

SIEMENS
Ingenuity for life

Siemens PLM Software

Simcenter SCADAS XS
provides maximum testing
flexibility

Combining broad noise and vibration
testing functionality

siemens.com/simcenter



Providing a handheld solution to test products in real-life circumstances

There is continuous pressure to test products in real-life circumstances against ever-stricter deadlines. Using Simcenter SCADAS™ XS hardware answers this challenge by allowing on-the-go investigative diagnostics and troubleshooting, even by nonexpert users who need to perform fast and reliable measurements. With its attractive, compact design, Simcenter SCADAS XS literally fits in your hand.

Combined with reliable onboard data storage and six hours of battery autonomy, it offers test engineers the flexibility they need to take testing efficiency to the next level.

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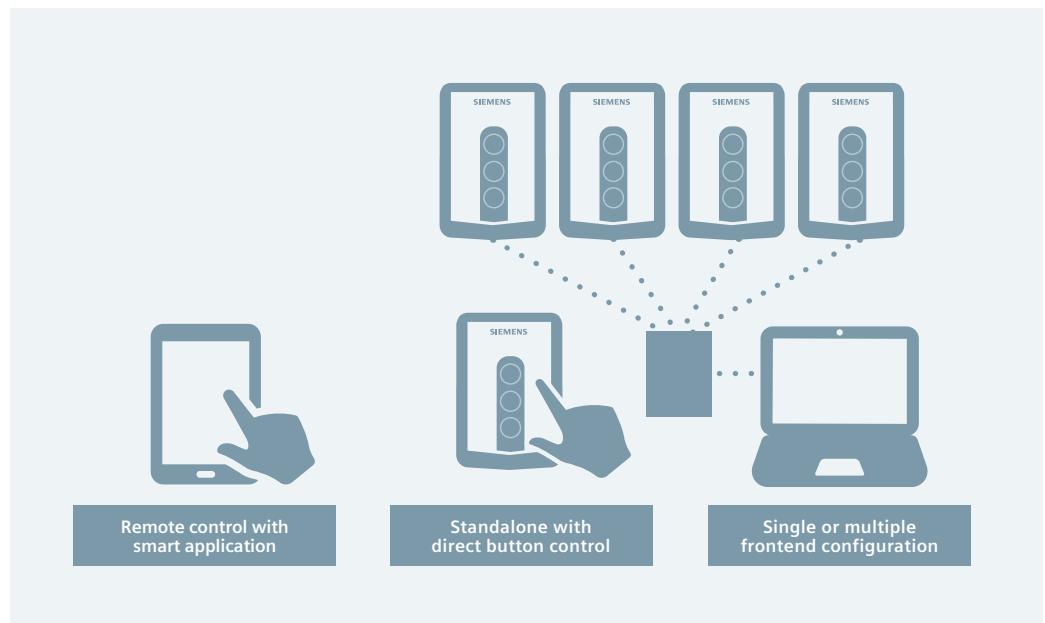
Delivering flexibility and scalability

Simcenter SCADAS XS can be used in multiple ways, depending on your testing needs. It is possible to set up and control Simcenter SCADAS XS by using Simcenter software on an Android™ mobile app, which is the perfect setup for in-field testing.

