



ALTINBAŞ
UNİVERSİTESİ

MÜHENDİSLİK VE MİMARLIK
FAKÜLTESİ

e-bülten

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MÜHENDİSLİK VE MİMARLIK FAKÜLTESİ

e-bülten

Kutlamalar

- Atamalar**

Fakültemiz Dr. Öğr. Üyesi Doğu Çağdaş ATILLA ve Dr. Öğr. Üyesi Oğuz ATA hocalarımız doçentlik ünvanını almışlardır. Kendilerini tebrik eder, başarılarının devamını dileriz.

- Proje Destekleri**

TÜBİTAK 2209-A proje çağrısı 2022 yılı 2. döneminde fakültemizin dört projesi desteklenmiştir.

- Orta İrtifa Roketler İçin Freertos Tabanlı Stm32 İşlemcili Aviyonik Kart Yazılım Tasarımı (Doç. Dr. Doğu Çağdaş Atilla)
- Otonom Su Altı Sistemleri İçin Ultra Kısa Baz Hattı İle Sualtı Akustik Konumlandırma Yapımı (Doç. Dr. Doğu Çağdaş Atilla)
- Karbon Fiber Araç Yarış Koltuğu (Doç. Dr. Süleyman Baştürk)
- Polimer Nanokompozitlerin Geri Dönüşümü (Doç. Dr. Hakan Kaygusuz)

YAYIN KURULU

Prof. Dr. Çağrı
ERHAN
(Rektör)

Prof. Dr. Galip
Cansever
(Mühendislik ve
Mimarlık Fakültesi
Dekani)

Doç. Dr. Hakan
KAYGUSUZ

Doç. Dr. Yasa
EKŞİOĞLU ÖZOK

Öğr. Gör. Özge
Deniz DAYIOĞLU

YAYINA HAZIRLAYAN

Arş. Gör. Burcu ORHAN

Öğr. Gör. Büşra
BAŞKURT YAVUZ

Arş. Gör. Merve ÇİLTAŞ

Etkinlikler

Fakültemizin düzenlediği ilk Çarşamba Buluşmaları etkinliğinde Deprem konusu ele alındı.





Yayınlar

- Doç. Dr. Aykut ERKAL'ın tek yazarlı makalesi SCI indeksli ve Q1 olan Journal on Computing and Cultural Heritage adlı dergide yayınlanmıştır.

Response of Little Hagia Sophia (Church of SS Sergius and Bacchus) to adjacent Train-induced Vibrations

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Cultural heritage structures have recently faced the adverse impacts of traffic-induced vibrations more frequently than ever due to rapid and excessive urbanization. Closeness of Little Hagia Sophia Mosque to the intense traffic of an adjacent railway line in İstanbul made it vulnerable to the long-term and repetitive action of ground vibrations. To understand the structural response of this Byzantine edifice, an extensive vibration measurement program was conducted on and around the structure. After the construction material properties were determined, a numerical model of the structure was created and modal, self-weight and time history analyses were applied. It was observed that the maximum stresses reach approximately 45% of the tensile strength of the construction materials at certain locations. Cyclic loading of traffic-induced vibrations can be a significant contributing factor in the gradual material deterioration along with other environmental factors. Furthermore, measured peak particle velocity at the gallery level of the structure critically exceeded the limit of 2.5mm/s for historic or sensitive structures.

CCS Concepts: • **Computing methodologies** → **Modeling methodologies**; **Model verification and validation**; **Simulation evaluation**; • **Applied computing** → **Computer-aided design**; • **Social and professional topics** → *Cultural characteristics*;

Additional Key Words and Phrases: Cultural heritage, masonry conservation, train-induced vibrations, vibration measurement, little hagia sophia

- A. Erkal. 2022. Response of Little Hagia Sophia (Church of SS Sergius and Bacchus) to adjacent Train-induced Vibrations. J. Comput. Cult. Herit. 15, 3, Article 54 (September 2022), 18 pages. <https://doi.org/10.1145/3495224>

- Dr. Öğr. Üyesi Yaser ALAIWI'nin "Simulation and investigation of bioethanol production considering energetic and economic considerations" başlıklı makalesi Oxford yayıncılığın International Journal of Low-Carbon Technologies adlı Q1 dergide yayınlanmıştır.

