



**GROUPE  
RENAULT**

**Press Release**  
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## **Ecole Centrale Nantes and Renault to develop the electric and hybrid engines of the future**

**Today, Ecole Centrale Nantes and Renault launched the first Research Chair dedicated to the propulsion performance of electric vehicles.**

*"Renault has worked with electrification systems for several years. This Chair will be tasked with putting advanced propulsion system technologies in place in order to explore new avenues to optimise the performance, robustness, safety and costs of electric and hybrid engines",* explained Philippe Schulz, Director of Design for Electric and Hybrid Powertrains at Renault Groupe.

50,000 new electric cars were registered in Europe in the first half of 2016, an increase of 11% compared to 2015. France is the largest market, followed by Norway, where electric vehicles have captured 13% of the market, the highest market share in Europe. In this context of electric vehicle growth, manufacturers are speeding up the development of their zero emissions vehicles. As the pioneer of the 100% electric vehicle, Renault has already sold more than 100,000 units and is the European leader, with 27% of the market for electric cars and commercial vehicles.

*"The decision to combine the resources of Renault and Centrale Nantes will prove decisive in the rise of electric vehicles in France. This new Chair will benefit from the excellence of Centrale Nantes, combined with the expertise of Renault"* added Arnaud Poitou, Director of Centrale Nantes.

### **New initial and in-service training programmes**

Further to the research work, two new training programmes are available:

- Initial training courses for engineering students at Centrale Nantes and international Master's students, dedicated to electrical energy and its generation, management and storage.
- In-service training programmes for employees of Renault Groupe specific to the control and observation of electric energy.

### **30 brains in start-up mode**

The start-up will be located on campus for the five years that the Chair will operate. A team of about 30 international researchers, engineers, professors, PhD students, post-Doctoral and Master's students associated with teams at Renault will work on three scientific areas:

1. Robust control of electric drive motors
2. Control and management of on-board charging systems
3. Optimising the potential energy of hybrid engine systems.

Centrale Nantes, with its laboratories, is the world leader in hybrid systems and synchronous and asynchronous machines without sensors, offering unique platforms for each area within an academic environment.

With a budget of 4.6 million euros over 5 years, this new Chair on electric propulsion performance is led by **Malek Ghanes**, University Professor at Centrale Nantes. In 2015 Malek Ghanes received the prize for applied research from the Federation of Electrical, Electronics and Communications Industries (FIECC) for his pioneering work on the development of robust and inexpensive automation. The previous year he was awarded the prize for best article in Control Engineering Practice, a journal of IFAC (International Federation of Automatic Control) for his work on the management of fuel cell energy for electric vehicle applications.

### **About Groupe Renault**

A car manufacturer since 1898, Groupe Renault is an international group present in 125 countries, with sales of over 2.8 million vehicles in 2015. Today, the group has over 120,000 employees, 36 manufacturing sites and 12,000 dealerships worldwide. To respond to future technological challenges and pursue its strategy of profitable growth, the Group relies on its international development, the complementarity of its three brands (Renault, Dacia and Renault Samsung Motors), electric vehicle technology and its unique alliance with Nissan. With a new Formula 1 team and a strong involvement in Formula E, Renault is turning motorsport into a powerful driving force for innovation and building the brand's reputation.

### **About Centrale Nantes**

As a member of the Group of Ecoles Centrale, Centrale Nantes is an engineering school (French grande école) that awards undergraduate and Master's degrees and doctorates. Their academic courses are based on the most up-to-date scientific and technological developments and best management practices. Created in 1919, the 16-hectare campus of Central Nantes has 2,050 students, including 1,340 engineering students, 200 engineering students undergoing continuing education and apprenticeships (ITII), and 240 PhD and 270 Master's students.

#### **Ecole Centrale de Nantes Press Contact:**

Valérie Chilard - 02 40 37 16 87 / [valerie.chilard@ec-nantes.fr](mailto:valerie.chilard@ec-nantes.fr)  
Website: [www.ec-nantes.fr](http://www.ec-nantes.fr)  
Follow us on twitter : @CentraleNantes

#### **Renault Press Contact:**

Tél.: +331 76 84 63 36  
[renault.media@renault.com](mailto:renault.media@renault.com)  
Websites: [www.media.renault.com](http://www.media.renault.com) - [www.group.renault.com](http://www.group.renault.com)  
Follow us on Twitter : @Groupe\_Renault