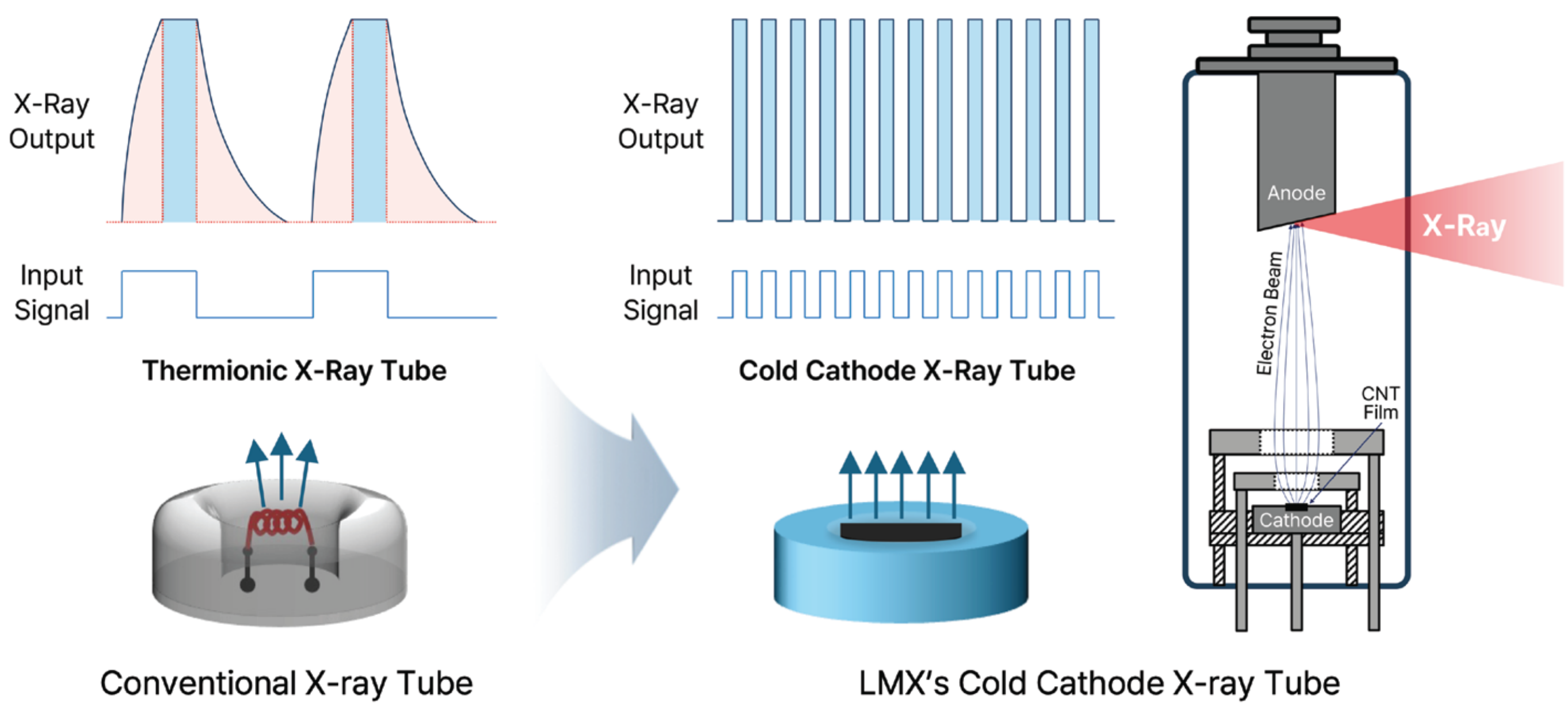


CNT Cold Cathode X-ray Tubes with 5.5 kW Power Rating

Next-Generation X-Ray Imaging Technology



Advantages of cold cathode X-ray tubes over conventional X-ray tubes

Low Unnecessary Radiation Exposure

Low Operating Energy

High Operating Speed

Easy Dose Control

Multi X-ray Source

Digital Cold Cathode X-ray Tubes



Advantages of Cold Cathode X-ray Tubes over Conventional X-ray Tubes

Material → Carbon Nanotube

- Small Radius → Energy Efficient
- High Electric Conductivity → Large Current
- High Thermal Conductivity → High Stability
- High Mechanical Stability → High Stability

Operating Temp. → Cold Cathode

Room Temperature → Low Energy Consumption

High-temperature induced X-ray emission vs. Electric field induced X-ray emission

Hot-Cathode (Conventional) vs. Cold-Cathode (LMX)

Mode → Digital Pulse Drive

Digital Switching → Fast, Low Unnecessary Radiation Dose

Slow switching modes vs. Fast switching modes

Analog Drive (Conventional) vs. Digital Drive (LMX)

Conventional Systems (with hot-cathode tube)		Next-gen Systems (with cold-cathode tube)	Advantages of Next-gen Systems
Unnecessary Radiation Dose	High	Low	Health benefits / increased frequency of X-ray examinations
Energy Consumption	High	Low	Potential to create new markets for battery-powered systems
Operation Speed	Slow	Fast	Enhanced image resolution and increased accuracy in treatments
Drive Method	Analog	Digital	
Multi X-ray Source Capability	Difficult	Easy	Cost-effective CT implementation possible

Comparison of Cold Cathode X-ray Tubes

Carbon Nanotube Paste X-ray Tube

Number of electron emission sites : 200 ~ 300 / per paste

Electron microscopic image of CNT paste, Schematic diagram of CNT paste, Actual image of CNT pastes in X-ray tube

LMX's Carbon Nanotube Film X-ray Tube

Number of electron emission sites : hundreds of thousands / per film

Electron microscopic image of CNT film cross section, Schematic diagram of CNT film, Implementation of CNT film in X-ray tube

High X-ray dose, high X-ray uniformity, high resolution, simple structure → Favorable for use in medical diagnostic X-ray systems

CNT Paste X-ray Tubes		CNT Film X-ray Tubes	Benefits of Systems with LMX's X-ray Tubes
X-ray Dose	Low	High	Wide medical diagnostic range
X-ray Uniformity	Low	High	Precision diagnostic applications
Beam Focal Spot	Large	Small	High resolution
Structure	Complex	Simple	High stability and manufacturing yield
Application Range	Limited to portable intraoral systems	Medical and dental systems	Applicable in various diagnostic fields

Dental X-ray Tubes

Model	Max Current	Max Voltage	Focal Spot	Max Power Rating	Dimensions and Weight
LD-10	10 mA	100 kV	0.5 mm	1.0 kW	Φ 42 mm x 120 mm, 350 g
LD-20	20 mA	100 kV	0.5 mm	2.0 kW	Φ 42 mm x 120 mm, 350 g

Medical X-ray Tubes

Model	Max Current	Max Voltage	Focal Spot	Max Power Rating	Dimensions and Weight
LM-10	10 mA	120 kV	0.5 mm	1.2 kW	Φ 42 mm x 120 mm, 350 g
LM-20	20 mA	120 kV	0.5 mm	2.4 kW	Φ 42 mm x 120 mm, 350 g
LM-30	30 mA	120 kV	0.5 mm	3.6 kW	Φ 42 mm x 120 mm, 350 g
LM-50	50 mA	120 kV	0.5 mm	5.5 kW	Φ 42 mm x 120 mm, 350 g