CASE STUDY

Helping Volvo maximise uptime: PULSE Software Maintenance and Support Agreement (M1)

Sweden
Automotive NVH
PULSE Software Maintenance and Service Agreement

With the many challenges facing the automobile industry such as shortened development times, Volvo is increasingly moving its Noise, Vibration and Harshness (NVH) development into computer simulation and modelling, with less traditional prototyping. A well-established customer of Brüel & Kjær, Volvo benefits greatly from the value added to their systems in terms of the minimised downtime, optimised functionality, and assistance with new applications - thanks to their PULSE Software Maintenance and Support Agreement.

Photos courtesy of Volvo

Brüel & Kjær

Volvo - Latin for “I roll”

The first Volvo ever - the ÖV4 “Jakob”

From its beginnings in 1927 when the first car rolled off the assembly line, Volvo has set out to guarantee a high level of quality. That first open tourer, the ÖV4 - or Jakob as it was affectionately known - boasted a four-cylinder 2-litre engine, and was painstakingly designed at a time when it was common for car manufacturers to purchase components from industrial catalogues, and then assemble a car – resulting in severe quality issues.

Then as now, quality was of paramount importance to the people behind Volvo automobiles, and from then until today, via the iconic Amazon and P1800 to the next-generation S60, Volvo – Latin for “I roll” – has been synonymous with solid cars of impeccable safety and quality.

Modern challenges

In common with other high-end brands, it might even be said that Volvo faces a bigger Noise, Vibration and Harshness (NVH) challenge than more modest ones, as they seek to maintain their individual ‘feel’ and identity.

Critically, the modern world is naturally opposed to the energy-sapping weight that has been typically necessary until now in order to produce a quality vehicle. And as sound quality is increasingly important as a key differentiator in the automotive market, advances in NVH development are key to competitiveness. Recognising this, Volvo’s President & CEO has been putting a high priority on NVH since his tenure began in 2007.

“I can get in immediate contact with someone who can give me the answers I need”

The Director of Volvo’s NVH Center

Compounding these challenges is the drive to ensure that new models age less on their journey from the designer’s conceptualisation to the showroom itself, meaning shorter development times – so NVH departments everywhere are finding themselves squeezed.

According to the Director of Volvo’s NVH Center, “The market is moving faster than ever now, and all manufacturers have to keep up to stay on top. We also have more things to measure and verify than ever before.”

Ensuring maximum benefits for Volvo

For the Director of Volvo’s NVH Center, the Software Maintenance and Service Agreement (M1) adds vital value to the different Brüel & Kjær solutions his department uses – totalling over 25 separate PULSE analysis systems. Significantly, Volvo saw the benefit of the service agreement when Brüel & Kjær first offered it in 1996, and were one of the first customers to adopt the service. They have kept subscribing ever since.

Once customers have bought Brüel & Kjær’s equipment, a Software Maintenance and Support Agreement – or M1 for short – is an extra package that entitles them to an elevated level of service. This includes downloadable software upgrades, flexible licensing configurations, and exclusive worldwide technical support.

As the NVH Center Director says, “Firstly, it ensures that all of our hardware and software works properly, with full solution functionality. Secondly, we get local support and support from headquarters when we need it, like for new applications, as well as for training and system configuration. There is also continuous dialogue with Brüel & Kjær to optimise our setup by shortening the time needed, increasing test efficiency and maximising data quality.”

With many different types of testing to do, there is also the need to quickly transfer setups between different tests – another area where Brüel & Kjær’s expert knowledge adds value.

“We need help to change between different test types quickly in the optimal way. Brüel & Kjær help us to do that,” he says.

Adding value for the engineers using Brüel & Kjær systems

Configuring new test types is a key area where the M1 agreement saves customers time and confusion

Modal analysis

Given the focus that Volvo is putting on the integration between CAE and physical testing, the M1 agreement comes into its own here. Whenever new challenges demand a new solution, Brüel & Kjær application technicians are on hand to take the problem and come back with a solution, a setup which suits the NVH Development Engineer of Body Acoustics, well. "It's very valuable to have local support. It saves time, and provides accurate data," he says.

At present, he is using PULSE Modal and Frequency Response Functions, and is also very interested in PULSE Reflex Modal – Brüel & Kjær's post-processing analysis platform – saying that it "Looks very impressive." But peace of mind is a central consideration. As he says, "Support in new situations and for new test requirements is vital. I would never use a system without investing in a support contract."

Pass-by noise measurement

The NVH Development Engineer of Homologation, has had a pass-by system for over a year, which he uses every day for validation of standards – performing about 200 vehicle validations per year. Ease of use is a big attraction of this system, and he regularly takes it to Spain and Italy as it's so easy to pack up and transport.

"We continued to buy M1 during the recession because we get so much value and benefit from it, and we didn't even question whether to renew or not."

NVH Development Engineer of Body Acoustics

Although a relative newcomer to Brüel & Kjær systems, he is already feeling the benefit of the M1 service agreement. "A main benefit is local support, and having the latest versions of the software," he says.

Quality control

Electric and hybrid vehicles like this Volvo C30 Electric version bring new challenges for the NVH team, as they push to develop designs quickly with intensive use of computer modelling

The NVH Development Engineer of Quality Actions addresses NVH problems in production, as well as any customer issues that arise and require troubleshooting. Changes such as component suppliers or customer issues during the warranty period are his area of expertise, and require effective analysis.

He regularly uses Brüel & Kjær's Automotive Test Manager (ATM), which was itself developed in partnership with Volvo. Within the workflow that the ATM describes, he typically utilises PULSE FFT and Order Analysis software. As he says, "Thanks to the M1 agreement, I know I get immediate support and help if I need to measure in new ways or difficult situations."

He is now working on the development of new hybrid vehicles, the first of which to see the light of day will be the V60 in autumn 2012.

Future proof

Upgrading from their current Windows® XP to Windows® 7 holds no problems for Volvo's NVH team, as their M1 agreement entitles them to full Brüel & Kjær support during the required upgrading, and to ensure that everything is working properly. The peace of mind this brings is an important aspect of the M1. As the Director of the NVH Center says, "Because we have the M1, all the solutions will be supported on the new platform, so this will not be a problem for us."

The actual purchase of the M1 agreement is performed by Volvo's IT department, whose main criterion is, "Is it worth it?" And while the renewal of the M1 always involves an evaluation, the answer to date has always been a resounding yes. As the NVH Development Engineer for Body Acoustics says, "As an example of its importance, we continued to buy M1 during the recession because we get so much value and benefit from it, and we didn't even question whether to renew or not."

Volvo's NVH team, with Brüel & Kjær's Team System Specialist Bert van Amerongen (back right)

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