

46ESS-32: Engine Performance Testing – Aero

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Aero engine performance testing has become a crucial part in the development for manufacturers not only to make sure engines fulfil desired requirements but also to meet the necessary legislation standards. Performance testings are made along the whole design process, during engine installation on aircraft and when repairing or inspecting the engine. It is convenient to carry out tests for each component separately as the behaviour may change compared to that of the whole engine. For each test, different test bed, rigs or cells are needed as the outcome or the interest parameters that must be studied for each component are different.

The following paper contains an overview of the most common and used test rigs for compressor, combustors and turbines. It will also include some of the main requirements of the actual legislation for aero engines which need to be satisfied to commercialise them. The most used test beds for aero engine performance testing will also be presented. A brief comparison of CFD analysis and test bed results for different components' performances will be made, and finally, future trends of aero engine testing will be discussed.