INN-PAEK

Innovative thermoplastic Flange Wheel for future aeronautics

HIGHLY SPEED PRODUCTION

RECYCLING PROCESS

LIGHT MATERIAL

ONE-SHOOT MANUFACTUING

What - Developing a new Flange Wheel for aeronautics

INN-PAEK aims to demonstrate the technical, environmental and economic feasibility of manufacturing a thermoplastic Flange Wheel. INN-PAEK will substitute in an innovative way the classical flange wheel manufacturing processes for a near-net-shape cost efficient and easy to implement mold-supported processes such as advanced injection molding.

Why - The INN-PAEK eco-friendly Flange Wheel

INN-PAEK Project expects to achieve several inputs along these years, in order to succeed in stating a more sustainable (eco-friendly) production system for the aviation industry.

IMPACT 1 **Adapt future aeronautic parts for free design and customization with High Performance Polymers.**

IMPACT 2 **Adjust thermoplastic formulations for reaching feasibility for the transformation process.**

IMPACT 3 **Modify the material to hold extreme temperatures and chemicals.**

IMPACT 4 **Improve sound absorption capabilities alongside the engineering practices.**

IMPACT 5 **Reaching 40% of weight reduction by introducing new materials.**

IMPACT 6 **Validate and optimize new formulations and models of the product.**

IMPACT 7 **Reduce the final cost by 30% applying new manufacturing processess.**

IMPACT 8 **Decrease the carbon footprint with replication of “eco-friendly practices”.**

MATERIAL- PAEK Family

PAEK is suggested as the most promising substrate due to its high mechanical, thermal and electrical properties as well as its high strength-to-weight temperature resistance-to-cost ratios. INN-PAEK will address the production of the PAEK matrixes with different additives and fillers. Thanks to the capacity to work with thermoplastic materials in complex geometries a weight reduction will be effective

HIGH TECH - Injection Moulding

The injection process shows some interesting benefits for industry: The most remarkable feature is its cost effectiveness, because this process is capable of producing much more in a longer time in less time, thus overcoming the problems of the complete work cycle. The speed of the INN-PAEK model will allow the production of 30 complex parts per hour, instead of 2 per hour with the current materials

ADAPTATION - Innovative inserts

Within this new technology innovative inserts made by innovative materials will be used to assure that complex geometries can be carried out by injection moulding in one single manufacturing step. Ending with a high-quality product. The capacity of the new technology to manufacture complex geometry products with thermoplastic material will reduce the cost of the pieces, while allowing a faster production rate

PRODUCT- Flange Wheel

INN-PAEK arrives to improve the aeronautical cooling system, by producing an “eco-friendly” flange wheel with thermoplastic, instead of metal. The positioning of the INN-PAEK flange wheel is its exclusivity, as there is no other similar product on the market

GREEN AVIATION- Sustainability

The INN-PAEK comes to adapt future aeronautical parts for free design and customization with high performance polymers, reaching 40% of weight reduction by introducing new and greener –recyclable materials, and reducing the final cost by 30% through the application of new manufacturing processes

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