Software for inspections of sprayers: needs and solution.

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Introduction

AAMS is a manufacturer of testing and calibration equipment for sprayers since 2002. The products are ranging from simple mechanical tools up to complete automated devices, steered and controlled by PLC's and computers. Since its start, AAMS has established business all over the EU (26 of the 27 countries), Eastern countries, North-Africa, US, South America and India.

With all electronic devices, a software package is supplied to be able to transfer the measured data to a PC and simplify reporting of the different measured values. More specifically an inspection software has been developed to execute a complete inspection and complete the corresponding inspection report. The software has been developed so that it is easy adaptable to the local requirements as local criteria, test protocol, type of measurements and of course the language. It is even possible to use the software in one language and print the reports in another language.

As governments want to receive the data of the inspections more and more in a digital format, a special export function is foreseen to be able to export the required data in general file format that can be read by every standard database-program. With a second export function, selected data can be exported for commercial or marketing purposes by the inspection station.

Inconveniences with the different European inspection systems and protocols

The European countries with a mandatory inspection of sprayers have all their own inspection protocol with large differences in criteria and even larger differences in the protocols. The differences are varying from measurements of the pump flow or not, measurements of agitation return, measurements of the flow sensor, measurements of pressure at the first nozzle of the spray sections, at the last nozzle of the spray sections, pressures at different pressure levels, flow rate of nozzles mounted and/or dismounted, liquid distribution under the spray boom, vertical liquid distribution of orchard sprayers.

Of coarse have all these differences an effect on the corresponding report, with more or less parameters that need to be included. Unfortunately for both AAMS and their colleagues, only a few countries follow the proposed report and protocol by the EN13790. Nevertheless, AAMS has supplies the software in all of these countries adapted to the local requirements.

Many test stations want to supply the owner of the sprayer with more data than the official reports provide. Mostly the details of the measured parameters and resulting graphs are seldom included in the official reports, while this information is most valuable for the owner/user of the sprayer. Extra pages are created for those users of the AAMS software package. The reports are always created in a pdf format so that the inspector has still the choice which pages of the report are printed, similar with the number of copies. The creation of a pdf report simplifies the software and its usage, as f;ex it doesn't require any extra installation of printers and printer drivers.

Structure of the AAMS software package

The software is built in different levels: a first level for general configuration and a second level with all specific data of the individual inspections.

In the first level all criteria are configured, as well as the data of the inspection station, the different inspection locations (in case of mobile inspection), data of the different approved inspectors and all database management (as back-ups, exporting merging, etc.)

In the second level, a tabular structure has been established with following contents: general inspection data, data of the owner of the sprayer, inspection type (field crop, orchard, vineyard sprayer), data of the sprayer, measurement details (as pressures at the nozzles, manometer verification, pump flow rate check, spray computer check, flow meter verification, speed meter verification etc but no data of the nozzles), test protocol (that changes based on the selected type of sprayer), flow rate data of nozzles of orchard

sprayers, flow rate data of nozzles data of field crop sprayers, liquid distribution data of nozzles mounted on a spray boom, steering of the electronic flow rate measurement system for orchard sprayers, steering of the AAMS scanner with radio-link, specific invoicing tool for inspections and a reporting page.

Specific examples

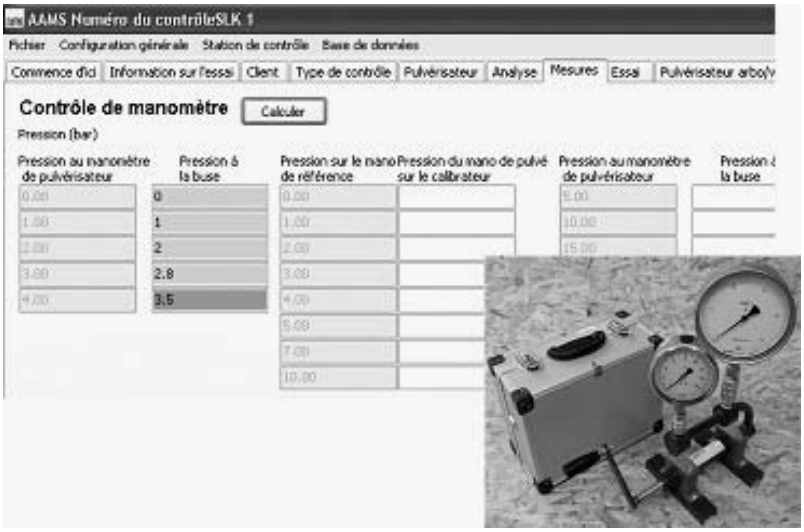


Fig. 1 Data of manometer verifications (up to 4 manometers, 8 different pressure levels possible for every individual manometer etc).

