

PROTECTING AN AIRCRAFT COMPONENT FROM COLLISION WITH FLYING OBJECTS

Area tecnologica principale → Mechanics

Keywords → Bird ingestion | Aircraft | Engine | Nacelle | Collision protection

The invention relates to a system for protecting aircraft components from collision with flying objects, in order to maintain a given degree of safety, efficiency and maneuverability of the aircraft itself. One of the most dangerous event for an aircraft is the “bird ingestion” from one or more aircraft engines, should it happen during the takeoff/landing or when taxiing.

TECHNICAL SPECIFICATIONS

The collision of birds or almost any solid foreign object with components of an aircraft (e.g radome, engines, control surfaces) can happen in most of the phases of the flight, and therefore poses a risk to impair aircraft flying ability. In particular the bird ingestion into jet engines can cause damage to the compressor stages, and other portions of the engine.

To prevent damage to aircraft components (in particular engines) a component protection device is proposed; the system comprise a rotating shield subject to collision with a flying object, composed of several twisted ribs which are designed to divert the objects, reducing their possible rotation due to the impact with the ribs and imposing them a different (lateral) trajectory, having the effect of mitigating the risk of impact with the surface protected by the shield.

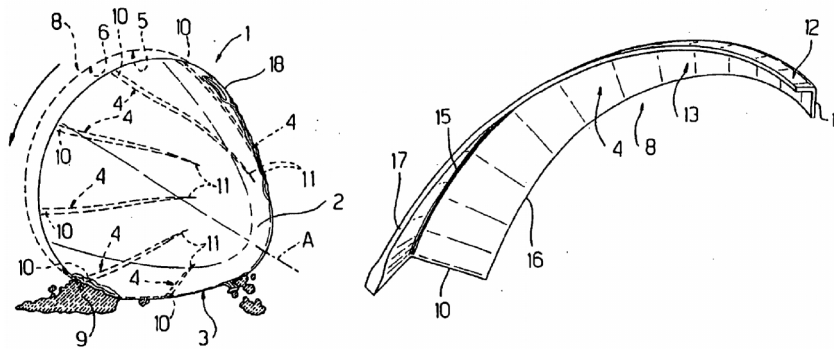


Figura 1 – View in perspective of the device and details of deflecting rib

The patented device provides for preventing or minimizing damage to the engine in the event of bird colliding with surface. More specifically, damage control is sufficient to allow the engine enough range for the aircraft to reach a landing site.

Certification regulations can thus be complied with, while at the same time reducing the additional weight of shield, with no impairment in performance of the aircraft, and no increase in consumption.

INNOVATION/ADVANTAGES

Advantages:

- Reduced additional weight to aircraft structure
- No impairment in performance of the aircraft, and no increase in consumption
- Low production costs
- Compliance with certification requirements to ensure the engine components to maintain flight long enough to reach a landing site in the event of collision with a foreign object

FIELD OF APPLICATION

Speedboating	Pump-jet engines protection from ingesting foreign objects (es. gravels, birds)
Agriculture/Construction/Industrial Equipments	“axial-flow” pumps or rotor protection from ingesting foreign objects

PATENT INFORMATION

Priority Date - 09/07/2007**Priority Code** – EP 07425425.1**IPC Codes** - F02C7/055 - B64D33/02**Active worldwide applications**EPO - EP2014551; **filing date:** 09/07/2007; **grant date:** 23/12/2009

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USA - US8251670; **filing date:** 08/07/2008; **grant date:** 28/08/2012CHINA – CN101468720; **filing date:** 09/07/2008; **grant date:** 26/06/2013**Leonardo internal code**

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