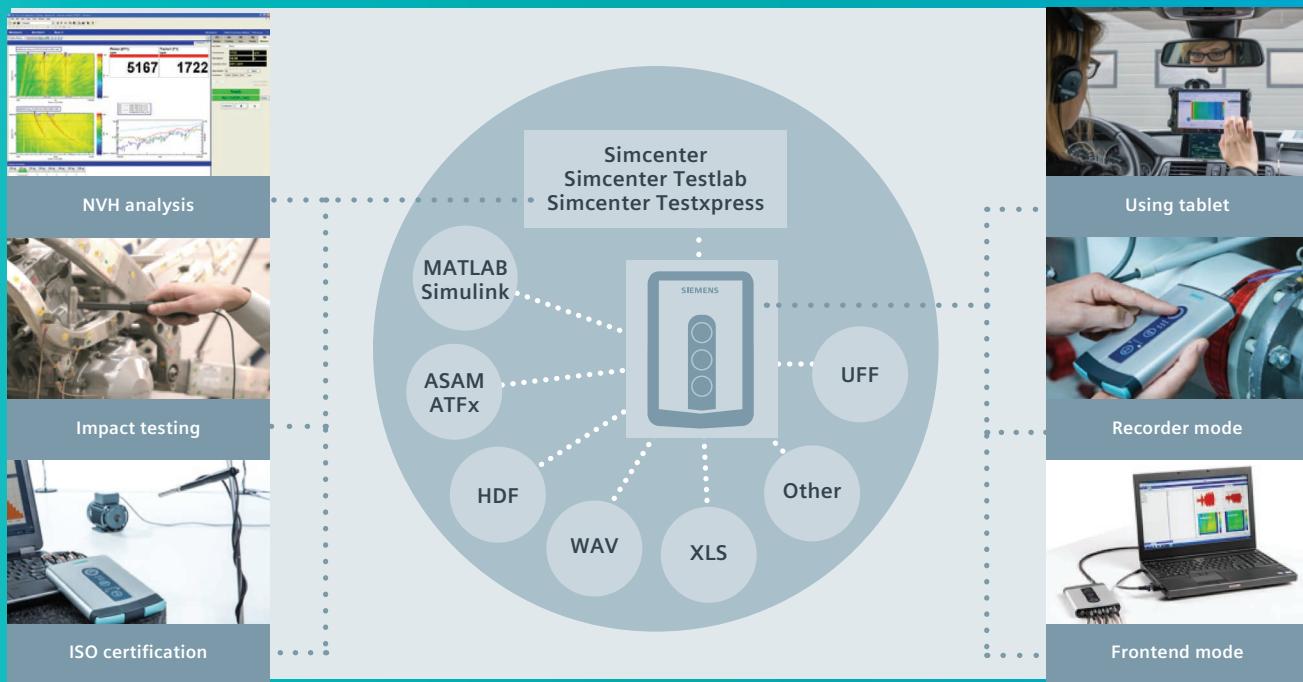
If the user does not need any real-time feedback and already has a measurement setup, Simcenter SCADAS XS can be used fully standalone using the built-in buttons.

For certification tests or more complex measurements, Simcenter SCADAS XS can be used in frontend mode with Simcenter Testlab software or Simcenter Testxpress software.

When the test requires more than the available number of channels in a single Simcenter SCADAS XS unit, or when the sensor distribution requires too many cables, it is possible to use multiple Simcenter SCADAS XS units at the same time and use the data as if it were acquired by a single system.



Schematic showing the three modalities.



An open solution for all processing needs

Simcenter SCADAS XS does not only offer flexibility during measurements and test preparation, but thanks to its openness, it provides full flexibility for data sharing and processing:

- Simcenter Testlab Scope App software allows you to share visualized function results by means of pictures or a spreadsheet export. That data can be shared by email with colleagues while you are in the field, even if you don't have a computer
- Process your data with any software: Thanks to the license-free Simcenter Recorder data conversion tool, the data measured with

Simcenter SCADAS XS in standalone mode or in combination with Simcenter Testlab Scope App can be exported to a large number of third-party formats, such as ATFx, UNIF, MAT, HDF and WAV



Leveraging a 12-plus channel system

Compact and rugged design

- 170 millimeters (mm) in height, 114 mm in width and 23 mm in depth
- Internal battery autonomy for at least six hours of continuous measurement
- Onboard storage capacity: micro standard definition (SD) card, 32 gigabytes (GB)
- Military standard (MIL-STD)-810 tested 14 root mean square of acceleration (grms) random vibration, 50-gram (g) shock, drop tested 1.2 meters
- Ultralight (± 0.5 kilogram)

High-channel density

- Six or 12 analog ICP® channel sensors with transducer electronic data sheet (TEDS) support
- Optional Simcenter SCADAS 3D binaural headset (BHS)
- BHS digital input (including equalization)
- Global Positioning System (GPS)
- Digital controller area network (CAN)
- Two analog tachometer inputs
- Connect multiple Simcenter SCADAS XS units to extend channel count

Ready to use

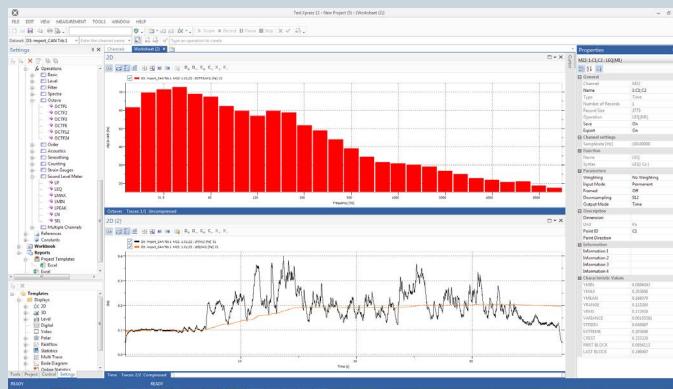
Simcenter SCADAS XS is delivered with everything that you need to start measuring immediately:

