

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202611031556 A

(19) INDIA

(22) Date of filing of Application :16/03/2026

(43) Publication Date : 08/05/2026

(54) Title of the invention : X-RAY TUBE COOLING DEVICE

(51) International classification	:H01J 35/16, H05G 1/02, H01J 35/10, H01J 35/12, H05G 1/00	(71)Name of Applicant : 1)Chitkara University Address of Applicant :Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India. Rajpura Punjab India (72)Name of Inventor : 1)Mohit Sharma 2)Dr. Ayush Dogra
(31) Priority Document No	:NA	
(32) Priority Date	:NA	
(33) Name of priority country	:NA	
(86) International Application No	:	
Filing Date	:01/01/1900	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

An X-ray tube cooling device, comprises an X-ray tube housing 101 enclosing an anode 102 and a cathode assembly 103 configured to generate X-rays upon application of high voltage, a phase-change material (PCM) chamber 104 embedded around the X-ray tube housing 101, the chamber 104 containing heat-absorbing phase-change materials configured to absorb thermal energy generated during X-ray emission by undergoing a solid-to-liquid phase transition, a thermal conduction interface 105 comprising a high thermal conductivity material configured to transfer heat generated from the X-ray tube to the PCM chamber 104, a monitoring unit 106 comprising at least one temperature sensor to monitor thermal conditions of the X-ray tube and a communication module operatively coupled with the monitoring unit 106 thereby enabling real-time monitoring and management of the thermal state of the X-ray tube to prevent overheating and maintain operational stability.

No. of Pages : 18 No. of Claims : 8