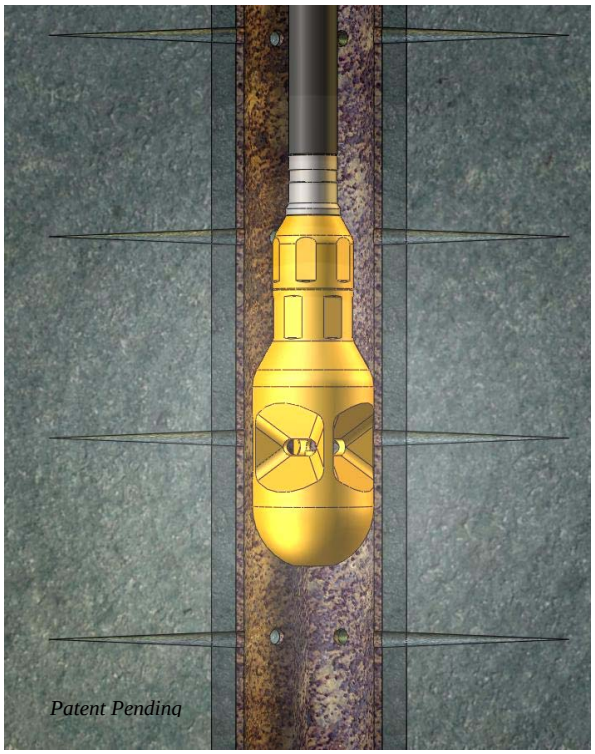
TEMPRESS®

NITROBLAST™

High-Intensity, Gas-Driven Acoustic Well Stimulation Tool



High-frequency sound can mitigate drilling- or production-induced skin damage if the intensity is high enough and the well is underbalanced so that fines loosened by the sound are flushed out of the formation[1]. The NITROBLAST™ tool creates high-power (up to 75 kW) sound at 2-20 kHz. Large diameter acoustic reflectors focus the sound on the formation. The measured sound intensity at the surface of a 6" borehole exceeds 190 dB (SPL), which is 300 times higher than the sound level near a military jet on takeoff. The tool is gas-driven to keep the well underbalanced during treatment.

Features and Benefits:

- High-intensity, high-frequency acoustic stimulation proven to be effective for permeability recovery
- Gas-driven to ensure flushing of fines by formation fluids during stimulation
- High-power allows fast, efficient treatment
- Simple with no moving parts for easy setup and reliable operation
- Compact for easy transport and deployment on 1-1/2" or larger coiled tubing

Applications:

- Drilling damage removal from coal bed methane and shale completions
- Tight gas well stimulation
- Depleted well stimulation
- Stimulation during routine well unloading operations

Specifications:

Two configurations are available for higher or lower flow rates. Both are sent with the tool, which is designed for easy change-out at the job site. The relatively wide operational parameters are clearly defined in the Operating Guide, making this tool easy to run. The acoustic signal can be monitored on surface with an acoustic pickup on the wellhead. The gas rate can then be adjusted to maximize the acoustic power output. Additional diameters down to 1-11/16" available on request.

Diameter and length (connected)	95.3 x 265 mm (3.75" x 10.4")
Tool connections	CT150010SA or CT206210SA
Serviceable well bore pressures	0.5 – 5 MPa (75 – 725 psi)
Design differential pressure	4 – 26 MPa (600 – 3800 psi)
Design flow rate	10 – 50 scmm (350 – 1800 scfm)
Acoustic power at design pressures	10 – 75 kW
Frequency Range	2 - 20 kHz

[1] van der Bas, F. et al (2004) "Acoustic stimulation to mitigate near-wellbore damage," *SPE90356*, Society of Petroleum Engineers, Richardson Texas.