Contribution ID: **1029** Type: **Poster**

5P31 - IMPROVEMENT OF THE SWITCHES RELIABILITY ON THE CEA 1MV LTD

Friday 28 June 2019 13:30 (1h 30m)

The CEA 1MV Linear Transformer Driver (LTD) has been operated since 2010 for flash X-ray radiography studies. This generator is composed of 10 cavities; each cavity includes 16 bricks representing two capacitors (GA 35436, 100kV, 8nF) and one multi-gaps air pressurized switch. The switches consist of a stack of annular electrodes inside an insulating body of polyamide. The postential distribution is carried out by corona effect using needles. The feedback of experience on the reliability of this concept after more than 4000 shots shows an aging of spark gaps inducing self-breakdowns before the end of the voltage charging of the cavities. We present here the different observations made during the maintenance operations of the switches and method used to qualify them after these operations. We propose also a solution to improve the reliability of these spark gaps from an analysis on the distribution between the corona and the current in the spark gap body.

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Session Classification: Poster - Compact and Explosive Pulsed Power and Pulsed Power Systems

Track Classification: 7.4 Linear Transformer Drivers