

PICASSO - Improved reliability inspection of aeronautic structure through simulation supported probability of detection (POD)

With ageing engines and an expected increase in air traffic over the next 20 years, a central challenge to the aeronautical industry will consist of developing the efficiency of maintenance operations, which still represent around 20% of an aircraft operator's indirect operating costs. This challenge is particularly important for metallic parts within the engine and aircraft industry. Maintenance is directly related to the concept of probability of detection (POD) curves which are obtained by expensive experimental campaigns.



The aim of PICASSO is to build a new and original concept of simulation-supported probability of detection (POD) curves based on non-destructive testing (NDT) simulation in addition to existing experimental data bases.

Project objective

The POD method of analysis is generally used for quantitative NDT process capabilities assessment. NDT performances must be evaluated to ensure the desired level of safety is reached and the POD curve provides a very useful method of quantifying the performance capability of an NDT technique. POD curves are used as a basis for establishing design acceptance requirements and setting inspection maintenance intervals.

However, generations of POD curves currently rely on expensive fully experimental campaigns which, in some cases, are technically impossible to realise.

Therefore the objectives of PICASSO are:

- To have more accurate and reliable POD curves in order to get appropriate damage tolerance assessments for critical parts to address the potential risk of failure from induced anomalies (from material, manufacturing or service) within the approved life of the part.
- To overcome cost issue of the POD campaign with NDT simulation techniques.

This challenge is particularly important for metallic parts within the engine and aircraft industry. The project outcomes will lead to building a future European standard on simulation-supported POD which will be the next step towards entry into the aerospace industry.

For further information, please visit the project website at www.picasso-ndt.eu.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under Grant agreement number 234117.