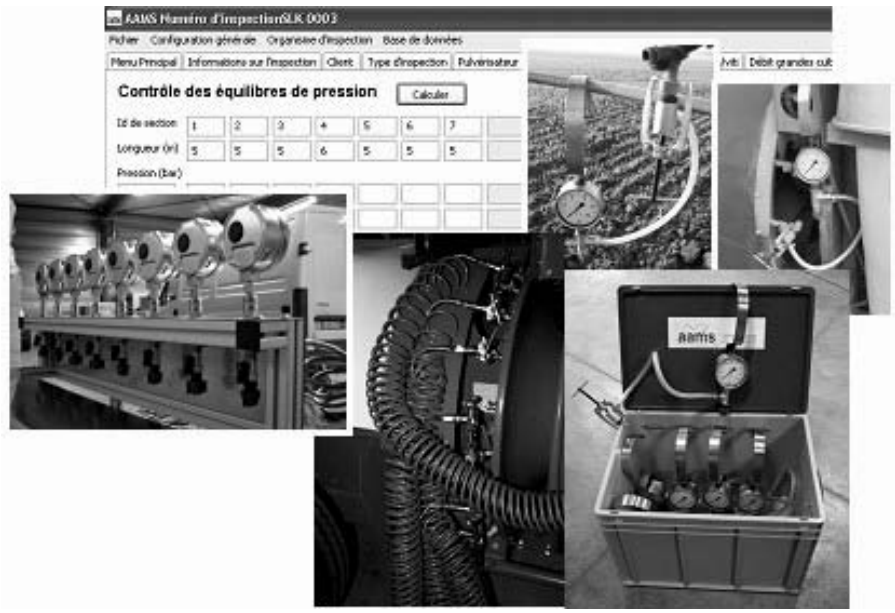


Fig. 2 The hydraulic equilibrium for both field crop as orchard sprayers.

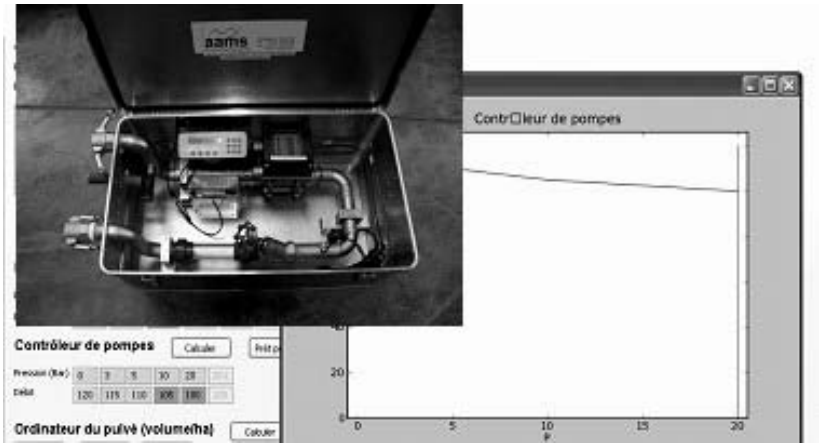


Fig. 3 Pump data can be entered manually or being integrated after data have been send with blue-tooth from a pump tester.

