

PRESS RELEASE

Naval Group and Centrale Nantes printing tomorrow's propellers

Naval Group and Centrale Nantes have printed the first full-scale propeller blade demonstrator for military applications using additive manufacturing. Within the framework of the Joint Laboratory of Marine technology¹ launched in 2016, Naval Group and Centrale Nantes teams have printed a large geometrically complex propeller blade weighing over 300 kg. Mastering the production process for large parts paves the way for the manufacture of more geometrically complex propellers.

With additive manufacturing it is possible to design parts that could not be made previously with standard production technologies. This disruptive technology deposits (adds) material as opposed to subtracting it by machining. By lifting the limits imposed by traditional processes, these technologies pave the way for innovative parts design and assembly, and thus for the production of propellers providing greater efficiency for ships at sea: performance (autonomy and propulsion), stealth and lightening.



Vincent Geiger, Director of Naval Group's Naval Research Technology Research Center, stressed the significance of these initial results: *"Printing this demonstrator is a major step towards the manufacture of innovative propellers by additive manufacturing. These initial results mean that it's possible to envisage the short-term commissioning of differentiated propellers for the ships that will use them."*

Professor Jean-Yves Hascoët, who heads up the Rapid Manufacturing Platform at Centrale Nantes, in the GeM laboratory (UMR CNRS 6183), is an international expert in additive manufacturing. He explained that: *"additive manufacturing is a process that offers unlimited possibilities: less material used, integration of additional features and geometrically-complex parts assembly. It allows for new designs, weight savings, lower manufacturing costs."*

Centrale Nantes has the industrial means and the extensive expertise in trajectory generation and additive manufacturing required for blade production.

¹ The Joint Laboratory of Maritime Technology was created in 2016. It is a joint industry / research laboratory whose general objective is to pool the academic and industrial expertise of Centrale Nantes, the University of Nantes and Naval Group in order to generate qualified innovation for Naval Group's industrial applications in the field of military shipbuilding.

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About Centrale Nantes

Founded in 1919, Centrale Nantes is a French engineering school and member of the Ecoles Centrales Group. Its undergraduate, Master and PhD programmes are based on the latest scientific and technological developments and the best management practices. At Centrale Nantes, research and training are organised into three key areas for growth and innovation: manufacturing, energy transition and healthcare. With research platforms ranging from digital simulation to prototyping using full-scale models and an incubator with 20 years of experience in supporting start-up projects, the school has two major tools for innovation and creation, working hand in hand with the world of business. Centrale Nantes promotes its teaching and research capabilities at the international level through around 100 partnerships with prestigious universities and schools worldwide.

Founded in 1919, Centrale Nantes welcomes 2,320 students, including 1,550 undergraduate students, 200 Executive Education and ITII degree apprenticeship students, 260 PhD students and 400 Masters students, on its 40-acre campus. For more information, visit www.ec-nantes.fr

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About Naval Group

Naval Group is the European leader in naval defence. As a high-tech company of international stature, Naval Group uses its extraordinary know-how, unique industrial resources and its capacity to build innovative strategic partnerships to meet its clients' requirements. The Group designs, produces and supports submarines and surface ships. The Group also provides services for naval shipyards and bases. In addition, the Group offers a wide range of marine renewable energy solutions. Aware of its corporate social responsibilities, Naval Group is a member of the United Nations Global Compact. The Group reported revenues of €3.7 billion in 2017 and has a workforce of 13,429 employees.