CASE STUDY

France

Consumer Products

Outils WOLF
EU Directive and Production-line Testing, R&D

Sound Level Meters, Transducers, Software

Outils WOLF group, based at Wissembourg, in northern France, manufactures a complete range of garden equipment – from simple hand tools to diesel-engined ride-on grass cutting machines for professional users. It's the market leader and its products are sold through distributors throughout the world. Outils WOLF and Etesia together employ about 500 people.

Outils WOLF has, together with Brüel & Kjær, developed a special noise measurement system. This is used to ensure that every product fully complies with the requirements of the relevant EU Directive and for 100% end-of-line production testing.

The Company and its History

The origins of Outils WOLF date back more than 90 years. In 1955, the company launched the first rotary lawn mower in Europe with a petrol engine. In 1958, Outils WOLF established its facility at Wissembourg, 60 km north of Strasbourg, France and introduced the world's first rotary blade electric mower. In the 1970s, the factory area was extended to 40 000 m^2 and a new research centre was opened. Still family-owned, the company is headed by Mr. Pierre Wolf, great-grandson of the founder.

Today, a long family tradition of dynamism and innovation ensures the Outils WOLF leadership. The company's products are sold in all the continents, and it offers a large range of lawn mowers and garden tools throughout the world. Furthermore, through Etesia, founded in 1988, the family owned group has designed and developed a range of ride-on lawn mowers for professional users.

Research and Development

Fig. 1
Yves Kettering is a development engineer in Outils WOLF's Research Centre

Outils WOLF invests heavily in engineering and product development through its R&D Centre. This focus ensures that the latest state-of-the-art technologies are used both in the company's products, and its production facilities.

Engineering Expertise

Yves Kettering is a development engineer in Outils WOLF's Research Centre at Wissembourg and was responsible for the special noise measurement system project.

Fig. 2
Outils WOLF also manufactures products for the professional user

Yves explains, "Our company policy is to always market the highest quality products. We focus not only on the quality of the cut of our grass mowers but also on the environmental aspects. This is especially important when selling to public authorities and other professional users".

He continues, "As market leader, we must ensure that all our products conform to the relevant regulations. We take our environmental responsibilities very seriously".

"Our goal is to offer comfortable, quiet, reliable products that give good value for money. We want our customers to enjoy their gardening and to take pride in using our products. We have a huge level of customer loyalty and by adopting these key values, we ensure that we get both repeat and new business", says Yves.

EC Directive

Yves explains, "Prior to 3rd January, 2002, the sound power of a garden machine was controlled by EC Directive 84/538. But on that day the new EEC Directive, 2000/14/CE, came into force. The Directive demands a guarantee of limit values of sound power on our motorised products and all models must be tested to ensure conformity".

The maximum permitted A-weighted sound power level depends on the cutting width of the machine. The levels are currently:

Fig. 3
The noise test system uses Type 2238 Sound Level Meters

- under 50 cm = 96 dB(A)
- 50 to 70 cm = 100 dB(A)
- 70 to 120 cm = 100 dB(A)
- over 120 cm = 105 dB(A)

Yves continues, “This is just the first step. There is a current study to investigate if the levels can be reduced by 2 dB(A). In fact, the level for machines with a cutting width of between 50 and 70 cm has been fixed for the year 2006 as a result of this. I make reports and prepare the documentation required by the external auditor who is appointed by the EC. The auditor checks that our products comply and issues the approvals. Once a year, the auditor will check our sound power measurement system”.

Test Facility

Fig. 4
Type 4188 Microphones are automatically positioned by pneumatic actuators

Yves says, “We decided to develop our own test facility as it was very economic to do so. It was not possible to continue using external consultants. The Directive demands a guarantee and this means being able to measure exact sound power levels”.

He continues, “All our products must of course be under the maximum level. With our new system, we now make a sound power test, as required by the Directive. But, in addition, we have the huge benefit of being able to make an end-of-line production test and this gives us very valuable data”.

For commercial reasons, the way in which the new system is constructed, and the exact method used to perform the tests cannot be described.

Yves explains, “We have several independent production lines and need to test finished products on each of these”.

A number of Type 2238 Sound Level Meters are used together with a number of Class 1 Type 4188 Microphones. These are automatically positioned by pneumatic actuators, according to the product being tested. The standard EN/ISO 3744 specifies the parameters of the acoustic measurement system. The system is calibrated using a Brüel & Kjær Type 4231 Calibrator.

Fig. 5
The user interface is very simple. This display is used to select the model to be tested

Yves continues, "The operator interface is so simple that unskilled people can use it. Basically, the interface advises the operator if the product being tested passes or fails, i.e., conforms to the set parameters. If the product passes, it can be packed for dispatch. If it should fail, then the operator is advised, step-by-step, what action should be taken".

Fig. 6
The display for the system database

Acoustic 'templates' for each model have been created and are stored in the database. These include a photograph of the product, the type number and the acoustic limits that have been set. Yves sets the limits and makes the templates.

The test data is stored in a central database for at least ten years. The system runs under Microsoft® Windows® 2000 and interfaces with the main company database.

This enables the test results to be seen in various departments within Outils WOLF. For example, R&D can check the results and use this information to change or modify designs of components or complete products to reduce the number of failures. The test data can also be used to monitor the quality of components received from sub-suppliers and to ensure that they are within agreed specifications.

Strong Relationship

Fig. 7
This display shows a test being made

Yves says, "We consider the relationship with Brüel & Kjær as a partnership. We work together to achieve the same goals. In fact, we have used their products for over 20 years and we have always felt that they were really interested in our business – not just a commercial interest. In addition, the service and support has always been excellent".

He explains, "We chose to develop the sound power measurement system with Brüel & Kjær because of this previous long relationship, their professionalism, reputation as the world leader in sound and vibration, and because we were totally confident that they would supply the right solution for us. We have signed a three year contract with them to secure the future evolution and improvements to the system, and maintenance".

Special Software

The special software, including the user interface, was developed by Philippe Callec. Philippe now runs his own company, Philippe Callec Solutions, based in Sophia Antipolis Cédex, near Nice. Previously, he worked for Brüel & Kjær for many years.

Yves says, “By using the partnership with Philippe, Brüel & Kjær was able to develop and supply a complete solution that was tailor made for us and Philippe acted as the Project Manager for this turn key contract”.

Philippe is currently working on a project for Etesia.

Key Facts

- Outils WOLF, based at Wissembourg, in northern France, manufactures a complete range of garden equipment
- Outils WOLF is the market leader and its products are sold through distributors throughout the world
- Outils WOLF invests heavily in engineering and product development
- Outils WOLF has, together with Brüel & Kjær, developed a special noise measurements system
- The system is used to ensure that the products fully comply with the requirements of the relevant EU Directive
- Type 2238 Sound Level Meters and Type 4188 Microphones are used
- “We consider the relationship with Brüel & Kjær as a partnership. We work together to achieve the same goals”

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