THE DEVELOPMENT OF HEAVY CARGO HYBRID VTOL DRONE FOR SF EXPRESS - AMAZILIA AEROSPACE & PIPISTREL

News / Manufacturer



SF Express, China's leading integrated logistics provider, intends to expand its delivery network fleet through the deployment of large cargo unmanned aerial vehicles (UAVs) with vertical take-off and landing (VTOL) capability.

Together with its Munich based subsidiary, Amazilia Aerospace, SF Express has partnered with Pipistrel, a Slovenian aerospace company, to accelerate the development of commercial large scale UAV operation. Amazilia Aerospace will deliver an advanced digital flight control and vehicle management system for an innovative VTOL cargo drone designed and manufactured by Pipistrel.

SF Express pursues a VTOL aircraft capable of service in the environment of remote and isolated areas. The aircraft will be able to lift more than 300 kg of cargo in a 2.3m³ volume space over a range of 500km with cruising altitudes up to 6000m and VTOL capability up to 2500m above sea level. Pipistrel specifically designed the aircraft to meet these demanding conditions. The aircraft will be equipped with 8 vertical-lift packages each consisting of a Pipistrel E-811 EASA Type certified powered rotor with highly efficient and redundant battery packs that assure safe operation even if 2 rotors are inoperative. The aircraft design and component production of the prototype will be carried out in Pipistrel facilities.

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Pipistrel Founder and CEO Ivo Boscarol points out “To be chosen by one of the largest logistics companies globally to design and produce a tailor-made line of vehicles for aerial cargo transportation is a solid recognition of Pipistrel’s capability built up on more than a decade of achievements in electric flight. We look forward to becoming even more involved in strategic business solutions on a global scale, where our vehicles will change how aerial logistics work and have further significant impacts to sustainability and quality of life.“

The brains flying this innovative design is the Amazilia Aerospace Automatic Flight Control System and Vehicle Management System (AFCS/VMS). This versatile system includes both the avionic hardware and the software capable of automating the entire cargo mission. It can be integrated into both VTOL and conventional aircraft configurations and has been designed specifically to meet the requirements for large scale logistical operations by logistics companies such as SF Express.

Amazilia Aerospace builds on years of research at the Technical University of Munich (TUM) reinforced with aerospace industry experience. The team will develop and deliver an ACFS/VMS which is compliant to aerospace industry standards. This system is not only compatible with the economics of unmanned aerial cargo transport but also scalable and versatile, which integrates well with a variety of aircraft types and sizes.

The aircraft prototype is scheduled to undergo flight testing with the Amazilia Aerospace system in Europe followed by operational validation in China starting in 2022. By 2023, SF Express intends to deploy the HVTOL cargo drone fleet in their domestic and non-domestic business operations.

“Our efforts to achieve 36-hour countrywide delivery throughout China face significant challenges, such as natural barriers, underdeveloped logistics infrastructure, and more, especially in rural China. SF Express intends to adopt cargo VTOL drones to solve this bottleneck due to their flexibility and high speed, which is on par with helicopters, and has low costs which are competitive with truck delivery. The high-altitude capability allows us to extend our civil air cargo service coverage to even difficult to reach mountainous areas. We believe VTOL drones will become a major vehicle in China, and SF Express alone will need more than 1000 in the next 10 years. " says LI Dongqi, SF EXPRESS VP & SF UAS Chairman.

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