



DIGITAL INDUSTRIES SOFTWARE

# Direct field acoustic noise testing as a service

Simcenter Engineering and Consulting services provides and manages all aspects of DFAN testing

## Benefits

- Support all aspects of DFAN testing
- Increase accuracy by combining test and simulation
- Reduce facility costs by eliminating the need for a reverberation room
- Enhance efficiency by having DFAN test equipment delivered and set up by our team of experts
- Conduct onsite and offsite DFAN testing
- Optimize test configuration and setup

## Summary

Simcenter™ Engineering and Consulting services helps the space industry make sure their payloads can survive the noise and vibration generated at launch by providing direct field acoustic noise testing (DFAN) as a service.

DFAN is a highly accurate, low-cost alternative to traditional testing methods. However, like any technology, it is only as good as the team supporting the test campaign.

The main challenge that companies face with DFAN is variability in the test arrangement and possibilities. For example, typical issues include:

- Required system size
- Availability and scheduling
- Location of control microphones
- Investment in a simulation model beforehand

DFAN can be a costly endeavor, particularly since it is not a test most companies regularly perform. Therefore, it is often safer and more cost-efficient to procure DFAN testing as a service.

### DFAN as a service

Simcenter Engineering and Consulting services, which is part of the Xcelerator™ portfolio, the comprehensive and integrated portfolio of software and services from Siemens Digital Industries Software, offers a DFAN as a service capability to address these challenges. Simcenter Engineering and Consulting services incorporates test and simulation, managing all aspects of DFAN testing.

### DFAN testing

Hardware setup, multiple input, multiple output (MIMO) control and data acquisition and analysis are typically the most challenging aspects of DFAN testing. By performing this testing as a service, Simcenter Engineering and Consulting services frees up valuable customer engineering time. It also spares companies the cost of investing time and budget in a DFAN system.

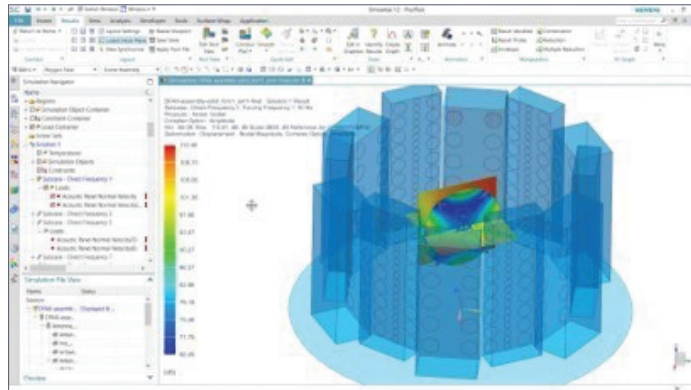
Simcenter Engineering and Consulting Services provides:

- All aspects of speaker array setup and tear down (configuration/precheck and rigging) – using industry-proven loudspeaker and amplifier systems
- DFAN-experienced personnel ready to support different system configurations
- Simcenter SCADAS™ MIMO Random Control System hardware (acoustic control module)
- Increased efficiency and safety thanks to unique test-based pretest analysis for optimized control channel selection
- A collection of pressure, acceleration, and/or strain gauge response using standard Simcenter Testlab™ software and Simcenter SCADAS hardware
- Hardware and software safety shutdowns for device under test (DUT) protection
- Onsite concurrent data processing and analysis (time history and frequency data)
- Thousands of channels of data acquisition hardware and transducers, which are available in inventory
- More insights into the dynamics of the structure by performing operational modal analysis on measured acceleration response data (optional)



Live DFAN Demonstration at Rock Lititz, Pennsylvania, USA September 2021.

Using Simcenter 3D, Simcenter Engineering and Consulting services experts can determine the appropriate speaker and microphone configuration for DUT acoustic-loading requirements. This includes: speaker arrangement and position of the test item and reflectors as needed, which helps improve the uniformity of the acoustic field. Setting up a simulation model reduces the number of iterations that would need to be done using physical testing, which significantly reduces the time and cost of DFAN testing.



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