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### Patent Search

Invention Title	MHD POROUS DYNAMICS: HARNESSING MAGNETO HYDRODYNAMICS AND POROUS MEDIA FOR ENHANCED FLUID FLOW CONTROL
Publication Number	22/2024
Publication Date	31/05/2024
Publication Type	INA
Application Number	202441040846
Application Filing Date	26/05/2024
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRONICS
Classification (IPC)	H01L0023473000, G06F0009500000, H01L0023380000, B01J0008020000, G06F0001200000

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#### Abstract:

The invention integrates magnetohydrodynamics (MHD) with porous media to enhance fluid flow control. This system uses a magnetic field to manipulate electrically fluids through a porous medium, improving efficiency in applications like cooling, filtration, and chemical reactors. The porous medium optimizes fluid distribution and transfer, while the adjustable magnetic field provides precise control over flow direction and velocity. Applications include electronic cooling systems, where enhanced flow improves heat dissipation, and filtration systems, where clogging is minimized. In chemical reactors, the system enhances reactant mixing and reaction rates. This integration promises significant advancements in fluid dynamics, offering more efficient and sustainable solutions across various industries.

### Complete Specification

Description: The present invention relates to the field of fluid dynamics, specifically focusing on the innovative integration of magnetohydrodynamics (MHD) and porous media to achieve enhanced control and manipulation of fluid flow. This novel approach leverages the principles of MHD to influence and direct the movement of electrically conductive fluids through porous structures, enabling more efficient and precise management of fluid dynamics in various industrial and engineering applications. The invention encompasses the design, development, and application of systems that utilize magnetic fields in conjunction with porous materials to optimize fluid flow, heat transfer, and improve overall system performance. Potential applications include, but are not limited to, advanced cooling systems, filtration processes, and chemical reactors, where precise fluid control is critical. This invention aims to address current limitations in fluid management technologies by providing a robust and versatile solution that combines the advantages of MHD and porous media.

Background of the proposed invention:

Fluid dynamics is a cornerstone of many industrial and scientific processes, from chemical engineering to environmental management. Traditional methods of controlling fluid flow often rely on mechanical components and pressure gradients, which can be limited in efficiency and precision. In recent years, there has been a growing interest in harnessing the unique properties of magnetohydrodynamics (MHD) and porous media to develop more sophisticated methods for managing fluid flow.

Magnetohydrodynamics refers to the study of the behavior of electrically conductive fluids in the presence of magnetic fields. These fluids, which include plasmas, molten metals, and saltwater solutions, can be manipulated using magnetic forces, allowing for non-contact control of their motion. This principle has been employed in various applications, such as in MHD generators, where the motion of a conductive fluid in a magnetic field is used to generate electricity, and in propulsion systems, where magnetic fields are used to drive the fluid without moving parts.

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Page last updated on: 26/06/2019