Asst. Prof. ORKUN ÖZŞAHİN

Personal Information

Office Phone: +90 312 210 2568
Email: ozsahin@metu.edu.tr
Web: https://avesis.metu.edu.tr/ozsahin

International Researcher IDs
ScholarID: xwtgMlsAAAAJ
ORCID: 0000-0002-7572-0235
Publons / Web Of Science ResearcherID: B-5761-2016
ScopusID: 36004950400
Yoksis Researcher ID: 163540

Education Information

Doctorate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Makine Mühendisliği (Yl) (Tezli), Turkey 2008 - 2014
Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Makine Mühendisliği (Yl) (Tezli), Turkey 2005 - 2008
Undergraduate, Middle East Technical University, Faculty of Engineering, Makine Mühendisliği Bölümü, Turkey 2000 - 2005

Dissertations

Doctorate, Analysis and modelling of machine tool dynamics and cutting stability during operation, Middle East Technical University, Graduate School of Natural and Applied Sciences, Makine Mühendisliği (Yl) (Tezli), 2014
Postgraduate, An investigation on dynamic contact parameters in machining center spindle?tool assemblies, Middle East Technical University, Graduate School of Natural and Applied Sciences, Makine Mühendisliği (Yl) (Tezli), 2008

Research Areas

Mechanical Engineering, Construction and Manufacturing, Machine Elements, Machine Design, Machining Methods, Machine Theory and Dynamics, Mechanical Vibrations, Engineering and Technology

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Mechanical Engineering, 2018 - Continues
Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Mechanical Engineering, 2017 - 2018
Assistant Professor, Atilim University, Faculty Of Engıneerıng, İmalat, 2015 - 2017
Research Assistant, Middle East Technical University, Faculty of Engineering, Department of Mechanical Engineering, 2009 - 2013

Courses

MANUFACTURING TECHNOLOGIES (Section 1), Undergraduate, 2021 - 2022, 2019 - 2020
MANUFACTURING TECHNOLOGIES (Section 2), Undergraduate, 2021 - 2022, 2017 - 2018
MANUFACTURING TECHNOLOGIES (Section 3), Undergraduate, 2020 - 2021, 2018 - 2019, 2017 - 2018
SPECIAL TOPICS IN ME: MACHINING DYNAMICS AND MACHINE TOOL VIBRATIONS, Undergraduate, 2020 - 2021, 2018 - 2019
MACHINE ELEMENTS I (Section 05), Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2017 - 2018
MACHINE ELEMENTS I (Section 04), Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2017 - 2018
THEORY OF MACHINES II (Section 4), Undergraduate, 2019 - 2020
THEORY OF MACHINES II (Section 3), Undergraduate, 2018 - 2019

Advising Theses

Özşahin O., Çalışkan H., PNÖMATİK TAHRİKLİ KANARD SİSTEMİNİN MODELLENMESİ VE KONTROLÜ, Postgraduate, M.Can(Student), Continues
Özşahin O., YÜKSEK HIZLI TAKIM TEZGAHLARINDA TİTREŞİM ÖLÇÜMÜ İLE KESTİRİMCİ BAKIM, Postgraduate, M.Karakaş(Student), Continues
Özşahin O., Çalışkan H., YÜKSEK HIZLI ROTOR-RULMAN SİSTEMLERİNİN DİNAMİK MODELLENMESİ, Postgraduate, S.Can(Student), Continues
Özşahin O., Çalışkan H., PREDICTIVE MAINTENANCE IN CNC SPINDLES USING MACHINE LEARNING ALGORITHM, Postgraduate, A.BAHADIR(Student), Continues
Özşahin O., YÜKSEK HIZLI ROTOR-RULMAN SİSTEMİ DİNAMİKLERİNİN MODELLENMESİ VE KÜTLE SÖNÜMLEYİCİ KULLANILARAK TİTREŞİMLERİNİN BASTIRILMASI., Postgraduate, F.Can(Student), Continues
Özşahin O., ENDÜSTRİYEL ROBOTLARDA TİTREŞİM SÖNÜMLEMESİ İÇİN AKTİF SÖNÜMLEYİCİ TASARIMI, Postgraduate, H.Elif(Student), Continues
Özşahin O., CNC TAKIMLARI İÇİN PASİF SÖNÜMLEME SİSTEMLERİ GELİŞTİRİLMESİ, Postgraduate, C.Furkan(Student), Continues
Özşahin O., DEVELOPMENT OF A NEW HIGH SPEED CNC SPINDLE DESIGN FOR THE IMPROVED PRODUCTIVITY, Postgraduate, M.ÜNAL(Student), Continues
Özşahin O., Çalışkan H., Identification of Position-Dependent Workpiece Dynamics in Milling Process, Postgraduate, B.ALTUN(Student), 2022
ÖZŞAHİN O., Investigation of vibration based fault detection methods for spindle bearings, Postgraduate, M.KARAKAŞ(Student), 2022
ÖZŞAHİN O., Design optimization of tool extension components in machine tool assemblies based on the absorber effect between subcomponent modes, Postgraduate, H.ELİF(Student), 2022
Özşahin O., Structural and aeroelastic flutter analysis of wing store systems and structural modification approach in aeroelasticity, Postgraduate, A.AKPINAR(Student), 2021

