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Landing gear noise assessment on Airbus aircraft

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During the last two decades, airframe noise sources (high lift devices and landing gears) have become noticeable in new aircraft technology, especially during approach. Aircraft manufacturers need prediction tools, in order to include noise modelling at the early stages of aircraft design. Such tools can be developed on the basis of simple formulations. As long as the dominant features are preserved in the simplified problems, the solution is believed to behave correctly in terms of EPNdB.

Such a model of landing gear noise prediction was developed in the late 1990s. It is based on the decomposition of a landing gear into different noise sources: the primary structure (massive elements) and the secondary structure (wire, pipes, ...), whose noise is estimated with existing classical source noise model fed with empirical constants based on wind tunnel test results.

Airbus implemented this model into its total aircraft noise program and validated it with dedicated flight tests.

As the model takes into account all main components with their geometry, it is well adapted to predict the impact of add-on treatment such as fairings on the gear or the impact of an advanced low noise gear with simplified geometry.