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ENGINEERING FACULTY

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Editor

Res. Assist. Abdullah NİĞDELİOĞLU



ARTICLE

The article titled "Investigations of flow structures and performances of heat transfer in semi-circular grooved ducts by applying field synergy principal analysis: An experimental and numerical study" by Prof. Dr. Beşir Şahin, a faculty member at the Faculty of Engineering, Department of Aerospace Engineering, was published in the journal "International Communications in Heat and Mass Transfer 144 (2023) 106801." The journal is indexed in SCI-Expanded and has a JCR category and WoS-JCI category of Q1.

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Investigations of flow structures and performances of heat transfer in semi-circular grooved ducts by applying field synergy principal analysis: An experimental and numerical study

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ABSTRACT

The present study aimed at investigating the flow structure and heat transfer mechanism through the corrugated channel experimentally and numerically. Particle imaging velocimetry (PIV), which can give detailed information about the wake and shear flow regions, was used for the experiments. The experimental and numerical works were performed considering Reynolds numbers in the range of $5 \times 10^2 < Re < 12 \times 10^3$ and $3 \times 10^2 < Re < 2 \times 10^4$, respectively. In the numerical part, aspect ratios (R/h_0) of examined grooves have been chosen as 0.1, 0.2, and 0.3, and for the experiment, only one aspect ratio was chosen which was 0.3. The experimental studies were conducted regarding different Reynolds numbers as well as the distributions of instantaneous and time-averaged velocity contours, Turbulence Kinetic Energy, Reynolds shear stress, and vorticity. The standard SST k- ω turbulent method was employed for the case of numerical study to predict the thermal performance (η) along with Nusselt numbers (Nu) the friction factors (f) and local field synergy angles (α, β) were calculated. As a result, the Nusselt number (Nu) values of the corrugated channels were higher than the parallel plate, and the increment in the Nusselt number initially increased and later decreased with Reynolds numbers for all aspect ratios considered.

STEEL STRUCTURES WEBINAR

The webinar titled "Benefits of Using Steel and Seismic Resistance in Turkey and Worldwide," moderated by Dr. Hafez Keypour, a faculty member of the Civil Engineering Department, has been conducted.

Online

TÜRKİYE VE DÜNYADA
 ÇELİK KULLANMANIN
 FAYDALARI VE DEPREME DAYANIKLIĞI

konuşmacı
 Dr. kafan Yemez
 Structural Engineer, Ph.D. at
 Ankara Mimarlık ÇELİK VE ÇELİK
 MİMARLIK SAN. VE TİC. A.Ş.

moderatör
 Dr. Hafez Keypour
 Istanbul Aydın Üniversitesi İng. Müh.
 Bölümü Öğretim Görevlisi

17 Mayıs 2023
 16:00 - 18:30

ArcelorMittal

Zoom
 ID : 87575621393
 Password : 4441428



CODING COMPETITION

On Saturday, 27th May 2023, the Computer Engineering Department and Caretta Software organized an open "Coding Competition" for all students of our university in the computer laboratories of D Block. A total of 44 students from various departments and classes participated in the coding competition, forming 15 groups. The event took place in two sessions from 09:30 to 17:00. At the end of the competition, a team called "The Code Squad," consisting of Ibrahim Ulvi Mercan, Hajar Said, Khabibullakh Alibekov, and Çerve Çoban, students of the Computer Engineering Department, achieved the highest score of 92/100 and secured the first place.



CONFERENCE

Prof. Dr. Hasan Alpay HEPERKAN and Research Assistant Büşra Selenay ÖNAL from the Department of Mechanical Engineering in the Faculty of Engineering participated in the 15th National HVAC Engineering Congress held in Izmir. They presented their papers titled "The Effects of Utilizing New Energy Technologies in Buildings on Energy Performance." The presentation was delivered by Research Assistant Büşra Selenay ÖNAL.



**LATEST ACADEMIC PUBLICATIONS****1) Prof. Dr. Beşir ŞAHİN**

N. TOKGÖZ, M. T. ERDİNÇ, Ö. KAŞKA, and B. ŞAHİN, “Investigations of flow structures and performances of heat transfer in semi-circular grooved ducts by applying field synergy principal analysis An experimental and numerical study,” International Communications in Heat and Mass Transfer

2) Assoc. Prof. Dr. Hüseyin Çağan KILINÇ

H. Ç. KILINÇ et al., “Daily Scale River Flow Forecasting Using Hybrid Gradient Boosting Model with Genetic Algorithm Optimization,” Springer Science and Business Media LLC, May 2023.

Our faculty member Associate Professor Dr. Hüseyin Çağan KILINÇ's previous period publications that have not been featured in our bulletin are as follows.

S. I. Abba et al., “Bio-communal wastewater treatment plant real-time modeling using an intelligent meta-heuristic approach A sustainable and green ecosystem,” Elsevier BV, vol. 53, Jul. 2023.

B. HAZNEDAR, H. Ç. KILINÇ, A. YURTSEVER, and F. ÖZKAN, “Streamflow forecasting using a hybrid LSTM-PSO approach the case of Seyhan Basin,” Springer Science and Business Media LLC, pp. 0–0, Feb. 2023.

3) Assist. Prof. Dr. Dilşad AKGÜMÜŞ GÖK

AKGÜMÜŞ GÖK D., KILIÇTEK S., GÖK S., YAKUT N. (2023). A Research on the Comparison of Additive Manufacturing Technologies, Gümüşhane Üniversitesi Fen Bilimleri Dergisi.

AKGÜMÜŞ GÖK D., GÖK S., KILIÇTEK S. (2023). Effect of the Same Sized Holes with Different Geometries and Angles in the Gun Silencer Diffusers on the Acoustic Power Level, Erzincan University Journal of Science and Technology.

KILIÇTEK S., ŞAHİN İ., AKGÜMÜŞ GÖK D., GÖK S. (2023). Investigation of The Impact of Different Material Types on Quadcopter Ascension Performance, Bilecik Seyh Edebali University Journal of Science.



4) Assist. Prof. Dr. Hasan Volkan ORAL

Sürdürülebilir Kent Planlama Ekseninde Enerji Verimliliği ve Ekoloji, Nobel Akademik Yayınlar, Hasan Saygin, Süleyman Balyemez, Hasan Volkan Oral

Oral, H.V., Alagöz, S. Designing appropriate site determination criteria for installing constructed wetland treatment system based on multi-criteria decision-making analyses. Environ Monit Assess 195, 639 (2023).

Technical Assessment of Constructed Wetlands in the Province Of Istanbul and Suggested Selection Techniques For the Future Locations Of New Constructed Wetlands HASAN VOLKAN ORAL, 3.Uluslararası Mühendislik ve Doğa Bilimleri Çalışmaları Kongresi

5) Assist. Prof. Dr. Kaveh DEGHANIAN

Investigating the effects of wind loading on three dimensional tree models using numerical simulation with implications for urban design, Majid Amani-Beni, Mahdi Tabatabaei Malazi, Kaveh Dehghanian, Laleh Dehghanifarsani, 2023/5/4 ,Scientific Reports Cilt: 13 Sayı: 1, Nature Publishing Group UK

6) Assist. Prof. Dr. Mahdi TABATABAEIMALAZI

M. TABATABAEIMALAZI, "Design optimization of a longfin inshore squid using a genetic algorithm," Ocean Engineering, vol. 279, no. 114583, Jul. 2023.