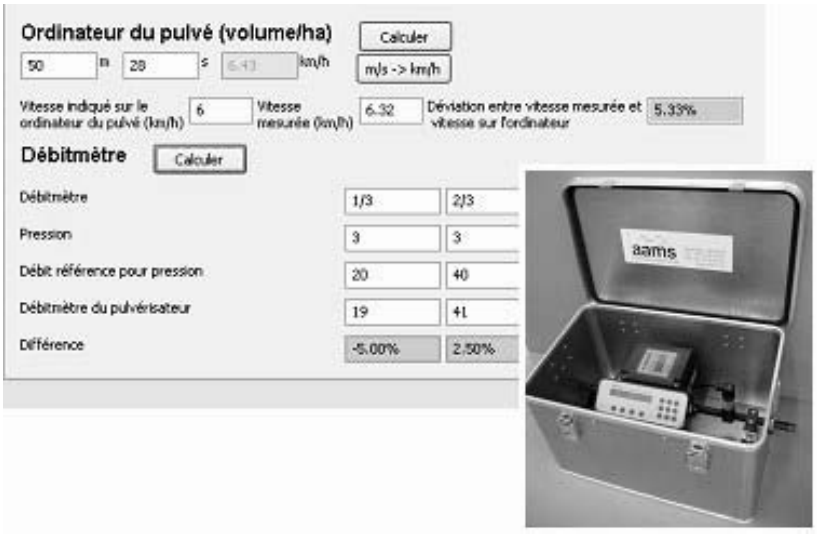


Fig. 4 Spray computer with data for flow sensor and or speed indicator.

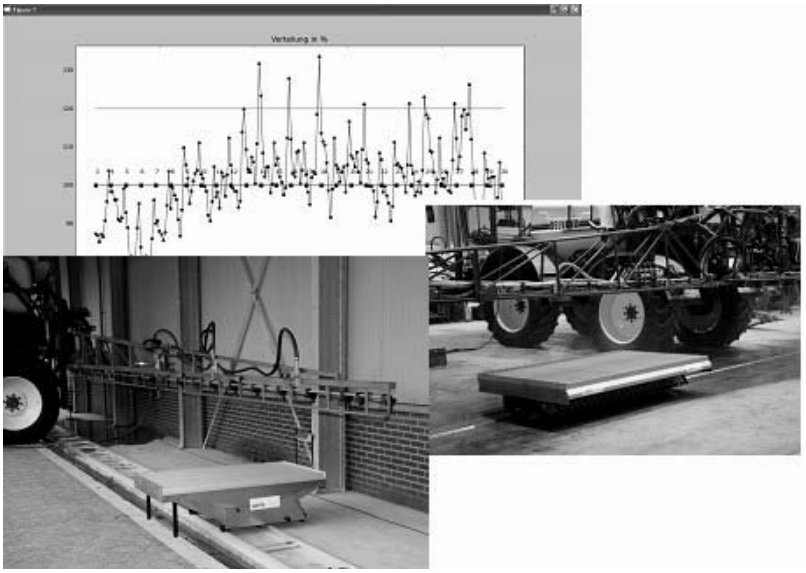


Fig. 5 Liquid distribution can be integrated from mechanical patternator, spray scanner of 80 cm working width with memory box or radio-link (including former Hardi Spray Scanners) or the Spray Scanner Plus with a working width of 2m40.