- Simcenter SCADAS XS
- Two chargers and universal serial bus (USB) cables
- Micro SD card and card slot adapter
- CAN, GPS, Sony/Philips Digital Interface Format (SPDIF) and tacho cables
- Android tablet with installed Simcenter Testlab Scope App
- Hard case for safe storage of Simcenter SCADAS XS and tablet
- Quick-start guide
- USB stick with Simcenter Recorder data conversion tool

A cornerstone of the Simcenter testing portfolio

Octaves analyzer

Traditional analyzers are flexible tools for qualifying product performance, and they are easy to operate and show the frequency content of sound signals or vibrations. However, they are limited. Why restrict measurements to two or four channels when productivity could be so much higher with six or 12 channels? What about directly connecting standard accelerometers and microphones?



Octaves analyzer.

ISO testing

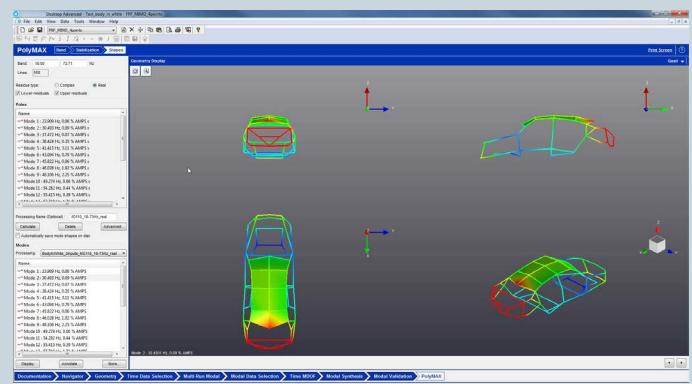
With six or 12 input channels, Simcenter SCADAS XS is a pocket-size solution for performing certification tests such as the International Organization for Standardization (ISO) sound power or human body vibration standard. Well-defined testing procedures, such as for ISO certification, must be easy to set up and use, and promote a streamlined workflow.



ISO sound power test.

Impact testing

Identifying the structural dynamics of a mechanical structure is a way to solve excessive vibrations. Impact testing using a hammer is an expeditious technique for measuring frequency response functions (FRFs) for experimental modal analysis. In order to apply a fast-paced technique, it is important to have a fast setup and it must be easy to transport instrumentation, ensuring accuracy and reliability, such as Simcenter SCADAS XS provides.