Designed Lessons

Özşahin O., SPECIAL TOPICS IN ME: MACHINING DYNAMICS AND MACHINE TOOL VIBRATIONS, Undergraduate, 2018 - 2019

Research Infrastructure Information

Özşahin O., Tezgah Dinamiği Araştırma Laboratuvarı, May 2022

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Development of a dynamic simulation model for CNC table vibration estimation in milling operations**
Frezeleme işleminde CNC tabla titreşimlerinin kestirimi için dinamik simülasyon modeli geliştirilmesi
ALTUN B., ÇALIŞKAN H., ÖZŞAHİN O.
Journal of the Faculty of Engineering and Architecture of Gazi University, vol.39, no.3, pp.1703-1718, 2024 (SCI-Expanded)

II. **Position-dependent FRF identification without force measurement in milling process**
Altun B., Çalişkan H., Özşahin O.
International Journal of Advanced Manufacturing Technology, vol.128, no.11-12, pp.4981-4996, 2023 (SCI-Expanded)

III. **Alternative experimental methods for machine tool dynamics identification: A review**
Iglesias A., Taner Tunç L., ÖZŞAHİN O., Franco O., Munoa J., Budak E.
Mechanical Systems and Signal Processing, vol.170, 2022 (SCI-Expanded)

IV. **Use of inverse stability solutions for identification of uncertainties in the dynamics of machining processes**
Tunc L. T., Özşahin O.
ADVANCES IN MANUFACTURING, vol.6, pp.308-318, 2018 (SCI-Expanded)

V. **High speed tooltip FRF predictions of arbitrary tool-holder combinations based on operational spindle identification**
Postel M., Ozsahin O., Altintas Y.
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, vol.129, pp.48-60, 2018 (SCI-Expanded)

VI. **Determination of tool point FRF of micro tools under operational conditions using analytical methods**
ÖZŞAHİN O.
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.33, no.2, pp.517-526, 2018 (SCI-Expanded)

VII. **Stability of Milling Operations With Asymmetric Cutter Dynamics in Rotating Coordinates**
Comak A., Ozsahin O., Altintas Y.
JOURNAL OF MANUFACTURING SCIENCE AND ENGINEERING-TRANSACTIONS OF THE ASME, vol.138, no.8, 2016 (SCI-Expanded)

VIII. **Receptance coupling based algorithm for the identification of contact parameters at holder-tool interface**
Matthias W., Ozsahin O., Altintas Y., DENKENA B.
CIRP JOURNAL OF MANUFACTURING SCIENCE AND TECHNOLOGY, vol.13, pp.37-45, 2016 (SCI-Expanded)

