

A METHOD FOR REPAIRING PARTS OF COMPOSITE MATERIAL OF AN AIRCRAFT

Main Technological Area → Materials

Keywords — Composite | Materials | Positive pressure | Structures

DESCRIPTION

The invention relates to the repair of composite-material parts. The expression "composite material" is understood as meaning a widely used fibre-reinforced cured thermosetting resin. The patented process allows high-quality structural repairs both on flat, concave or convex panels and on other parts of varying shape, for example beams, nose-cones or radomes, tail-cones, etc. and intends to be an effective alternative to the "vacuum bag" technique normally used for the repair of manufacturing defects in composite panels and with a quality comparable to the techniques that use the autoclave and which provide for the disassembly of the element to be repaired .





TECHNICAL SPECIFICATIONS

A portable device is applied onto that surface, the portable device including an inflatable chamber consisting of a flexible and airtight membrane and a concave body of rubber-like material sealed with the membrane. The concave body incorporates an inextensible inner reinforcement. Pressurized air is introduced into the chamber via a valve. A further valve, which passes through the membrane in a zone of the membrane external to the chamber, is used to suck air from one side of the membrane to the other.

The compaction achieved by the pressurizable chamber produces repairs of a quality comparable to those obtained in an autoclave, with the difference that the invention allows the repairs to be performed directly on the part (in situ), without having to disassemble the part to be repaired. The costs are drastically reduced compared to the use of an autoclave.

Owing to the flexibility of the membrane, the rubber-like concave body and the perimetral flange, the portable device may be adapted it not only to flat surfaces, but also to curved surfaces. External securing means are not required in order to keep the portable device against the panel to be repaired. This reduces the costs and the risk of further damage to the panel during the course of repair itself.

COMPANY GENERAL USE



PATENT BROCHURE

INNOVATION/ADVANTAGES

- a) Flexibility in the geometry of the surface to be repaired
- b) High quality of the repair, comparable to what can be obtained in an autoclave
- c) High portability of the device for in situ repairs
- d) Reduction of repair costs

FIELDS OF APPLICATION

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Materials	Repair of composite material structures
Constructions	Panels and coverings, also having a structural function
Automotive/Railway/Naval	Composite part maintenance
Utilities (wind power plants /pipelines)	Repair of composite parts subject to stress

PATENT INFORMATION

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Active worldwide applications

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