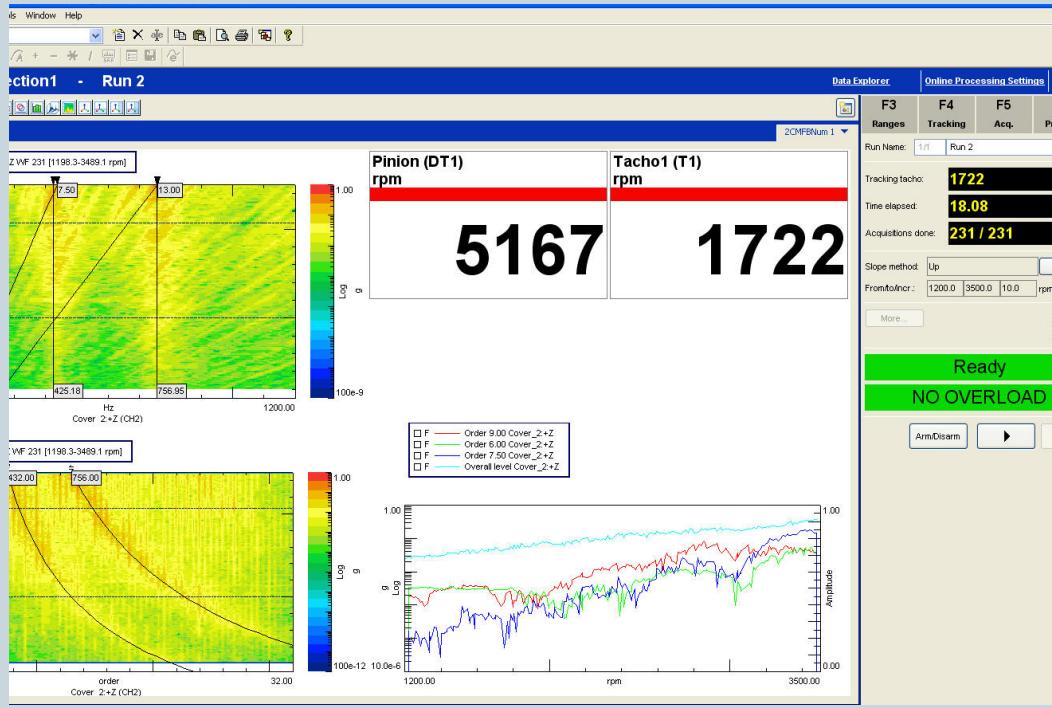


Modal analysis on a full vehicle.

Signature and sound quality testing

Signature testing

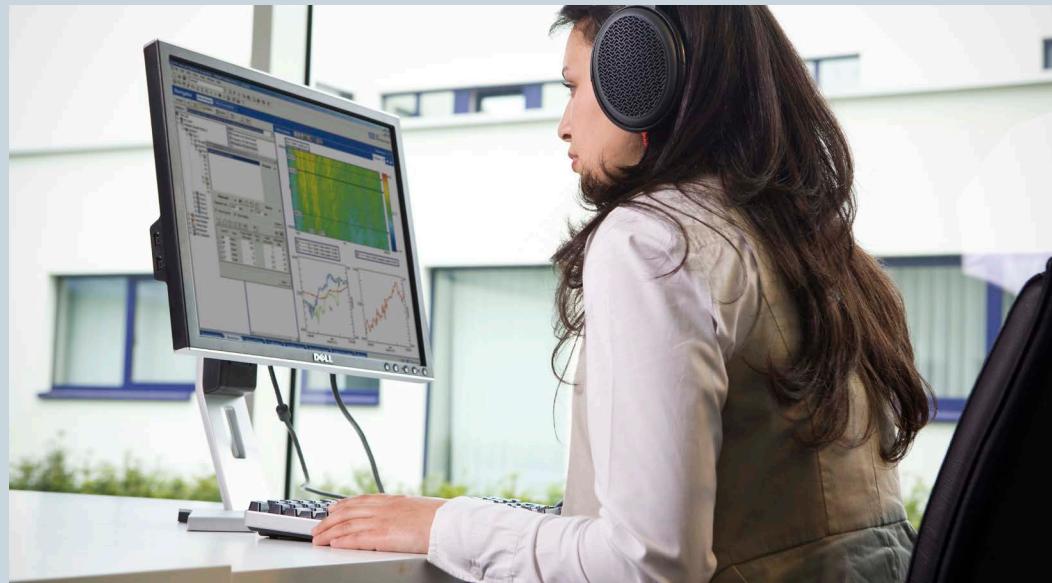
Online and offline harmonic analysis and vibro-acoustic testing of rotating equipment requires scalability and mobility in order to measure in any operating condition. In order to efficiently perform a vehicle field test, the instrumentation should be portable, not involve bringing cables to the driver's location, and should allow you to reduce instrumentation time, all requirements that are met by using Simcenter SCADAS XS.



Signature testing with online processing.

Sound-quality testing

Sound-quality engineering requires testing in operational conditions and acquiring binaural data in order to obtain realistic audio replay for high-quality troubleshooting. Simcenter SCADAS XS is a great acquisition tool for sound quality thanks to dedicated connectors for the Simcenter SCADAS 3D binaural headset and digital binaural head. Combined with the analog channels, this becomes a versatile data acquisition system for mobile acoustic analysis and more.



Audio replay with filtering capabilities.

Use Simcenter Testlab Scope App to configure, monitor and validate tests on the go



Picture courtesy of VDAB Competence Center.

