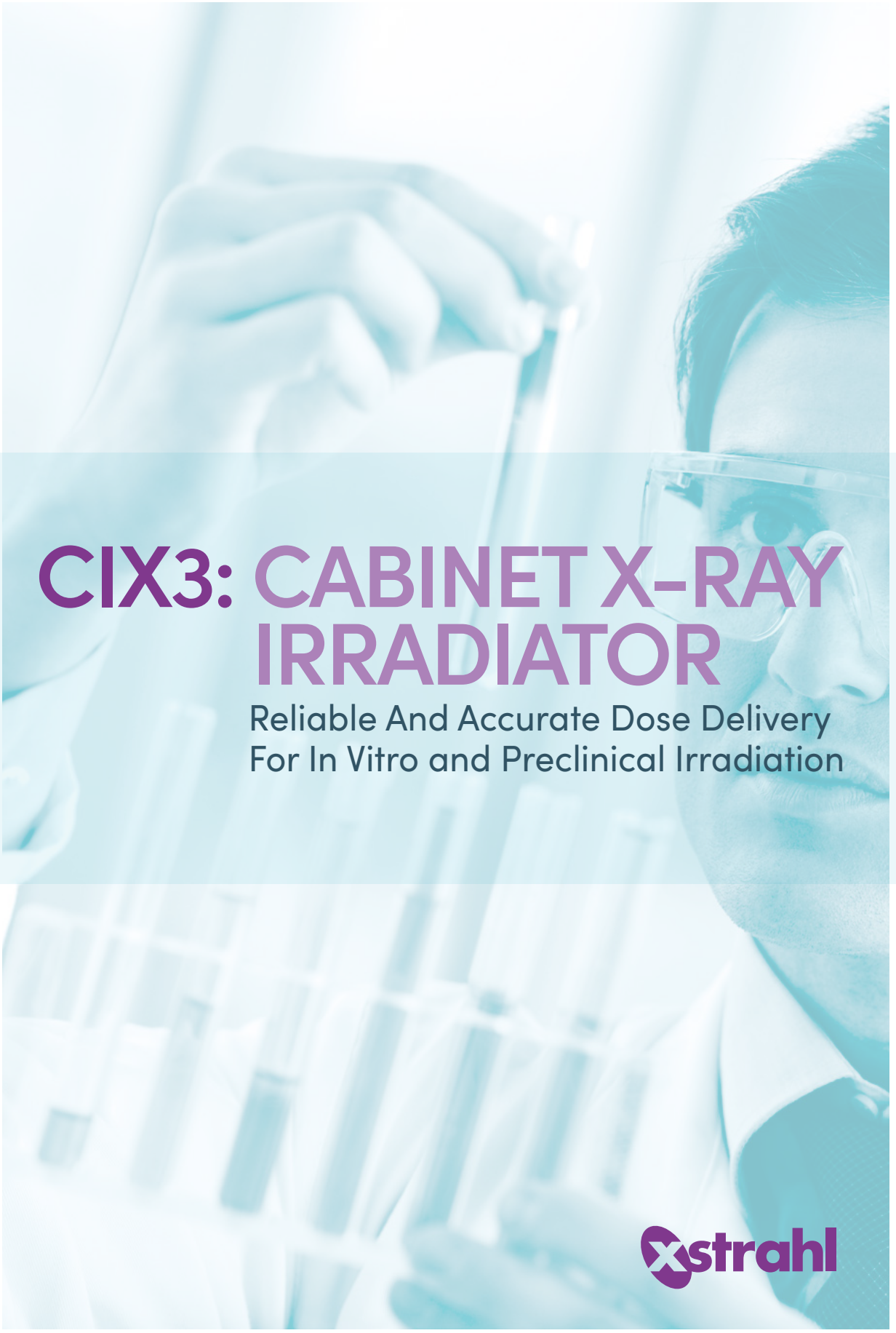


CIX3: CABINET X-RAY IRRADIATOR

Reliable And Accurate Dose Delivery For In Vitro and Preclinical Irradiation

Xstrahl

Xstrahl's CIX Series cabinet irradiators are free-standing, self-contained X-ray irradiators, designed to facilitate the safe and accurate irradiation of biological samples within a standard laboratory environment.

Fulfilling the requirements of in vitro and in vivo biological research, the CIX3 is a 320kV self-contained cabinet irradiator incorporating the irradiation chamber and system electronics in one enclosure.

The intuitive and easy to use software interface allows for multiple user logins, the X-Ray exposures can be programmed and executed automatically. In addition to removing the health and safety burden associated with the use of radioactive sources, the Xstrahl CIX3 provides a simpler, safer and lower cost alternative to radioisotope irradiators.

