nGen™-800 FOR HIGH OUTPUT NEUTRONS

Powered by Starfire Industries nGen™ technology

starfire industries

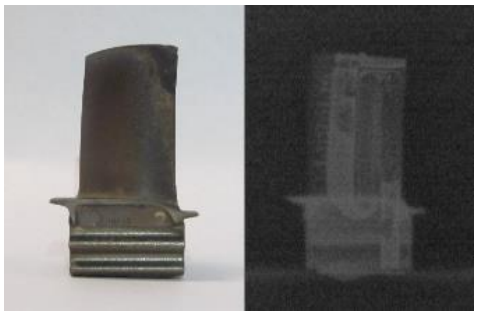
PORTABLE NEUTRONS FOR INTERROGATION

The nGen™-800 is a portable, easy-to-deploy **high-output sealed fusion neutron generator** suitable for a range of uses. One such use is neutron radiography, which produce images that allow the user to see inside dense materials to resolve internal structure of light materials – such as electrolyte distribution inside a lithium battery, adhesive debonding between composite structural parts or cracks in ceramic-metal brazed components for automotive engines – details that x-ray and ultrasound miss.

DO MORE WITH LESS USING GROUNDED TARGET

Using Starfire's patented biased-plasma source and grounded-target technology, the nGen™-800 generates copious neutrons a few mm from the device edge on a small-diameter extendable snout permitting:

- close coupling with moderator/collimator assemblies to minimize their size and weight
- greater than 2π solid angle access to the high-flux neutron emission zone
- higher neutron utilization leveraging forward-directed DD anisotropy



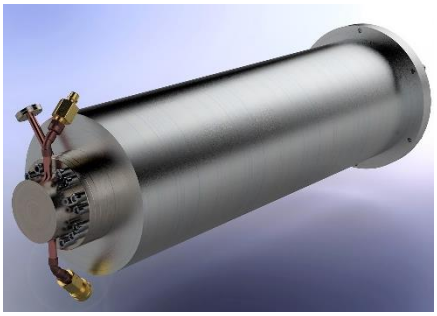
Neutron radiograph of turbine blade highlighting internal cooling channels

TAKE ADVANTAGE OF LOWER ENERGY DD NEUTRONS

The nGen™-800 avoids radioactive materials by utilizing the DD fusion reaction to generate neutrons. The resulting ~2.5 MeV DD neutrons are lower energy than DT ~14 MeV neutrons, making DD more suitable. The lower energy neutrons allow for advanced threshold neutron detection, fewer interfering secondary reactions, more compact moderator for thermal applications and lighter personnel shielding requirements. (Contact Starfire to discuss a design variation using Tritium.)

THE nGen™-800 ADVANTAGE

- **High neutron yield – 1e10 n/s**
- Sealed, compact form for human portable applications
- Designed for AC wall plug and remote computer control
- Neutrons generated at tube end for higher available neutron flux
- Multiple configuration options available for portability and use
- 1cm spot size for radiography, 3mm from end



nGen™-800 rendering

KEY FEATURES

- Avoids radioactive materials
- Not "dual-use"/export restricted
- Air-cooled
- USB to ethernet connection
- Simple software interface
- Safety feature: the generator shuts down when data link is lost

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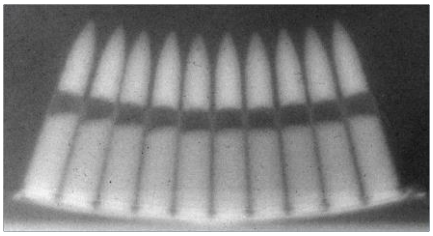
APPLICATIONS

- **Neutron radiography**
- PGNAA/Materials Analysis
- Active Interrogation
- Security/Inspection



nGen™ software screenshot

FEATURES SUITED FOR RADIOGRAPHY

- Cracks
- Inclusions
- Corrosion
- Material usage
- Fiber alignment/breakage
- Voids and porosity
- Delamination/de-bonding
- Adhesive flaws
- Underfill/overfill

SPECIFICATIONS

Neutron Output	
Time-averaged Yield	10^{10} n/s
DD Neutron Energy	~2.5MeV (DT 14MeV option by special request)
Ion Source Type	Electrodeless RF
Pulse Options	Continuous
Max Neutron Flux	~1x10^{6} n/cm^2•s
Power and Operation	
Operating Voltage	up to 250kV
HVPS Power Requirements	208V, 30A, Single Phase
Neutron Source Power Requirements	120V, 20A, Single Phase
System Information	
Neutron Source Dimensions	8” OD x 31.54” L
Neutron Source Weight	160 lb.
Supporting Hardware Dimensions	2’L x 3’W x 3’H
Supporting Hardware Weight	100 lb.
High Voltage Power Supply Dimensions	31”L x 17”W x 19”H
High Voltage Power Supply Weight	240 lb.
Warranty	500 operating hours, or 12 months

nGen™ technology makes the nGen™-800 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. (Patents: 9607720, 9008256, and others)

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