

# CASE STUDY

Spain

Automotive Sub-supplier

**Valeo Sistemas Eléctricos SL**

**NVH Test and Analysis of Windscreen-wiper Systems**

PULSE

*Valeo Sistemas Eléctricos company in Madrid manufactures windscreen-wiper motors, arms, blades and other components and is just one of the Valeo Group factories in Spain. It is one of the European market leaders in this specialised segment and is an OEM supplier to many of the worlds major automotive manufacturing companies. Valeo uses a 12-channel Brüel & Kjær PULSE system for Sound Power measurements*



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## History

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The first wiper systems were produced under licence by Marconi, Spain in 1978. The business expanded rapidly and SWF Auto Electric S.A. was founded in 1986, becoming ITT Automotive Spain S.A. in 1995. In 1998 the company was sold to the French owned Valeo Group and acquired its present name. Valeo is an independent industrial group, totally focused on the automotive industry.

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## Markets and Production

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Today, the company employs over 550 people in a factory area of some 14600 square metres and two-thirds of the production is exported. The majority of the production is sold to major European automotive manufacturers. The product range comprises:

- Rear wiper systems
- Front wiper systems
- Arms
- Wiper blades

**Fig. 1**  
*In an anechoic chamber, the wiper motor under test is placed in a hemispherical frame that holds the array of microphones in position*



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## Sound and Vibration Testing

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Valeo has had a long close relationship with Brüel & Kjær for over 15 years. Type 2133 analyzers are used for a variety of NVH analysis tasks while three Type 2141 QC Mask systems are used for on-line tasks.

The fast-moving and highly competitive automotive industry has, in recent years, greatly increased its demands for NVH optimised components and Valeo's customers are no exception! Automotive manufacturers not only impose strict NVH specifications – they also require documentation to support the demanded standards.

Oscar Rodriguez is Product Engineering Manager at Valeo. He comments, “Research and development play an important role in the constant search for innovation, client satisfaction and profitable growth. Our priority is that the engineers and technicians design and develop innovative products and systems which fulfil the strictest demands in terms of total reduction of the time and money spent on development, accuracy, total quality and also reductions of acoustic pollution, weight, volume and improved fuel efficiency. At Valeo's test centres, the use of equipment with the latest technology allows us to reproduce the strictest weather and driving conditions. Our systems offer a distinctive design, respect the environment, and we can contribute to the driver's comfort and safety.”

In 1999, Valeo took a major step and purchased a Brüel & Kjær 12-channel PULSE™ multi-analyzer, Type 7748 multichannel Sound Power system, free-field microphones, preamplifiers, computers and other equipment.

Oscar continues, “Our customers’ sound and vibration requirements were getting harder to fulfil. We needed a very accurate and reliable system to measure sound power according to ISO Standards. In this way we can guarantee the sound power output of our products”.

Antonio Luna, responsible for the engineering laboratory at Valeo: “We chose a Brüel & Kjær PULSE system because we had previous good experiences with their product support and they have a world renowned reputation for accuracy and reliability. He continues, “CPB and FFT multi-analysis was mandatory both to save time and to obtain consistent results. PULSE is a modern PC-based system which we can upgrade in the future; it’s flexible, open and can perform many different tasks.”

**Fig. 2**  
Oscar Rodriguez,  
Product  
Engineering  
Manager, working  
with PULSE



Indeed, Valeo’s PULSE system is put to other uses! Javier Garcia is responsible for on-line quality control systems using sound and vibration testing. Javier says, “We also needed an accurate system to define the tolerance masks for our several production line quality control systems. Our PULSE system is ideal for this application.”

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## Sound Power

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Today, the main PULSE application is to perform Sound Power measurements. “It’s very fast and easy to use”, says Oscar Rodriguez.

Valeo is now considering the next steps – to use PULSE in the detailed test and analysis of noise sources, and for prototype testing. Additionally, Valeo’s test team is considering an expansion of the PULSE platform and its integration it into production line testing for quality control applications.

**Fig. 3**

Left: The motor under test can also be suspended in the anechoic chamber  
Right: A Valeo rear-wiper motor



**Fig. 4**

Some of the Valeo staff together with Mario Menendez of Brüel & Kjær



## Key Facts

- Valeo Sistemas Eléctricos SL in Madrid is one of a number of Valeo factories in Spain and is a subsidiary of Valeo, France
- Valeo Sistemas Eléctricos specialises in the design, development and manufacture of windscreen-wiper systems
- The company employs about 560 people
- Valeo is an OEM supplier to many of the world's major automotive manufacturing companies
- Two-thirds of the production is exported. Germany is the largest market
- Valeo has been a Brüel & Kjær customer for 15 years
- Various Brüel & Kjær analyzers are used including a 12-channel PULSE system which is used for Sound Power measurements