THE CIX3 CABINET IRRADIATOR CONSISTS OF:

- 225kV metal ceramic X-ray tube
- Large lead-shielded irradiation chamber
- Movable operator control panel with an intuitive touch screen interface
- Quick-change beam flattening filters and conditioning filters
- Unique vertical movement access door, resulting in a smaller footprint and safe, easy access to specimens
- Easy access cable maze for addition of external tubing and cabling
- Full physics commissioning report

OPTIONAL ACCESSORIES

- Dosimetry system
- SmART-RAD cabinet dosimetry software for improved dose calculation

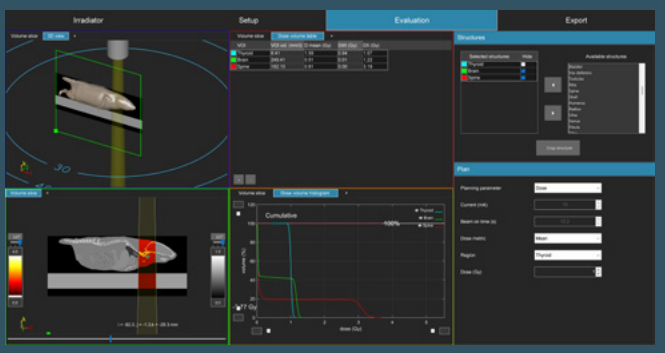
Research Applications

- *In vitro* irradiation
- *In vivo* irradiation
- DNA repair mechanisms
- Tumour micro environment
- Bystander effects
- Normal tissue toxicity
- Low dose radiobiology studies
- Hypoxia research
- Combination therapy studies
- Radioimmunotherapy
- Immunology
- Bone marrow chimeras
- Total body irradiation
- Irradiation of materials and components
- Space irradiation

Ongoing Support

Xstrahl prides itself on providing best in class customer service with every system. We are proud to provide an unsurpassed level of service, from initial planning through to after sales maintenance and both technical and applications support.

From user training to our extensive range of ongoing maintenance and service contracts, the Xstrahl team's comprehensive in-depth knowledge ensures an unrivalled level of technical support, is provided to all users. Our international network of factory trained and clinically experienced engineering teams support hundreds of clinical radiotherapy and research systems worldwide.



Introducing

SmART-RAD

An easy-to-use dosimetry tool for the CIX cabinet irradiators simulating your precise study using a powerful Monte-Carlo algorithm.

- Delivers insight and understanding of how dose will be absorbed in different tissues which may affect experimental outcomes.
- Accurate & reproducible 3D dose distribution for in vitro and in vivo studies
- Aligns with the requirements for consistent dosimetry reporting.
- Complements and supports the move from Caesium to X-ray
- Export the complete experiment set-up and dosimetry report to support publications

Dosimetric validation of SmART-RAD Monte Carlo modelling for x-ray cabinet radiobiology irradiators Phys Med Biol. 2024 Apr 19;69(9):095014. doi: 10.1088/1361-6560/ad3720

Powered by

SMART SCIENTIFIC SOLUTIONS

CIX3 FEATURES

STANDARD FEATURES

The standard components of the system include:

- No additional room shielding required - the CIX3 complies with radiation protection regulations in Europe, USA & the rest of the world
- Space-saving, vertically operated, lead-lined door – drastically reduces the system footprint
- Large irradiation chamber with fully adjustable specimen table from 20cm to 70cm SSD
- Quick-change beam conditioning filters
- Automatic warm up procedure with optimal beam conditioning keeps the X-ray tube in peak condition
- Cable maze side port for safely introducing cables and tubing into the irradiation chamber
- Proven long-term reliability of components
- Movable touch screen control panel
- Intuitive user interface allows the user to independently set the kV, mA and time for an exposure or select from saved pre-programmed exposures
- Individual, password-protected accounts
- System usage data including operator logon time, X-ray exposure time and the total number of exposures can be exported to a USB memory stick
- CCTV video system for live specimen monitoring
- Full physics commissioning and unique beam flattening filters to give 95% beam homogeneity over 90% of the field

OPTIONAL FEATURES

The optional components of the system include:

- Independent dose measurement system for real-time dose monitoring and QA
- Motorized Turntable to maximise dose homogeneity
- Environmental Hypoxia chamber
- Air-blower heating system to warm the irradiation chamber
- Bespoke beam conditioning filters
- Fixed size beam collimators
- Dosimetry system
- Mouse containment cages
- Cut out and shield sets for targeted irradiation

SPECIFICATIONS

CABINET SIZE AND WEIGHT

Overall Dimensions: 2090mm H x 1000mm W x 810mm D
Irradiation Chamber: 650mm H x 595mm W x 650mm D
Weight: 1450kg (excluding generator and cooling system)

X-RAY TUBE

Type: Metal ceramic, fixed anode, unipolar water cooled
Maximum Voltage: 320kV
Maximum Current: 1.0mA to 30.0mA
Power: 3200W/3.2kW (broad focus for designated stability)
Focal Spot Size (EN12543): 8.0mm
Inherent Filtration: 4.0mm Be (Berilyum)
Divergent Beam Angle: 40°
Maximum Field Size: 51.3cm diameter at 70cm FSD

HT GENERATOR & COOLING SYSTEM

Maximum Power: 4200W/4.2kW
kV Range: 23 to 320kV
kV Accuracy: ±1% of demand value
kV Reproducibility: Better than ± 0.05kV
mA Range: 1.0mA to 30.0mA (auto power restricted)
mA Accuracy: ± 0.5% of demand value
mA Reproducibility: Better than 2µA
Cooling System: Oil-to-water /oil-to-air

About Xstrahl

Xstrahl is a medical technology company that designs clinical and research systems to help eradicate cancer. For more than 20 years, Xstrahl has been shaping the development of superficial and orthovoltage therapies for cancer treatment and advancing pre-clinical research. Xstrahl systems are in operation at more than 700 treatment and research facilities worldwide.

Xstrahl.com