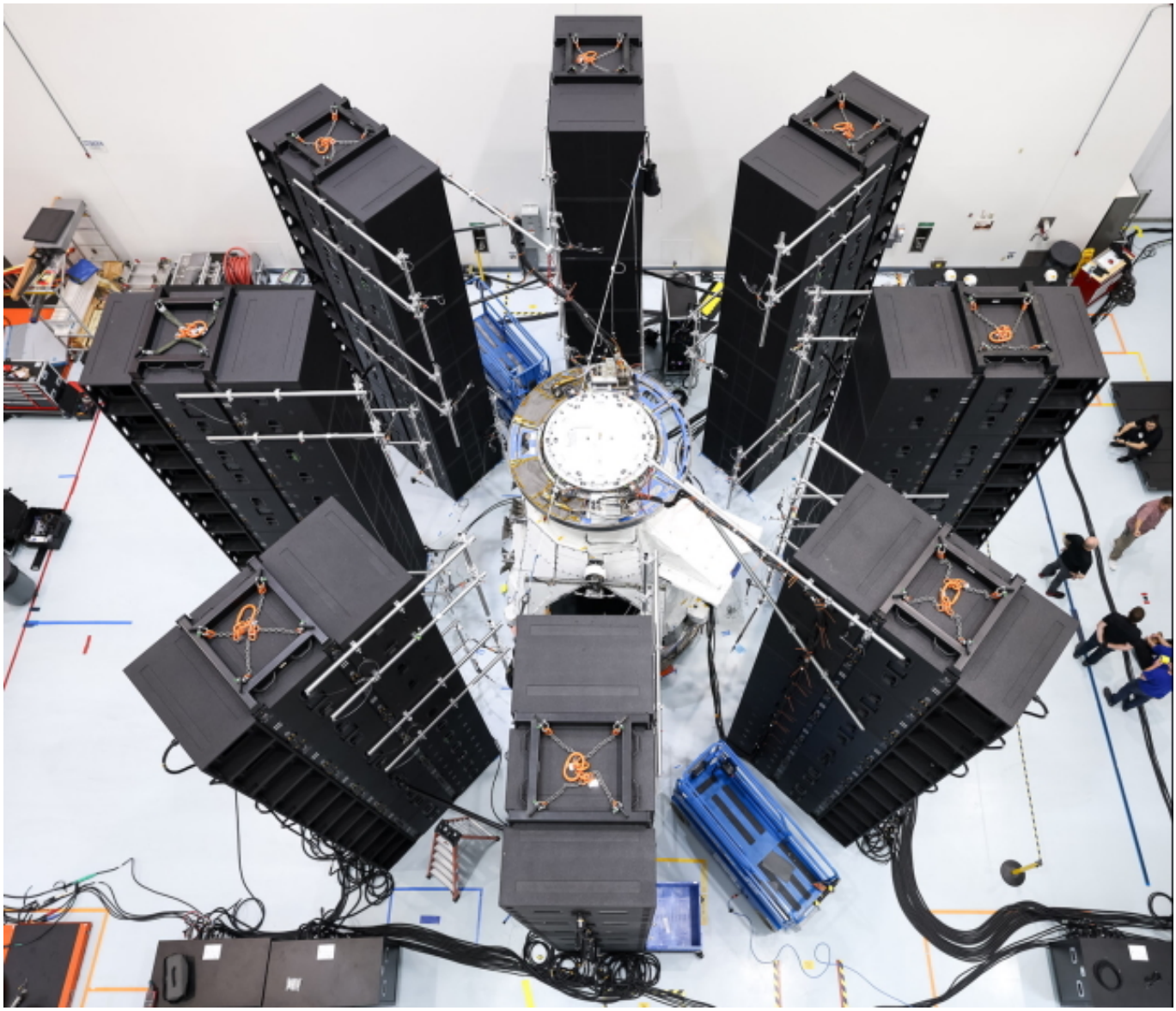
Extreme Acoustic Testing for DirectOut PRODIGY.MP

