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Res. Assist. Abdullah NİĞDELİOĞLU

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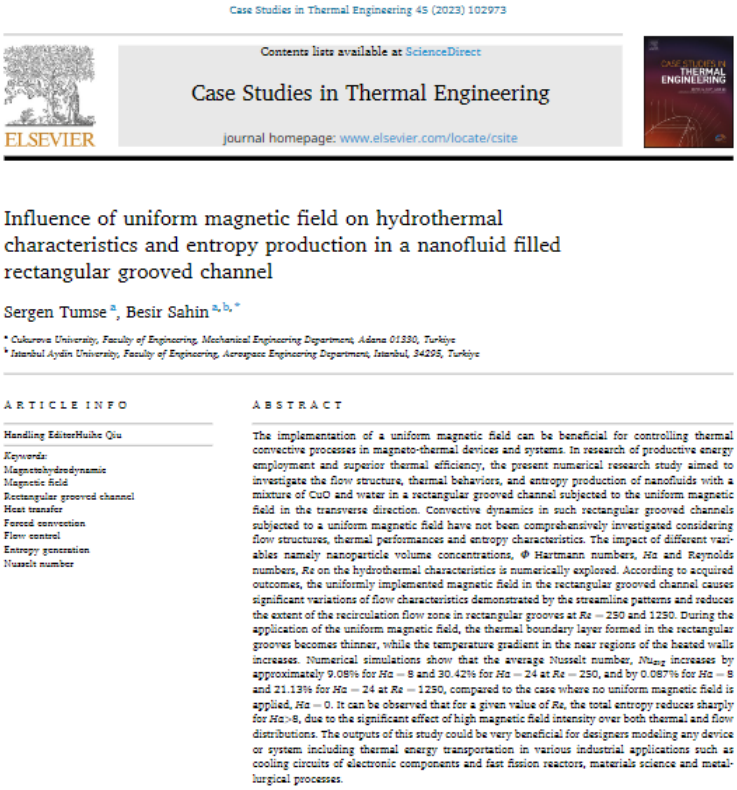
ARTICLE

The article titled "Influence of uniform magnetic field on hydrothermal characteristics and entropy production in a nanofluid filled rectangular grooved channel, 102973" by Prof. Dr. Beşir Şahin, Faculty of Engineering, Department of Aerospace Engineering, was published in the journal "Case Studies in Thermal Engineering", which is SCI-Expanded and has JCR and JCI categories Q1.



Case Studies in Thermal Engineering 45 (2023) 102973

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journal homepage: www.elsevier.com/locate/csite

ELSEVIER

Influence of uniform magnetic field on hydrothermal characteristics and entropy production in a nanofluid filled rectangular grooved channel

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ARTICLE INFO

Handling EditorHuihe Qiu

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ABSTRACT

The implementation of a uniform magnetic field can be beneficial for controlling thermal convective processes in magneto-thermal devices and systems. In research of productive energy employment and superior thermal efficiency, the present numerical research study aimed to investigate the flow structure, thermal behaviors, and entropy production of nanofluids with a mixture of CuO and water in a rectangular grooved channel subjected to the uniform magnetic field in the transverse direction. Convective dynamics in such rectangular grooved channels subjected to a uniform magnetic field have not been comprehensively investigated considering flow structures, thermal performances and entropy characteristics. The impact of different variables namely nanoparticle volume concentrations, Φ Hartmann numbers, Ha and Reynolds numbers, Re on the hydrothermal characteristics is numerically explored. According to acquired outcomes, the uniformly implemented magnetic field in the rectangular grooved channel causes significant variations of flow characteristics demonstrated by the streamline patterns and reduces the extent of the recirculation flow zone in rectangular grooves at $Re = 250$ and 1250. During the application of the uniform magnetic field, the thermal boundary layer formed in the rectangular grooves becomes thinner, while the temperature gradient in the near regions of the heated walls increases. Numerical simulations show that the average Nusselt number, Nu_{avg} increases by approximately 9.08% for $Ha = 8$ and 30.42% for $Ha = 24$ at $Re = 250$, and by 0.087% for $Ha = 8$ and 21.13% for $Ha = 24$ at $Re = 1250$, compared to the case where no uniform magnetic field is applied, $Ha = 0$. It can be observed that for a given value of Re, the total entropy reduces sharply for $Ha>8$, due to the significant effect of high magnetic field intensity over both thermal and flow distributions. The outputs of this study could be very beneficial for designers modeling any device or system including thermal energy transportation in various industrial applications such as cooling circuits of electronic components and fast fission reactors, materials science and metallurgical processes.