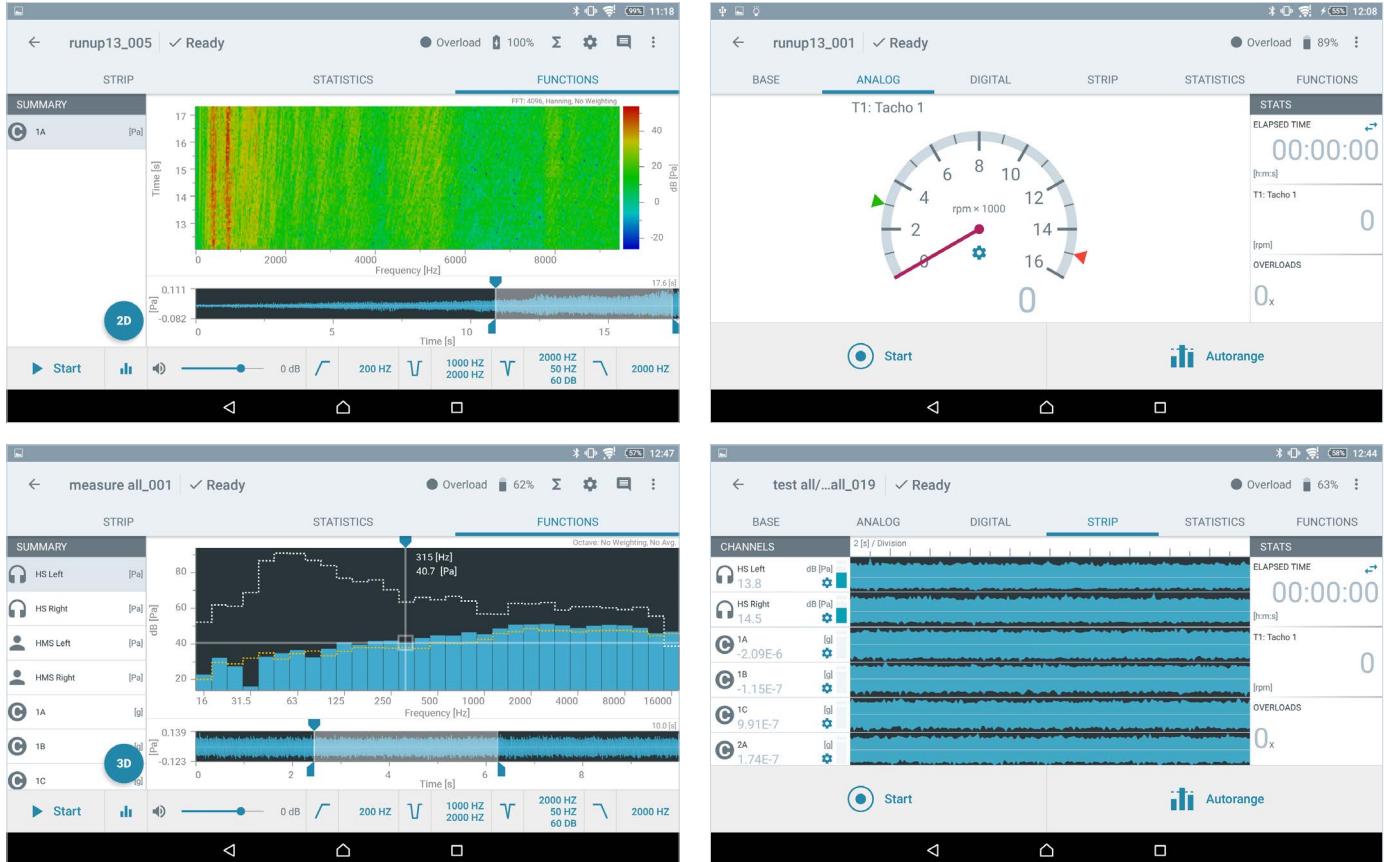
Using a wirelessly connected tablet brings additional freedom to test engineers, who can install Simcenter SCADAS XS on or near the test object and walk around freely during a test, calibrating or monitoring signals on the tablet in real time.

Through the wireless connection with Simcenter SCADAS XS, the Simcenter Testlab Scope App application allows engineers to monitor and control the test settings and measurements, flip through existing measurement setups and past measurement runs, or create a new test configuration from scratch. A wide range of display types and layouts offers online data viewing, post-run data validation and signal replay at the push of a button.

Simcenter Testlab Scope App enables you to fully validate data during measurements to make sure the signal is within expected ranges with built-in data sanity checks and user-defined reference curves.

Troubleshooting is typically performed under increasing time pressure, so Simcenter Testlab Scope App allows you not only to validate the data, but also to look into existing recordings and use the optional Simcenter SCADAS 3D binaural headset headset, facilitating the equalized and calibrated audio replay with filter functionalities.