Picture: Shay Saldana, Sierra Space



DirectOut, a provider of audio technology, announces the successful deployment of its modular audio platform, PRODIGY.MP, in extreme acoustic testing conducted by Acoustic Research Systems (ARS). ARS, is an industry leader of Direct Field Acoustic Testing, and relies on multiple PRODIGY.MP to ensure accurate and repeatable launch simulations. Founded by Eric Friedlander and Jeremiah Leiter, ARS has established itself as a disruptive innovator in the field of acoustic testing. The company utilizes PRODIGY.MP as a critical link between the acoustic test control system and the ARS NeutronTM acoustic fields. Designed to provide next-generation acoustic power output for aerospace, scientific and industrial applications, the ARS

NeutronTM System is part of the turn-key, complete solution for mobile or fixed High Power Direct Field Acoustic Testing needs.

Orbiting satellites provide essential services for us on Earth: communication and internet access, navigation and weather forecasting, even scientific and military objectives. Launching these objects through our atmosphere is accompanied by tremendous noise, vibration and pressure loads, so testing these, and other space-bound objects is crucial for verifying their durability.

A Falcon 9 rocket launch creates approximately 107dBa and the historic Saturn 5 rockets of the Apollo era were over 200dBa. These are amongst the loudest sounds possible on Earth. Sound at this volume stops being a wave moving through air and becomes a massive pressure zone, pushing air with huge force causing gigantic destructive vibrations. To ensure the survivability of delicate electronics and solar panels required by modern space-technology, launches today require robust testing methods.

The NeutronTM acoustic field generating platform is the first turn-key ultra-high output field acoustic testing and launch simulation system, with each unit weighing in at over 770kg, these are substantial acoustic devices. Used in groups of three, these stacks are capable of producing over 150dB, exactly the level needed to recreate the force of dangerously loud rocket engines.

The PRODIGY.MP platform offers flexible I/O, dual network audio, DSP functions, sample rate conversion, and powerful software. In conjunction with the NeutronTM system, PRODIGY.MP ensures that the correct input signals are precisely routed to the appropriate output points, guaranteeing successful test execution. The built-in redundancy of PRODIGY.MP, including dual power supplies and Dante redundancy, delivers exceptional operational reliability.

The test environment is created by producing an acoustic field that precisely meets the specific frequency response profile required by the customer. Achieved with as few as three NeutronTM drivers, some systems may require many more, stacked horizontally, vertically, or both. PRODIGY.MP, as central hub of the system drive, is key to these set-ups. Its ability to handle complex routing and signal processing allows the field to be entirely randomized, a feature that is in high demand from industry customers as they seek to repeat the specific conditions that their launch vehicles create, and their payloads need to withstand.

ARS is the first company to introduce a standardized, fully digital, fully redundant drive system for Direct Field Acoustic Testing. This innovation provides optimal and consistent testing environments, that accurately recreate the acoustic stresses of a rocket launch. The automated test control supported by PRODIGY.MP, along with real-time monitoring via the globcon software, provides an intuitive interface that simplifies the entire testing process.

With PRODIGY.MP at the core of the acoustic test system, ARS sets new industry

standards. DirectOut's flexible, reliable, and precise audio platform eliminates concerns about signal processing, ensuring that customer goals are consistently met. PRODIGY.MP provides the necessary adaptability and confidence to meet the demanding requirements of the aerospace industry.

“PRODIGY.MP stood out to us for its unmatched blend of capability, reliability, and adaptability,” says Leiter. “Few platforms can meet the demands of high-power acoustic testing like it does. For smaller-scale campaigns, the sheer power and footprint were occasionally more than we needed — but that’s where MAVEN steps in. Together, these tools give ARS the versatility to deliver precision testing across missions of all sizes.”

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