Simulation and investigation of bioethanol production considering energetic and economic considerations

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Abstract

Today, the use of alternative fuels that have plant origin has attracted the attention of most countries because these fuels emit less pollution. In this research, bioethanol production has been evaluated considering solar energy sources. In the present study, the possibility of developing net-zero energy concepts in a bioethanol production plant as one of the most consumed energy industries in the field of bio-systems of the country from a technical and economic perspective was investigated. The purpose of this research is to model the bioethanol production plant with the aim of achieving zero net energy using a photovoltaic system. In addition, technical and economic analyses have been used in different approaches for a more detailed investigation. According to the modeling done, in the zero net energy approach, the results showed that the maximum production of electrical energy by the photovoltaic cell is 76.6 GWh/y. For this approach, the return on investment is 10.7 years. The area required to install photovoltaic modules in this approach is very large and equal to 88 334 m².

Keywords: electrical energy; bioethanol; photovoltaic; sustainable development; *Keywords:* net-zero energy

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- Dr. Öğr. Üyesi Yaser ALAIWI'nin "Experimental investigation of thermal performance of single pass solar collector using high porosity metal foams" başlıklı makalesi Case Studies in Thermal Engineering adlı dergide yayınlanmıştır.

Case Studies in Thermal Engineering 45 (2023) 102879



Experimental investigation of thermal performance of single pass solar collector using high porosity metal foams

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Solar air heater
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ABSTRACT

The previous literature showed that there have been many studies focusing on some specific aspects of single-pass solar air collectors, such as the effects of the number of passes, the shape of fins, and their effects on thermal performance. Also, the effect of thermal efficiency accompanied by the existence of these fins has been the interest of many studies. A few research types are dealing with using porous materials (Metal foam) to improve thermal performance. Therefore, an experimental apparatus was designed and fabricated to study the effect of Metal Foam (MF) on the performance of solar air collectors. The experiments were held in Iraq, Al Ramadi climate conditions. A comparison of three configurations of absorber plates of solar air heaters with and without MF is presented and evaluated. The results showed that by including MF fins in the absorber plate, the absorber plate's surface area was increased, increasing heat transmission compared to a flat plate (without MF). Moreover, utilizing MF at the tilted angle of 45° (MF_{0-45°}) increased turbulence intensity, which improved the mixing of cold and hot air. The MF_{0-45°} layout had the best thermal efficiency of the three employed configurations (94.8%), followed by the MF_{0-0°} configuration (62.6%) and the flat plate configuration (33.8%), all with the same mass flow rate. Finally, when using MF fins with a tilted angle of 45°, the air temperature differential is bigger compared to MF fins with a tilted angle of 0° or a flat plate collector.

Mutar, W. M., & Alaiwi, Y. (2023). Experimental investigation of thermal performance of single pass solar collector using high porosity metal foams. Case Studies in Thermal Engineering, 102879.

EVA Team Mart Ayı Faaliyetleri

EVA OTONOM Kritik Tasarım Raporundan 89.5 Puanla Bir Sonraki Aşamaya Geçti



EVA Team'in Otonom Araç Takımı EVA Otonom, TEKNOFEST 2023 Robotaksi-Binek Otonom Araç Yarışmasının özgün araç kategorisinde Kritik Tasarım Raporundan 100 üzerinden 89,5 puan alarak, bütün başvurular içinde 3. olarak bir sonraki aşamaya geçmeye hak kazandı.

EVA ROV Kritik Tasarım Raporunu Geçerek Sonraki Aşamaya Geçti



EVA Team'in Sualtı Araç Takımı EVA ROV, TEKNOFEST 2023 İnsansız Sualtı Sistemleri Yarışması Kritik Tasarım Raporunu 100 puan üzerinden 88,5 puan alarak bir sonraki aşamaya geçmeye hak kazandı.

EVA PSY Kritik Tasarım Raporundan Geçerek Bir Sonraki Aşamaya Geçti



EVA Team'in Psikoloji Takımı EVA PSY, TEKNOFEST Psikolojide Teknolojik Uygulamalar Yarışması Proje Detay Raporundan 82,33 puan alarak başarılı şekilde finalist oldu.

EVA TEAM 2.Genel Koordinasyon Toplantısı Gerçekleşti.



EVA Team 2.Genel Koordinasyon Toplantısı gerçekleştirerek, bu zamana kadar projelerde gelinen durum hakkında yapılan toplantıda hocalarımıza ve takım arkadaşlarımıza aktardık.



Ayrıca takımımızdaki kadın mühendis adaylarına 8 Mart Dünya Kadınlar Günü hediyelerini takdim ettik.

EVA TEAM, İstanbul Eğitim ve Kariyer Fuarında yer aldı.

22-23 Mart'ta Lütü Kırdar Kongre Merkezinde binlerce öğrencinin akın ettiği İstanbul Eğitim ve Kariyer Fuarında Altınbaş Üniversitesinin standında EVA-2S aracımızla yer aldık. Ziyaretçilerin ilgi odağı olan standımızda Altınbaş Üniversitesi ve EVA TEAM hakkında bilgiler verdik.

