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Pressure drop through regular vs. Irregular porous media

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Porous media has gained an extensive interest in various thermal management applications. The versatile use of such materials in applications requires a better understanding of the thermal-hydraulic performance. The current study is focused on the evaluation of pressure drop through regular (wire mesh system) and irregular (metallic and carbon foams) porous media. Experiments have been conducted to determine the pressure drop at various air flow rates of air. The impact of flow depth has been evaluated and reported in terms of pressure gradients (pressure drop per unit length) and compared with different flow depth for various materials. The Darcy flow model has been used to extract important flow parameters (permeability and coefficient of inertia) which can be used to analyze the feasibility of such materials in various thermal management applications.

References

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