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(54) Title: VEHICLE INTERIOR LOW NOISE OPTIMIZATION DESIGN METHOD, AND SYSTEM

(54) 发明名称: 一种车内低噪声优化设计方法及系统

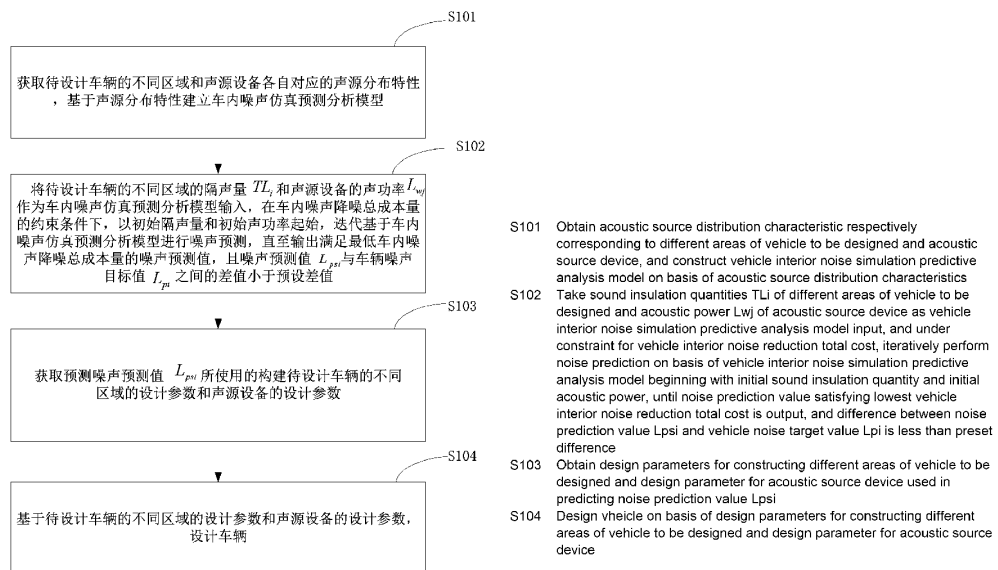


图 1

(57) Abstract: A vehicle interior low noise optimization design method and a system, where sound insulation quantities TL_i of different areas of a vehicle to be designed and the acoustic power L_{wj} of an acoustic source device are input into a vehicle interior noise simulation predictive analysis model, and under a preset constraint, noise prediction is iteratively performed on the basis of the vehicle interior noise simulation predictive analysis model beginning with an initial sound insulation quantity and an initial acoustic power, until a noise prediction value L_{psi} satisfying a lowest vehicle interior noise reduction total cost is output; design parameters for the acoustic source

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WO 2022/061944 A1

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device and for constructing the different areas of the vehicle to be designed that are used in predicting the noise prediction value Lpsi are obtained, and the vehicle is designed. By means of iteratively performing noise prediction on the basis of the vehicle interior noise simulation predictive analysis model, obtaining an unbiased noise prediction value Lpsi under a lowest vehicle interior noise reduction total cost is ensured, allowing the vehicle interior noise optimization design method to have a short cycle and low costs, and to be without bias, and vehicle design need not be carried out by means of subjective experience of personnel, and thus no subjectivity is present.

(57) 摘要: 一种车内低噪声优化设计方法及系统, 将待设计车辆的不同区域的隔声量TLi和声源设备的声功率Lwj输入车内噪声仿真预测分析模型, 在预设的约束条件下, 以初始隔声量和初始声功率起始, 迭代基于车内噪声仿真预测分析模型进行噪声预测, 直至输出满足最低车内噪声降噪总成本量的噪声预测值Lpsi, 获取预测噪声预测值Lpsi所使用的构建待设计车辆的不同区域和声源设备的设计参数设计车辆。通过迭代基于车内噪声仿真预测分析模型进行噪声预测, 确保在最低的车内噪声降噪总成本下得到无偏差的噪声预测值Lpsi, 使车内噪声的优化设计方法周期短、成本低、不出现偏差, 无需通过人员的主观经验进行车辆设计, 从而不存在主观性。