Open system for data sharing

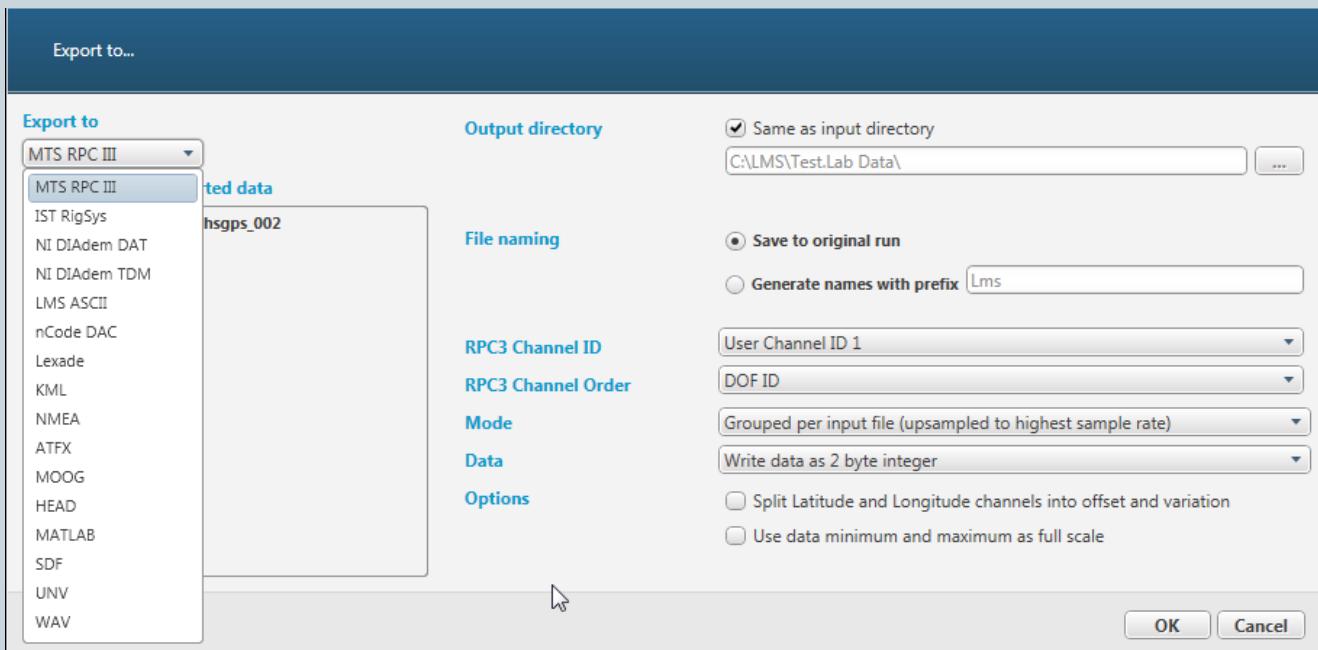


Simcenter Testlab Scope App provides easy-to-use and crisp displays for acquisition, data validation and troubleshooting.

Simcenter Testlab Scope App is the perfect measurement and troubleshooting device for any noise, vibration and harshness (NVH) engineer, regardless of the processing platform thanks to the license-free Simcenter Recorder data conversion.

Once the problem is identified, it is also possible to generate screen shots and spreadsheets to share data directly from the field with colleagues in remote locations.

Simcenter Recorder data conversion



Large numbers of high-quality data formats are supported by the license-free Simcenter Recorder conversion tool.

Process data with any software

The use of Simcenter SCADAS XS is not limited to the classical applications; the collected data can be used for any engineering analysis. The license-free Simcenter Recorder data conversion tool, which is delivered with the Simcenter SCADAS XS system, allows you in a few clicks to access the measured data with

