder
- Ayurvedic Herbs, Medicines & Granules

Fresh Fruits like Mangoes & Pomegranates:

- 3 Plants built by Symec have been approved for Phytosanitary treatment of mangoes for export to USA, Australia & New Zealand



Food Grains, Cereals and Pulses:

- Disinfestation of the food grains to reduce losses during storage
- Bulk Handling & treatment of products with automated bagging after treatment



APPLICATIONS: OTHERS

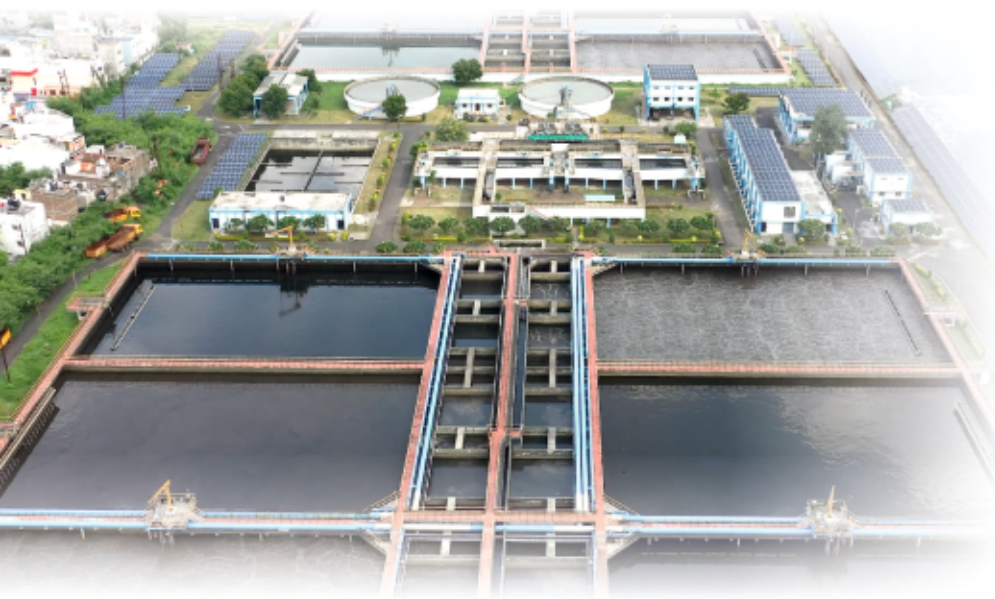
Chilled/Frozen Seafood, Poultry & Meat:

SYMEC has developed special Insulated tote boxes which can maintain products at chilled/ frozen condition for 8 hrs. This allows the cold chain to remain unbroken during the Irradiation process.

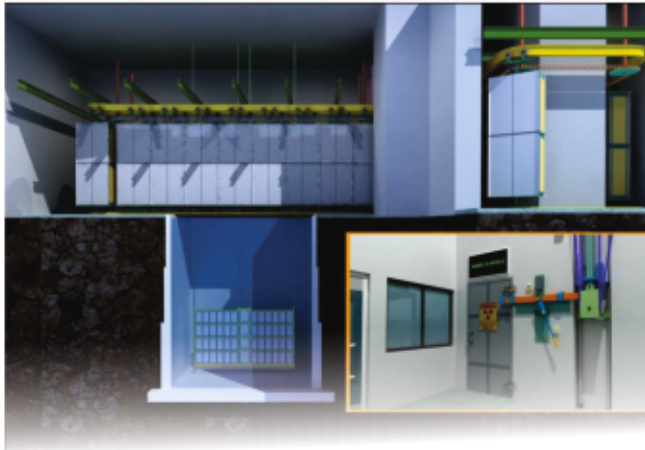


Dry Municipal Sewage Sludge

Dry Sewage Sludge from STPs can be treated to eliminate harmful pathogens like Listeria, salmonella, etc. allowing it to be used as an organic fertilizer or for soil rejuvenation



SYM - 1 CARRIER TYPE CONTINUOUS GAMMA IRRADIATOR



Plant Specification:

Maximum Source Capacity	3 MCi
Tote Box Specifications	1060 mm X 460 mm X 1200 mm (capable of handling 230 kg of product at a density of 0.4 gms/cc)
Max. Design Throughput	23 m ³ /hr
Mode of Operation	Continuous type plant with product overlap design & shuffling system
Key Features	<p>Scissor lift assisted loading / unloading of products</p> <p>Source Raise System with Hydraulic power pack & mechanical interlock with personnel entry door</p> <p>Split source frame design for the efficient irradiation of high & low dose products</p> <p>DM plant and pool water conditioning and monitoring</p> <p>Irradiation cell Ventilation System</p> <p>PLC based control and safety systems with SCADA and HMI interface</p> <p>In cell fire fighting and lightening system</p> <p>Bulk handling and Irradiation of Dry Sewage Sludge</p>

Products	Dose Range (kGy)	Bulk Density (gmm/cc)	Production/hr @1000kCi
Tubers (Onions, Potatos, etc)	0.02 to .2	0.4	9 MT/hr
Rice / Wheat, Cereals & Pulses	0.25 to 1	0.6	13 MT/hr
Fried Fruits & Vegetables	0.25 to 1	0.35	6 MT/hr
Fresh Chilled Meat, Poultry & Seafood	1 to 3	0.6	13 MT/hr
Spices, Herbal & Dehydrated Products	6 to 14	0.45	3 MT/hr
Pet Food	6 to 14	0.45	3 MT/hr
Medical Disposables	25 to 30	0.15	0.5 MT/hr
Dry Sewage Sludge	7 to 13	0.6	3.33 MT/hr

