

Newsletter nr.23 January 2017



CRITT M2A thanks you for your trust and wish you

/a Happy, peaceful and successful New Year 2017

In this issue:

New partnerships at CRITT M2A

Development of the Turbo Testing Centre

Electrical Testing Centre: Implementation of a water regulation system

CRITT M2A represented at the Automotive NVH Comfort Conference

Science Days

FORTHCOMING EVENTS

New partnerships at CRITT M2A

CRITT M2A joined the Mobility and Automotive R&D cluster Mov'eo. Mov'eo fosters the development of R&D collaborative projects and facilitates access to public and private joint funding for your projects through labelling.

Mov'eo regularly organizes events, thematic days and annual conventions in which CRITT M2A participates—Mov'eo Days, « Electric vehicle » day: myths & realities »...

As part to of the development of the electrical test centre, CRITT M2A also joined WATTSTORAGE. It is a grouping of high tech companies support by Mov'eo French mobility Cluster to respond to the increasing need of Automotive Electric Hybrid. WATTSTORAGE offers services around storage energy in transport.





CRITTN

Development of the Turbo Testing Centre



Adrian Miguel Sanchez was hired in May 2016 as a Manager of the turbocharger testing centre. This recruitment enables CRITT M2A to continue the development of the expertise, the know-how and innovation through customers tests as well as new R&D projects either internally or developed in partnership.

« My priority is to continue to make CRITTM2A a major player in turbocharger tests by offering new kinds of tests to our customers and new research projects to students, but also by maintaining a continuous R&D activity by constantly staying informed about the latest technologies and manufacturers' issues. It is also important to highlight the complementarity between the different departments (Engine, Turbo, Electrical Energy Storage, Acoustics and Metrology), which is a major asset in analyzing interactions with the turbocharger environment. This helps to solve manufacturer problems as a whole.

Taking the responsibility of the Turbocharger Department is a rewarding and exciting opportunity both from the technical and human point of view».







New equipment at the Turbo Test Centre

One of the benches of the CRITT M2A's turbocharger testing centre will be equipped with a system of combustion air temperature control. This equipment will cover a temperature range from 5 to 35°C and a flow range from 0 to 250 g/s.

By equipping the test bench with this technology, CRITT M2A could control the temperature to the compressor inlet constantly throughout the test. This will make it possible to avoid any correction required on the compressor side while a mapping test undergoes fluctuations in outside temperature throughout the test.

Therefore, it will be possible to carry out any test under the reference temperature conditions desired by the customer from 15 to 30 $^\circ$ C. This will simplify the corrections and allow cleaner and more stable results.

The combustion air regulation at the compressor inlet is a major improvement for the performance tests and even for certain thermomechanical tests.



Electrical Testing Centre: implementation of a water regulation system



Climate chambers

Whether it is for a Tesla or a ZOE, the temperature has a direct influence on the autonomy, the available power, the recharge time or the lifetime of the battery pack. Characterization and endurance tests of cells and battery modules are performed in a climate chamber of the Electrical testing centre. By controlling the ambient temperature of the climate chamber, CRITT M2A is able to quantify the impact of thermal conditions on the behaviour of the battery.

However, when the battery cell is charged and discharged, it dissipates heat in the ambient air of the climate chamber. The air being a poor heat conductor, the cell temperature will vary; the ambient temperature remains constant but the temperature cell will change according to the electrical use.

As part of a continuous improvement of its testing facilities, CRITT M2A has developed a water cooling system to maintain a constant cell temperature despite the electrical charge and discharge. This cooling system enables to generate a water flow regulated in temperature which is circulating between two plates compressing the cell.



Thanks to this system, CRITT M2A is currently able to perform tests with totally controlled ambient and cell temperature .





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CRITT M2A represented at the Automotive NVH Comfort Conference



On October 19th 2016, CRITT M2A presented a publication at the Automotive NVH Comfort Conference in Le Mans. The topic dealt with the acoustic intensity measurements in the turbocharger's compressor ducts through the use of a multi-microphone arrangement. Several methods exist to quantify the noise which is propagating in the ducts.

Various methods were used on the turbocharger and the compressor thanks to industrial tests (comparison between engine and turbo bench). Very interesting results were achieved concerning the acoustic power emission from the turbo in the ducts. These results could be used by automotive OEM's, car and turbocharger manufacturers to characterize the turbochargers as an acoustic source, or to optimize the size of the components of the engine air intake line.

The acoustic tests were carried out on engine and turbocharger benches; which fostered synergies between the 3 complementary departments of CRITT M2A.

Isaac Jaimes, engineer at CRITT M2A, currently taking a doctorate course through a CIFRE Thesis with Arts et Métiers ParisTech and the Laboratoire de Mécanique de Lille (LML).



Science Days

During the Science days, CRITT M2A showed its expertise and know how to the public. From October 13th to 16th 2016, more than 500 people visited the test centre. A TV report was made by the local TV Channel WEO.



FORTHCOMING EVENTS

- the Battery Show, stand nr. 406, in Stuttgart.
- From June 20th to 22nd 2017, CRITT M2A will attend the Automotive Testing Expo Europe, stand nr. 1952, in Stuttgart.







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