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”EDRIVE#2 - NVH optimization of electric motors: optimization under constraints and uncertainty”

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The optimization methodology described in this paper aims at minimizing the noise and vibrations of electric motors. It relies on a numerical workflow involving electromagnetic, dynamic and acoustic models. Afterwards, a deterministic optimization method is described and applied to automotive traction motors. A robust enhancement of the optimization is then presented. It aims at considering the effect of manufacturing tolerances, materials properties dispersion and control uncertainties on the vibratory and acoustic levels to minimize, so that the electric motors are really silent when manufactured and operated. An application case of this robust optimization based on an automotive motor is then detailed.

Presenter(s) : DUPONT JEAN-BAPTISTE

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