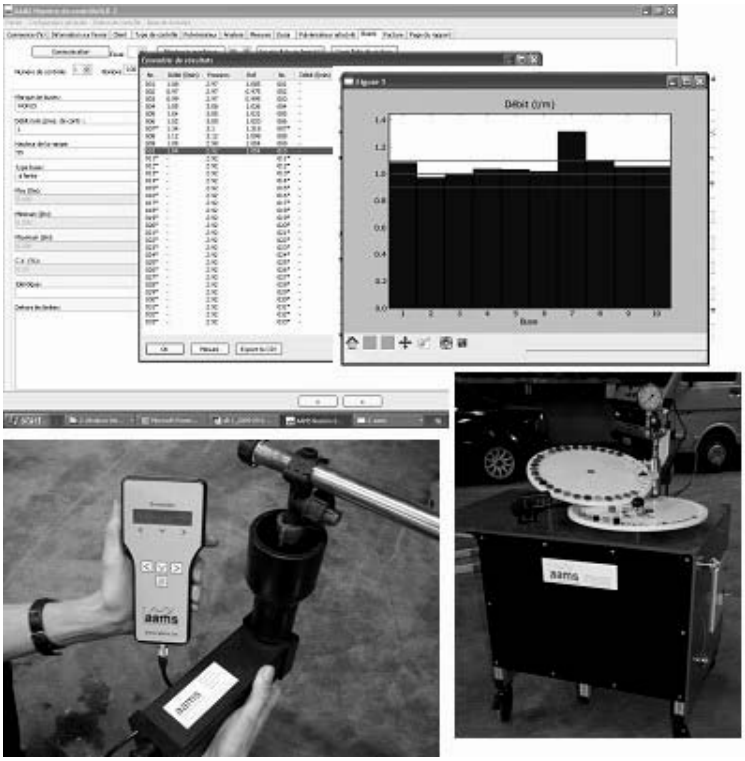


Fig. 6 Flow rate measurements of nozzles of field crop sprayers, mounted or dismounted

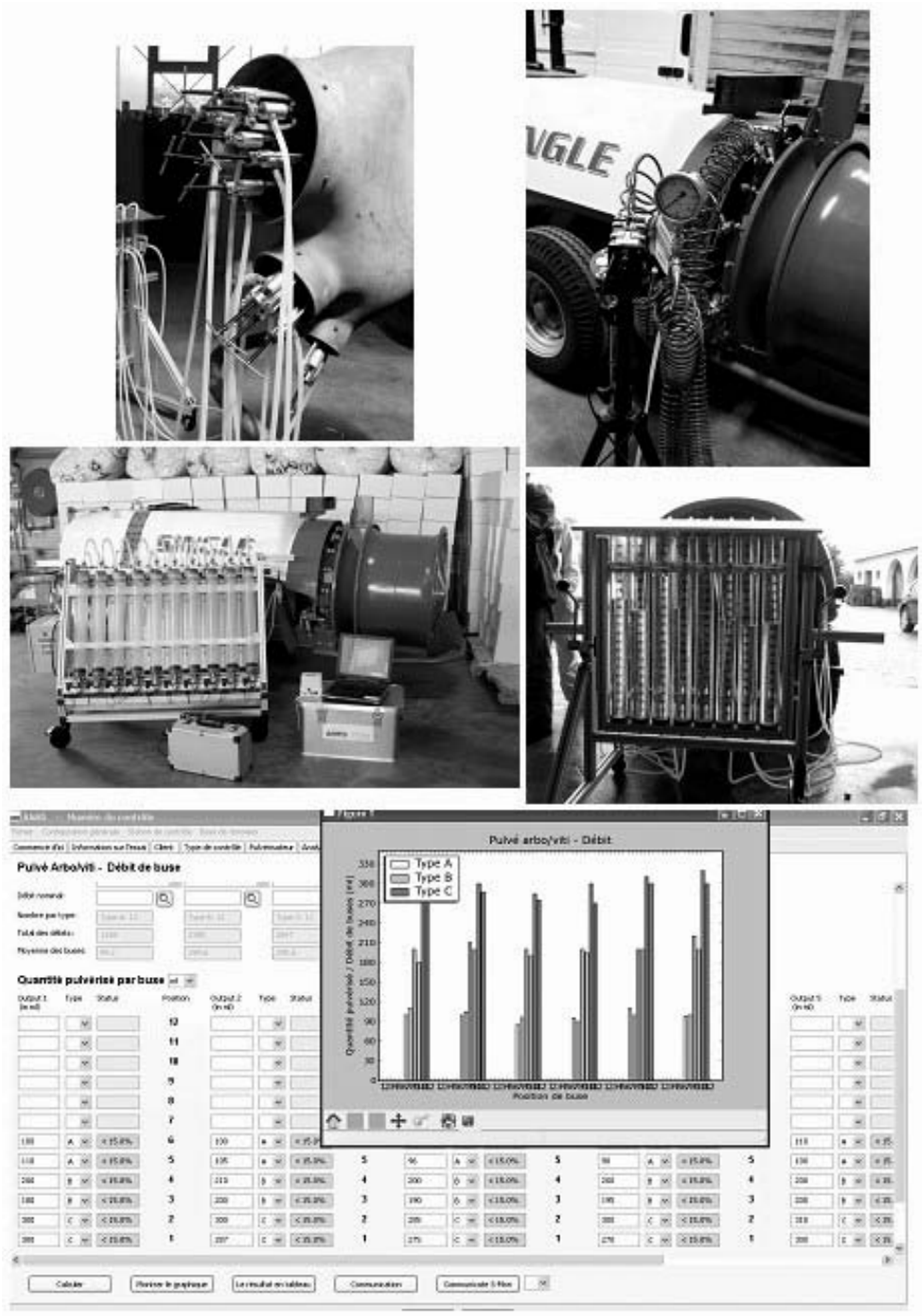
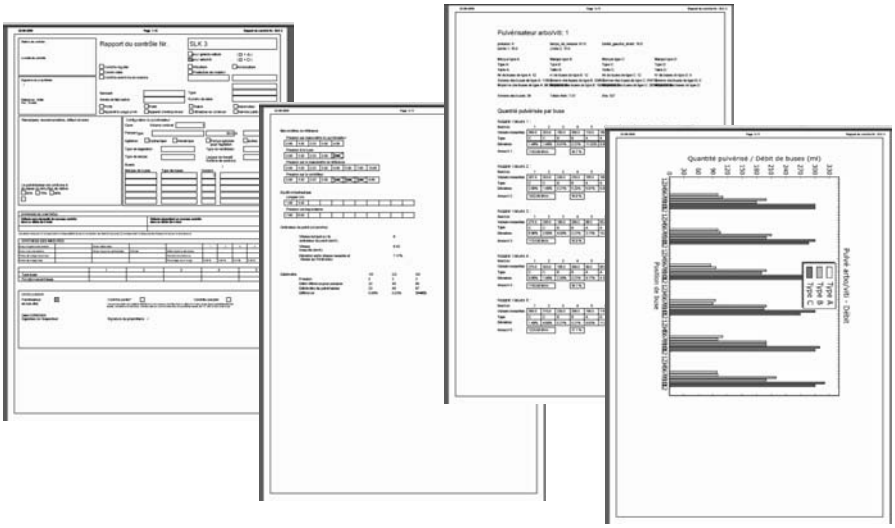