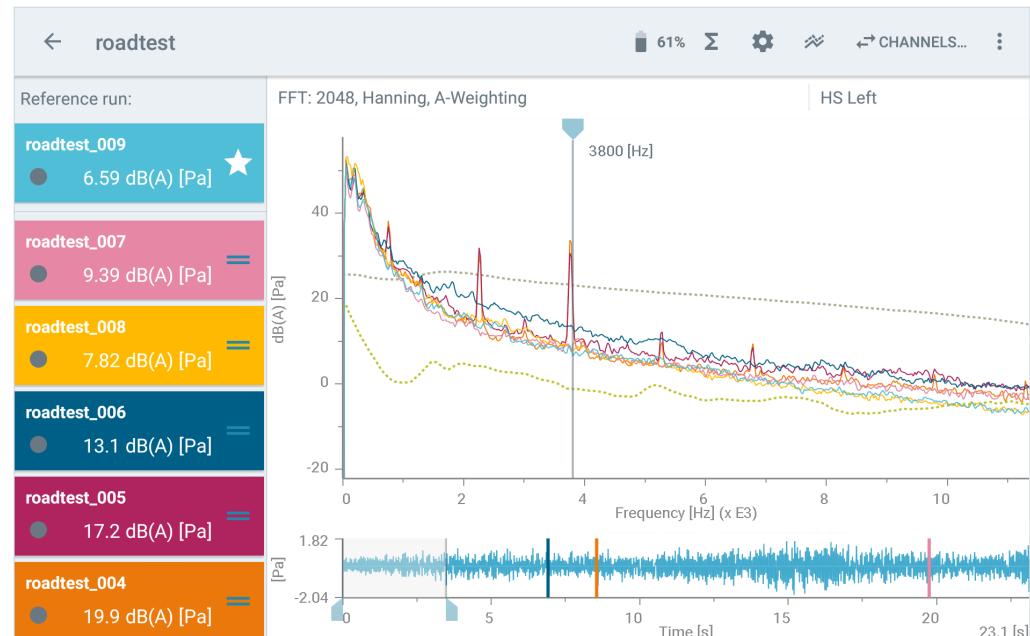
Simcenter SCADAS XS in standalone recorder mode or in combination with Simcenter Testlab Scope App. You can then export the data to industry-relevant formats, making this open solution an excellent choice for users who do not want to use a single platform.

Simcenter Testlab Run Comparison App

Compare measured data and ensure data repeatability

During a measurement campaign it is required to measure the same operational condition multiple times and expect comparable results. To ensure data quality in the past, the user had to use a laptop in the vehicle, which is not allowed anymore for safety reasons; or the repeatability was checked only a second time with the risk of not having enough data or needing to repeat the measurement campaign.

Simcenter Testlab Run Comparison App enables the direct comparison of data stored in Simcenter SCADAS XS while in the field in order to safely ensure measurement repeatability during the measurement campaign, removing the risk of measurement repetitions and the need for additional instrumentation such as laptops. The data can also be compared to reference curves, and annotate or delete inconsistent measurements.



Directly compare measured data in the field.



Automotive applications

Full vehicle NVH road testing

As the range of available vehicle types increases, automotive original equipment manufacturers (OEMs) are more often faced with the need to test these vehicles in operational conditions. The aim is to verify the NVH and acoustic comfort of the vehicle on different road surfaces and in different driving conditions. Typically, this type of measurement requires a low-channel count. The measured signals may include a binaural recording, CAN or onboard diagnostics (OBD)-II recordings to access the vehicle's

internal network, GPS, microphones and accelerometers. The pocket-sized Simcenter SCADAS XS is well suited to this application, as the measurement can be set up by both experts and nonexperts. Furthermore, the Simcenter Testlab Scope App application enables you to verify on the spot that the correct data is acquired, eliminating the need to repeat driving tests.



End of production line quality control



Picture courtesy of VDAB Competence Center.

In a production environment, it is important for the NVH quality of the finished product to remain consistent. To verify this, OEMs and suppliers perform tests on randomly selected finished products. These could be a full vehicle or components, such as a steering column or braking system. The data acquisition system must be portable, quick and easy to set up. With Simcenter SCADAS XS, measurements can be set without connecting the device to a personal computer (PC). Its portability means the measurements can be performed in the production plant, without having to move the tested component into a lab. The tablet application allows you to confirm the validity of the acquired data on the spot. Then the data is sent over to an engineering center where experts perform in-depth analysis using Simcenter Testlab.

Sound quality assessment



In an increasingly competitive market, a major decision-making criterion for the purchase of a vehicle is how a sound is related to perceived quality. The sound of the powertrain and door slam as well as road noise and the noise of the auxiliaries must convey the right message to the user. In order to assess the sound quality of the vehicle, OEMs and suppliers measure binaural data in different operational conditions. Additionally, they collect subjective data on the customer perception of such sounds. Simcenter SCADAS XS is the right data acquisition system for this application thanks to the support of digital and analog binaural heads. In parallel, binaural data can also be acquired with

the Simcenter SCADAS 3D binaural headset, which allows both to acquire equalized data and replay calibrated and equalized sounds. Engineers can use Simcenter Testlab Jury Testing to collect subjective evaluations, and correlate them to traditional objective sound quality metrics. Simcenter SCADAS XS and Simcenter Testlab support the entire sound quality engineering process.

