

Apparatus and method for active reduction of the noise
emission from jet engines and for their diagnosis

Abstract

The invention relates to an apparatus and a method for active reduction of the noise emission from a jet engine (1) having an air inlet (3), a gas outlet (4) and an engine (5) which is arranged between the air inlet (3) and the gas outlet (4). In this case, at least one first acoustic transducer (7, 7') is arranged in the air inlet (3) upstream of the engine (5) and/or in the gas outlet (4) downstream of the engine (5), in order to convert sound waves (30) into first signals (31) which are a measure of the frequency, the amplitude and the phase of the sound waves (30). An electronic control unit (16, 16') converts the first signals (31) into second signals (32). At least one second acoustic transducer (8, 8') is arranged centrally, in the air inlet (3) upstream of the engine (5), and/or, centrally, in the gas outlet (4) downstream of the engine (5), in order to convert the second signals (32) into compensation sound waves (33) whose frequency, amplitude and phase are such that the sound waves (30) and the compensation sound waves (33) at least partially cancel one another out. The apparatus can also be used for diagnosis of the condition or of the operation of the jet engine. For this purpose, the apparatus has a comparison unit (17, 17') in which the first signals (31) from the first acoustic transducer (7, 7') are compared with nominal signals.

Fig. 1



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