Fig. 7 Flow rate of nozzles on orchard sprayers or vineyard sprayers, mounted or dismounted.

Reporting



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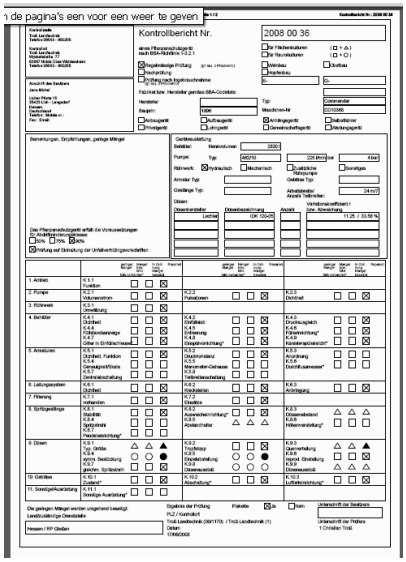

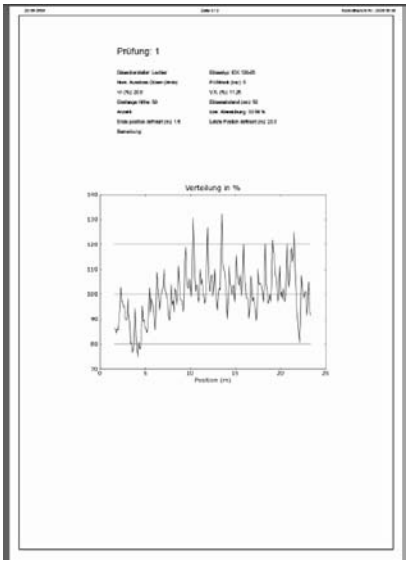

or

Conclusion

AAMS has developed a multi-functional software package that allows different inspections with different protocols. It hopes that countries not having a mandatory inspection yet, take advantage of the developments in other countries for establishing a correct and complete protocol and create a report that is both useful for official purposes as for a good interpretation of results by the operators of the sprayers. AAMS has a broad experience regarding inspections of sprayers in mandatory and voluntary systems, both on organisational level as technical level for protocols. AAMS is a unique player in the market that only focuses on spray testing and calibration tools.