Industrial machinery and equipment



The traditional markets for using Simcenter SCADAS XS are automotive and aerospace, but it is also well suited for solving typical noise and vibration problems in the mechanical industries. It allows testing in the field as well as mobile and laboratory testing for both expert and nonexpert users. To optimize availability of production machinery means avoiding unplanned downtime. However, it is not always feasible at an early stage to conduct thorough field diagnostics to identify component failure. Simcenter SCADAS XS allows you to quickly initiate a noise and vibration assessment of the data on a running

machine, determine the root cause of pending failure and take corrective actions. It can be carried anywhere for on-site diagnostic measurements, or preconfigured and shipped. It is also easy to use even for inexperienced operators. Simply connect the sensors to the system, select one of the predefined templates and push a button to start the measurement process and record the data to the onboard memory card.

Consumer electronics



As customers become more sensitive to the acoustical behavior of electronic devices, it is critical to test these goods with smarter products. Simcenter SCADAS XS hardware is a small yet powerful tool that enables both noise and vibration measurements all in one. It allows you to measure vibration levels of specific components as well as check the ISO sound-power radiated noise. Further, it can be used for running a complete modal analysis and taking operational measurements. It is

a reliable device for the quality control of products both during the development cycle as well as at the end of manufacturing, helping create safe, quieter products for a more comfortable lifestyle.

Marine



One of the main concerns when having to perform noise and vibration tests on ships or submarines is usually the size of the equipment. The pocket-sized Simcenter SCADAS XS stands out as an excellent testing solution to bring on board. It can be operated as a stand-alone recorder or in combination with a tablet device. With its built-in battery, the user is free to walk around and do measurements without having to worry about finding a power outlet. Since the setup can be

preprogrammed, the data acquisition system can be handed to any operator to perform the tests. The detailed data can be stored on the internal memory card and made available to the device for further detailed analysis.

Building and infrastructure



For infrastructure testing, Simcenter SCADAS XS from the Simcenter™ portfolio is an excellent acquisition system for connecting seismic sensors and capturing real-life data when, for instance, measuring vibrations of buildings and bridges. As these are generally big structures, the risk is that the vibration sensors might not be close enough to the source. To enable accurate, close-to-the-source measurement, several Simcenter SCADAS XS systems can be connected to one another and

distributed throughout the building. The data can then be synchronized via direct cable connection or GPS signals, and is automatically merged and readily available for further analysis.

Medical



In the demanding medical care sector in which the quality of devices and instrumentation is vital, Simcenter SCADAS XS brings valuable advantages to enhance human health and safety. The system helps measure unwanted vibrations that may, for instance, compromise the results of medical imaging. It

also contributes to reducing the noise levels of pumps or other accessories. Simcenter SCADAS XS is easy to attach to the equipment being tested so you can measure real-life operating loads as a standalone recorder.

Aerospace and defense



In-flight diagnostics and operational data collection

Thanks to its ability to support up to 12 analog channels, Simcenter SCADAS XS can be used to measure any combination of voltage, acceleration and acoustic signals. This makes it an excellent tool for collecting operational data to enable further tailoring of tests. Simcenter SCADAS XS makes noise and vibration diagnostics more accessible and cost effective, even for testing at remote

sites. Equipped with a standalone Simcenter SCADAS XS and a Simcenter SCADAS 3D binaural headset, engineers and technicians can easily record the required acoustic or vibration data in a test flight or even on a commercial flight. Test data is subsequently brought or sent home to the lab for detailed analysis in Simcenter Testlab software.



Cockpit noise monitoring and cabin comfort engineering

The small size of the Simcenter SCADAS XS system makes it easy to bring on board and verify that no excessive noise levels occur in the cockpit of an aircraft or helicopter, and the pilot can operate safely. Compactness, long battery autonomy and the excellent environmental specifications of Simcenter SCADAS XS make it a terrific tool for these demanding tests. Not only can the safety of the pilot be assessed, but passenger comfort can be measured with multiple microphones that can be connected to Simcenter SCADAS XS. They are used to monitor and analyze in real time the noise levels in the cabin of passenger aircrafts, and perform sound quality engineering.

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of software solutions to drive the digital transformation of industry, creating new opportunities for manufacturers to realize innovation. With headquarters in Plano, Texas, and over 140,000 customers worldwide, Siemens PLM Software works with companies of all sizes to transform the way ideas come to life, the way products are realized, and the way products and assets in operation are used and understood. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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