

## 多腔共振式消声器的声学特性分析

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摘要: 多腔赫姆霍兹共振消声器的内部结构比较复杂, 一维平面波理论无法准确预测其声学性能, 利用三维声学软件分别对不同组合形式的多腔赫姆霍兹共振消声器进行数值仿真, 分析不同组合结构对共振消声器传递损失的影响。结果表明: 并联或串联形式共振消声器, 可以消除多个频率处噪声值, 或增加某个频率处的消声量, 串并联组合结构有效地扩展共振消声器的消声频带, 提高消声性能。 Since the inner structure of multi-chamber Helmholtz resonator is complicated, acoustical performance could not be predicted by 1-D plane wave theory. The 3-D acoustical software has been used to simulate multi-chamber Helmholtz resonator which was combined in different ways. Then the influence of different combined structures on transmission loss of Helmholtz resonator was analyzed. The results showed that the parallel or serial structure of Helmholtz resonator could eliminate noise of several frequencies or increase transmission loss in one frequency. The combined series-parallel structure could increase its working frequency range and transmission loss.

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