Predictive maintenance: the "Dominno" effect

In March 2018, the Ministry of the Armed Forces commissioned Safran Helicopter Engines to undertake the Dominno study, which is designed to explore new concepts in big data-driven helicopter engine maintenance. Another step towards after-sales support "4.0".

Under a French government support contract, Safran Helicopter Engines is responsible for maintaining several families of helicopter engines used by the armed forces in a state of operational readiness. "Equipment availability is a major stake - vital, even, in some theaters of operation," points out Eric Seinturier, head of the Programs, Support and Services Department of Safran Helicopter Engines, which is sponsoring the Dominno* study. We believe we can become even more efficient and competitive in this area by mining engine data. The Dominno study is designed to confirm this.

Tailored maintenance

The study will focus on two categories of data. The first is maintenance data. "It are currently filled in by hand on a paper form after each maintenance operation," says Eric Seinturier. "That can make it difficult to piece together the history of the engines when they return to the workshop, sometimes ten years after they were commissioned. If we scan the information, it will be instantly available, more complete and so more useful. "There is also flight data. For several years now, Safran Helicopter Engines has been fitting its engines with sensors to record and transmit metrics that can then be used to monitor their fitness for service, such as power, temperature, pressure and so on.

Thanks to its computational algorithms, this data can be used to tailor maintenance recommendations to actual engine wear, rather than simply scheduling maintenance operations at regular intervals, as is usually the case. This is the principle behind the Health Monitoring Service launched in October 2017 for Safran Helicopter Engines' civilian customers. "Dominno aims to go a step further by increasing the number of metrics monitored and developing more complex algorithms", says Eric Seinturier. "That will enable us to provide personalized monitoring of each engine and do maintenance as and when it is needed, so at a lower cost."

Digital continuity

For these increasingly vast amounts of data to be turned into useful information, it will have to circulate smoothly and continuously in the decision loop, i.e. from the embedded sensor to the database on the ground and from the Safran Helicopter Engines experts to the armed forces. "Because of the type of missions carried out," says Eric Seinturier, "data exchanges will have to be extremely secure. This aspect will therefore be a core concern." The Dominno project has been launched for a two-year period, but is not intended to provide operational solutions in the short term. "It is a pre-project", says Eric Seinturier. "aimed at demonstrating the feasibility of a certain number of innovative concepts. Their implementation on the fleets will be addressed at a later stage."

* Dominno: Données de maintenance moteurs innovante, for Innovative Engine Maintenance Data.

Learn more

Safran Helicopter Engines' Health Monitoring Service

This is a set of solutions based on the analysis of engines' "health" data. Safran Helicopter Engines customers enter this health data in a portal provided for the purpose. They can then run their own analysis and set up predictive maintenance, or receive tailored recommendations from the experts at Safran Helicopter Engines. The Health Monitoring Service is part of EngineLife® Services, Safran's range of services for helicopter engines.