ACCEPTANCE OF TUBITAK APPLICATION

Department of Mechanical Engineering faculty member Dr. Rıza İLHAN was entitled to participate in the Tübitak 2224-A Supporting Participation in Scientific Activities Abroad program.

Issue 07 / 2023
Istanbul Aydın University
e - Newsletter
Engineering Faculty

PRESS STATEMENT

Dr. Hakan Koman and Dr. Hafez Keypour from the Department of Civil Engineering made evaluations on 'The danger posed by abandoned buildings and the renovation of these buildings.

DISASTER MANAGEMENT WEBINAR

The Department of Civil Engineering (English) and Disaster Training Application and Research Center organized a webinar on Importance of Geotechnical Engineering in Disaster Management ' on April 3.

e - Newsletter

Issue 07 / 2023

Istanbul Aydın University

Engineering Faculty

ARTICLE

Faculty of Engineering, Department of Aerospace Engineering Prof. Dr. Beşir Şahin's article titled "Determining the Contributions in a Denim Fabric Production for Sustainable Development Goals: Life Cycle Assessment and Material Input Approaches, 15 (6), 5315" was published in the journal "Sustainability, MDPI", which is SCI-Expanded and has JCR and JCI categories Q2.

sustainability

MDPI

Article

Determining the Contributions in a Denim Fabric Production for Sustainable Development Goals: Life Cycle Assessment and Material Input Approaches

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Abstract: In this paper, within the framework of increasing the contributions to sustainable development goals and reducing the water footprint, the sustainable production potential of a factory producing denim fabrics have been studied in association with the sustainable development goals. For this purpose, Life Cycle Assessment and Material Input per Service methods were used to determine the environmental impact factors of the factory and the existing water footprint. Calculations were made in three different ways, taking the factory's total production capacity, a selected product, and the wet processes into account. Although the sustainable production potential of the factory is demonstrated with the Sustainable Development Goals, it has been determined that the contribution rates differ according to both the calculation method and the production data taken into account. As a result of the evaluations, it has emerged as a more dominant view that the factory's contribution to the Sustainable Development Goals should be evaluated according to the total production capacity. The sustainability evaluation made according to the total production capacity determined that the

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Citation: Sarı, B.; Zarifi, F.; Alhasan, M.; Güney, H.; Türkeş, S.; Sırlıbaş, S.; Civan Yiğit, D.; Kılınççeker, G.; Şahin, B.; Keskinkan, O. Determining the

e - Newsletter

Issue 07 / 2023

Istanbul Aydın University

Engineering Faculty

LATEST ACADEMIC PUBLICATIONS

1) Prof. Dr. Beşir ŞAHİN

S. Tümse ve B. Şahin (2023) Influence of uniform magnetic field on hydrothermal characteristics and entropy production in a nanofluid filled rectangular grooved channel, 102973

B. Sarı et al., B. Şahin, O. Keskinkan, (2023), Determining the Contributions in a Denim Fabric Production for Sustainable Development Goals: Life Cycle Assessment and Material Input Approaches, 15 (6), 5315

2) Prof. Dr. Osman YILDIRIM

Ezgi Yildirim Arslan, Osman Yildirim, Tayfun Kaynas & Koycho Atanasov, Exploring the Impact of Digitalized Learning and Teaching Systems on the Big Five Personality Traits, Book Chapter, 2023. https://link.springer.com/chapter/10.1007/978-3-031-23432-3_14 2.

Ezgi Yildirim Arslan, Selin Soner Kara, Nadi Serhan Aydin, Osman Yildirim, The Personified Model for Supply Chain Management. Book Chapter, https://link.springer.com/chapter/10.1007/978-3-031-23432-3_16

OZTURK, A.I., YILDIRIM, O., KURU,A. (2022). Cyst Segmentation Using Filtering Technique in Computed Tomography Abdominal Images, Mathematical Statistician and Engineering Applications, ISSN:2094-0343, 2326-9865.

IDMAN, E., YILDIRIM, O., IDMAN, E. (2022). Investigation of the Electrical Conductivity of Pernigralin with Carbon Monoxide and Nitrogen Monoxide Doping, Mathematical Statistician and Engineering Applications, ISSN:2094-0343, 2326-9865.

3) Res. Assist. Abdullah NİĞDELİOĞLU

NİĞDELİOĞLU, A., ALBAYRAK, U., BALKAYA, C. (2023). The Behaviour Of Twisted Tall Building Structures Under Lateral Loads. Journal of Engineering and Architecture Faculty of Eskişehir Osmangazi University, 31(1), 509–518.