



OTR-X INC. / TECHNICAL WHITEPAPER / REV. A

The OTR-X Acoustic Propulsion Stack

Bio-mimetic rotor acoustics, solid-state plasma flow control, and metamaterial ducting, unified into a single ultra-quiet VTOL propulsion architecture.

Abstract

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Propulsion Architecture — Five Pillars

Pillar	Function	Headline Metric
Bio-Mimetic Owl-Wing Rotor	Source-level tonal noise reduction	-12 dB attenuation
Active Surface Plasma (EHD) Actuators	Solid-state boundary layer control	+3.4° stall delay
Metamaterial Acoustic Ducting	Tuned Helmholtz noise cancellation	-9 dB insertion loss
In-House Non-COTS Drivetrain	Ceramic-hybrid, SiC-controlled power path	98.6% controller efficiency
Autonomous Avionics & Anti-Jamming	Edge AI, link-independent flight	1,000 hops/sec