

The Next generation of Neutron Generator Technology



JNG-2



What is the Innovation?

A new discovery in plasma physics has led to a patented breakthrough neutron generator technology that achieves superior performance at lower costs.

Why is it a leading technology?

A smaller and more compact device, adaptable and easily customisable to suit multiple applications in scientific research and industry.

A simplified design allows more reliable performance and a longer operating life.

Reduced input power requirements and scalability for higher powered devices with a greater neutron output.

Significantly reduced manufacturing costs mean a more affordable end product.

What are the applications?



Research and Nuclear Industry:

Calibrating neutron detectors for spontaneous fission neutrons and higher energy neutrons including AmBe sources, neutron activation analysis, transuranic waste assay, and neutron radiography.



Security:

Ship and air luggage security inspection, detection of explosives, chemical weapons and drugs.



Mining:

Oil exploration and detection, on-line assaying of various materials (such as cement and coal).

Technical Features:

- Neutrons emitted are monoenergetic at 2.45MeV for D-D interactions and 14MeV for D-T interactions. The neutron source behaves like a point source, localised to a central dense plasma core spread over a few cm. The neutrons are emitted isotropically.
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- An output of 106 n/s at 30cm gives a dose rate of 30 μ Sv/hr (3 mrem/hr). Exposure to 108 n/s at 30cm gives a dose rate of up to 2 mSv/hr (2 rem/hr).
- Our device typically operates at half the voltages of accelerator based neutron tubes, making power supply requirements more accessible and operation much safer. This radical difference negates the need for SF6 insulating gas and other expensive measures for power supply lines. No maintenance required. No warm up time.
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- The device can be refuelled and serviced at the end of the operating life to extend its overall lifetime.

Technical Specifications:

Product Id:	JNG-2	JNG-3
DD Neutron Yield	1*10 ⁵ n/s	1*10 ⁶ n/s
DT Neutron Yield	1*10 ⁷ n/s	1*10 ⁸ n/s
Stability (short term)	< 5%	< 5%
Voltage	50 kV	70 kV
Current	2.5 mA	5 mA
Power Consumption	160 W	385 W
Case Diameter	13 cm	13 cm
Case Length	1 m	1 m
Tube Weight	17 kg	17 kg
Projected Lifetime	3-5 years	3-5 years
Tritium Inventory (DT only)	19.5 Ci	19.5 Ci



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