# LEONARDO AND THE POLITECNICO DI MILANO COLLABORATE ON THE HELICOPTER OF THE FUTURE: AGREEMENT FOR THE DEVELOPMENT OF SUSTAINABLE INNOVATIVE TECHNOLOGIES

**News / Manufacturer**

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- **Signed agreement to explore the use of new materials for innovative mechanical components**
- **New steps forward for Innovation Hub, the 2016 agreement between Leonardo and Politecnico di Milano, with the significant target to reduce vibration and noise levels in the cabins and prospects for use in search and rescue and emergency medical services (Comfort project)**
- **An innovative research project on predictive maintenance based on the helicopter's health status will be launched by the end of the year**
- **Through e-GEOS, Leonardo signs a further agreement with Politecnico for the development of geo-information tools for precision management of agriculture, insurance, oil and gas, defence and emergency management?**

**Helicopters will be an increasingly comfortable means of transport; by reducing noise and vibration inside the helicopter, pilot workload can be reduced, search and rescue tasks are easier and the quality of medical treatment in air ambulances is improved. It is the reason Leonardo and the Politecnico di Milano (PoliMi) are developing new technologies for helicopters as part of their expanding collaboration, launched in 2016 with the signing of Innovation Hub, a multi-year framework agreement. The studies will also focus on the development of innovative technologies that can be used in new mechanical components utilising new lighter materials, which will bring advantages in terms of production costs and ease of installation. A further research project on predictive helicopter maintenance based on its health status will be launched by 2018.**

The agreement, in addition to developing innovative solutions related to helicopters, covers other areas of research that pertain to the business of **Leonardo**. The partnership between the company and the Milan based university reaffirms the importance of collaboration between large companies and universities of excellence as a determining factor in economic and cultural development and growth.

"The Politecnico di Milano is collaborating in a structured way with major industrial companies to make its research environment more and more relevant to the needs of businesses – says Ferruccio Resta, Rector of the University –. The **Innovation Hub** created with **Leonardo** is producing concrete results and significant ones that confirm our commitment and identify, once again, as an engine of innovation in the nation."

"In **Leonardo**, we invest in continuous and increasingly collaborative innovation – underlines Alessandro Profumo, Leonardo's CEO – **to develop increasingly effective and sustainable solutions for our customers and for Italy**. The multi-year collaboration with the Politecnico of Milan is a concrete example of this. By putting our wealth of skills in line with those of the academic world – adds Profumo – we can accelerate the processes of innovation and technological development, create synergy and mutual benefit to support the competitiveness of Italy."

**Collaboration between the PoliMi and Leonardo is aimed at completing highly innovative projects, of which the following are important examples.**

The object of the research will be the development of innovative mechanical components based on new materials, allowing the transfer of loads from the rotor to the main gear box of the helicopter. This will provide a significant simplification of the existing mechanical system, thanks to the use of a single flexible component rather than a complex mechanical system.

Through project **Comfort**, **Leonardo** and the **PoliMi** are also developing technologies to reduce

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the vibration and noise of helicopters. The reference platform for the study is the **AW139** helicopter. **The research activities are concentrated on three main areas: the rotor, from which the vibrations originate; the main gear box attachments, through which rotor vibrations are transmitted into the helicopter structure thereby reducing the level of comfort, and finally on the airframe itself**. The ultimate goal of the programme is to demonstrate a significant vibration and internal noise reduction, through the coordinated use of passive and active systems. The development of solutions suitable for achieving the objective includes simulation activities and experimental research validation.

Under the agreement, an innovative project looking at predictive maintenance for helicopters based on its health status provided by **Health & Usage Monitoring Systems** (HUMS), a continually advancing technology, will start by the end of the year. This will help provide advance indications of anomalies helping to increase safety levels and reduce operating costs.

Furthermore, within the **Innovation Hub**, **e-GEOS**, a subsidiary of Leonardo's join venture Telespazio (80%) and the Italian Space Agency (20%), has signed a further agreement for the joint development of innovative data analytics of satellite services. **The partnership will allow e-GEOS to offer new and powerful tools for the detailed analysis of our planet**. The analysis will support specific market sectors: from insurance to precision agriculture, from oil and gas to defense, from emergency management to all the activities in which the monitoring of large-scale distributed assets is strategic. Artificial Intelligence techniques, developed by **e-GEOS**in partnership with the Department of Electronics, Information and Bioengineering (DEIB) of the PoliMi, will be able to reveal insights, trends and other information contained in satellite data when integrated with information generated from other sources.

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