nGen™-300 FOR SHARP PULSED NEUTRONS

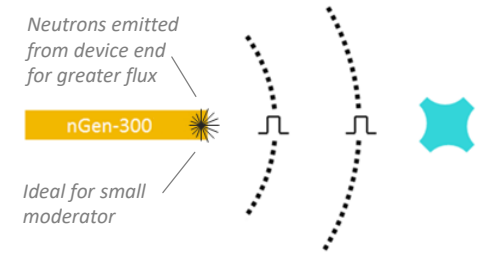
Powered by Starfire Industries nGen™ technology

HUMAN PORTABLE FOR FLEXIBLE OPERATION

The Starfire Industries nGen™-300 is a lightweight, field deployable fusion neutron generator. Its compact size and battery-powered operation allow greater task flexibility – promoting analysis in a variety of positions and applications. Modular design enables numerous configurations to suit your application. The nGen™-300 is portable, so one system can service multiple locations, saving time and money with increased usability. The DT version, available in 2019, will have 50x the neutron output.

MEET TIGHTER TOLERANCES WITH SHARP PULSING

Sharp neutron pulsing enables enhanced detection and evaluation capabilities beyond those of continuous-output generators. Pulsing makes possible time-resolved gamma and neutron detection, higher signal-to-noise ratio, detection of materials at lower concentrations and performing neutron time of flight. With patented technology, nGen™-300 neutrons are generated <3mm from the device end or an extended snout to increase flux by more than 50%, minimize moderator size and improve overall response.



Sharp pulsing with 1/e rise and fall times under 5µs and zero dark current

BENEFITS OF LOWER ENERGY DD NEUTRONS

The nGen™-300-DD avoids radioactive materials by utilizing the DD fusion reaction to generate neutrons. Resulting ~2.5 MeV DD neutrons are lower energy than DT ~14 MeV neutrons, making DD a more suitable option for radionuclide source replacement. The lower energy neutrons allow for advanced threshold neutron detection & PGNAA, fewer interfering secondary reactions, faster thermalization time for pulsed applications, more compact moderator for thermal applications and lighter personnel shielding requirements.

nGen™-300 with shroud & power box

THE nGen™-300 KEY FEATURES

- Pulsed neutrons with sharp on-off
- Sealed & compact for portable applications
- Designed for AC or battery-power
- Neutrons generated at tube end for higher available neutron flux
- DD version: avoids radioactive materials; not "dual-use"/export restricted
- DT version: 50x neutron yield
- Designed to operate on AC or Batteries
- Integrated HV supply
- Electrically grounded neutron region on small snout
- Close moderator coupling to minimize active interrogation mass
- Configuration options: backpack, crate, suitcase, robot, vehicle, customized

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APPLICATIONS

- On-site Inspection
- PGNAA/Materials Analysis
- Active Interrogation
- Security/Inspection
- Quality Control
- Neutron radiography
- Laboratory research
- Mineral Analysis

nGen™ 300 PC software screenshot

SPECIFICATIONS

Neutron Output	
Time-averaged Yield	10^7 DD n/s; $5x10^8$ DT n/s @ 5% DF
Pulsed DD Neutron Energy	2.5MeV
Ion Source Type	ECR-coupled plasma
Pulse Rate	0-1 kHz standard
Pulse Width	2-1000µs
Pulse Rise/Fall Time	< 5µs
Nominal Duty Factor	5-10%
Dark Current between Pulses	None
Max Neutron Flux	> $2x10^7$ n/cm^2•s during pulse for DD
Power and Operation	
Operating Voltage	150kV
Power Requirements	400W
System Information	
Neutron Source Dimensions	3” OD x 19.6” L (7.6 cm OD x 46 cm L); without shroud
Neutron Source Weight	11 lbs, 9 oz.
Supporting Hardware Dimensions	6.25” W x 10” H x 15.75” L (31 cm W x 31 cm H x 31 cm L)
Supporting Hardware Weight	29 lbs, 6 oz. + 5.5lb battery
Integrated cooling w/cowling Dimensions	3.5” OD x 22” long
Battery Operation Time	45 min (at 5% duty factor); 30 min (at 10% duty factor)

nGen™ Technology makes the nGen™-300 possible

Starfire Industries’ nGen™ Technology has 5-10x greater neutron output over existing generators of the same size. Patented biased RF ion source, ultra compact HV and grounded target technologies enable higher voltages in a small form factor, higher power operation >100W and detector placement near the neutron source plane.

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