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Abstract	<p>This work was initiated by MAAXIMUS, an European research program for composite aircrafts, and was conducted at the Center of Structure Technologies of the ETH Zurich. It deals with the integration of the vibration damping function into structural fuselage components. The objective is to investigate the vibroacoustic and mechanical properties of carbon fiber reinforced polymer C-frames with integrated viscoelastic layer manufactured by the RTM process. The dynamic and numerical analyses show on the one hand that the finite element updating by means of the modal strain energy method does not improve the correlation of simulation and test results in the same way as for more simple geometries. On the other hand they indicate that the viscoelastic layer does not noticeably improve the overall damping performance. The static tests show different results. In the specially developed "step" test the profile with viscoelastic layer performs worse than the profile without viscoelastic layer. However, the four-point bending test reveals higher mechanical properties for the profile with viscoelastic layer. This study also includes the design and the construction of a RTM tool, that has been used for the manufacturing of profiles with and without damping treatment.</p>