SYM - 5 TOTE BOX CONTINUOUS GAMMA IRRADIATOR

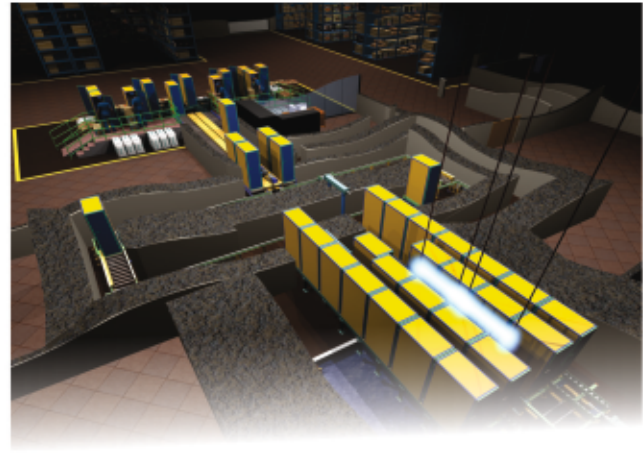
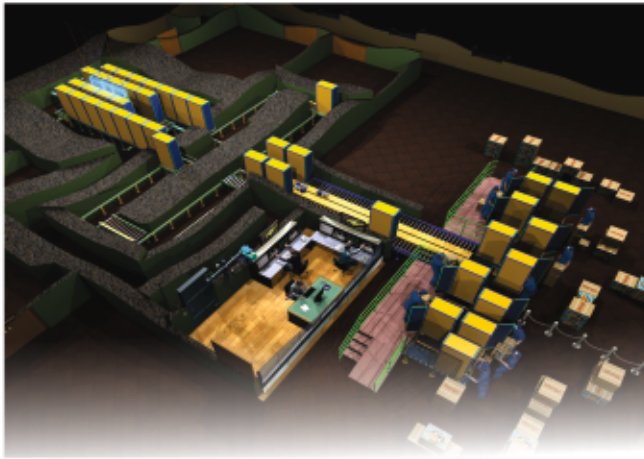


Plant Specification:

Maximum Source Capacity	5 MCi
Tote Box Specifications	1040 mm X 630 mm X 1800 mm (capable of handling 470kg of product at a density of 0.4 gms/cc)
Max. Design Throughput	47 m ³ /hr
Mode of Operation	Continuous type plant with product overlap design & in-cell shuffling system
Key Features	<p>Product Handling System for cell and labyrinth with in-cell shuffling feature</p> <p>Scissor lift assisted loading / unloading of products</p> <p>DM plant and pool water conditioning and monitoring</p> <p>Irradiation cell Ventilation System</p> <p>PLC based control and safety systems with SCADA and HMI interface</p> <p>Source pass mechanism with a total of 8 passes i.e. 4 in the lower level & 4 in the upper level with a total of 48 irradiation positions</p>

Products	Dose Range (kGy)	Bulk Density (gmm/cc)	Production/hr @1000kCi
Tubers (Onions, Potatos, etc)	0.02 to .2	0.4	11 MT/hr
Rice / Wheat, Cereals & Pulses	0.25 to 1	0.6	16 MT/hr
Fried Fruits & Vegetables	0.25 to 1	0.35	8 MT/hr
Fresh Chilled Meat, Poultry & Seafood	1 to 3	0.6	16 MT/hr
Spices, Herbal & Dehydrated Products	6 to 14	0.45	2 MT/hr
Pet Food	6 to 14	0.45	2 MT/hr
Medical Disposables	25 to 30	0.15	0.4 MT/hr

SYM - 8 AGRO PRODUCT CONTINUOUS GAMMA IRRADIATOR



Plant Specification:

Maximum Source Capacity	1 MCi
Tote Box Specifications	860 mm X 490 mm X 2000 mm (capable of handling 500kg of product at a density of 0.6 gms/cc)
Max. Design Throughput	25 m ³ /hr
Mode of Operation	Continuous type plant with product overlap design meant to handle low to high medium dose agro products & spices
Key Features	<p>Product Handling System for cell, labyrinth, loading and unloading area</p> <p>Product Tote boxes made of high strength Aluminium alloy and Mild steel frame</p> <p>Source Raise System with Hydraulic power pack & mechanical interlock with personnel entry door</p> <p>DM plant, pool water conditioning and monitoring</p> <p>Irradiation cell Ventilation System</p> <p>PLC based control and safety systems with SCADA and HMI interface</p> <p>Movable MS shielding for potato and onion irradiation</p>

Products	Dose Range (kGy)	Bulk Density (gmm/cc)	Production/hr @1000kCi
Tubers (Onions, Potatos, etc)	0.02 to .2	0.4	11 MT/hr
Rice / Wheat, Cereals & Pulses	0.25 to 1	0.6	12 MT/hr
Fried Fruits & Vegetables	0.25 to 1	0.35	7.5 MT/hr
Fresh Chilled Meat, Poultry & Seafood	1 to 3	0.6	12 MT/hr
Spices, Herbal & Dehydrated Products	6 to 14	0.45	1.5 MT/hr
Pet Food	6 to 14	0.45	1.5 MT/hr



**SYMEC
ENGINEERS
(INDIA) PVT. LTD.**

A-86, M.I.D.C. T.T.C. Indl. Area,
Thane Belapur Road, Khairane,
Navi Mumbai - 400 705, INDIA
Tel No : +91- 9029080424 / 556
Email: info@symecengineers.com
Website: www.symecengineers.com