IX. **Identification of bearing dynamics under operational conditions for chatter stability prediction in high speed machining operations**
ÖZŞAHİN O., Budak E., ÖZGÜVEN H. N.
PRECISION ENGINEERING-JOURNAL OF THE INTERNATIONAL SOCIETIES FOR PRECISION ENGINEERING AND NANOTECHNOLOGY, vol.42, pp.53-65, 2015 (SCI-Expanded)

X. **Prediction of frequency response function (FRF) of asymmetric tools from the analytical coupling of spindle and beam models of holder and tool**
Oezsahin O., Altintas Y.
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, vol.92, pp.31-40, 2015 (SCI-Expanded)

XI. **In-process tool point FRF identification under operational conditions using inverse stability solution**
ÖZŞAHİN O., Budak E., ÖZGÜVEN H. N.
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, vol.89, pp.64-73, 2015 (SCI-Expanded)

XII. **Analytical modeling of asymmetric multi-segment rotor - bearing systems with Timoshenko beam model including gyroscopic moments**
Ozsahin O., ÖZGÜVEN H. N., Budak E.
COMPUTERS & STRUCTURES, vol.144, pp.119-126, 2014 (SCI-Expanded)

XIII. **Analysis and compensation of mass loading effect of accelerometers on tool point FRF measurements for chatter stability predictions**
ÖZŞAHİN O., ÖZGÜVEN H. N., Budak E.
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, vol.50, no.6, pp.585-589, 2010 (SCI-Expanded)

XIV. **A closed-form approach for identification of dynamical contact parameters in spindle-holder-tool assemblies**
ÖZŞAHİN O., ERTURK A., ÖZGÜVEN H. N., Budak E.
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, vol.49, no.1, pp.25-35, 2009 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

I. **RECURSIVE DEFINING OF FORCE COEFFICIENTS IN MILLING PROCESS WITH ACCELEROMETER**
Altun B., Çalışkan H., Özşahin O.
UMTIK 2022, Nevşehir, Turkey, 31 August - 03 September 2022, pp.259-273

II. **Effect of spindle design on spindle dynamics and chatter stability**
Özşahin O., Budak E., Rahimzadeh Berenji K.
International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM), Jeju-Si, South Korea, 21 - 23 July 2021, pp.1-5

III. **Design optimization of tool holder extension for enhanced chatter stability by using component mode tuning method**
Karataş G., ÖZŞAHİN O., ÖZGÜVEN H. N., Budak E.
9th CIRP Conference on High Performance Cutting, HPC 2020, Virtual, Online, 24 - 26 May 2021, vol.101, pp.294-297

IV. **Identification of spindle dynamics by receptance coupling for non-contact excitation system**
ÖZŞAHİN O., Ritou M., Budak E., Rabréau C., Le Loch S.
17th CIRP Conference on Modelling of Machining Operations, CIRP CMMO, Sheffield, United Kingdom, 13 - 14 June 2019, vol.82, pp.273-278

V. **ANALYSIS AND DESIGN OF VARIABLE PITCH TOOLS FOR THE IMPROVED PRODUCTIVITY**
Özşahin O.
International Congress on Machining (UTIS 2018), Antalya, Turkey, 8 - 10 October 2018

VI. **Analytical modeling of the machine tool spindle dynamics under operational conditions**
ÖZŞAHİN O., Budak E., ÖZGÜVEN H. N.
37th International MATADOR 2012 Conference, Manchester, United Kingdom, 25 - 27 July 2012, pp.117-120

VII. **Investigating Dynamics of Machine Tool Spindles under Operational Conditions**
ÖZŞAHİN O., Budak E., ÖZGÜVEN H. N.
13th CIRP Conference on Modelling of Machining Operations, Sintra, Portugal, 12 - 13 May 2011, vol.223, pp.610-612

VIII. **The use of noise measurements in machining stability analysis**
Özlü E., ÖZŞAHİN O., Budak E., ÖZGÜVEN H. N.
36th International Congress and Exhibition on Noise Control Engineering, INTER-NOISE 2007, İstanbul, Turkey, 28 - 31 August 2007, vol.7, pp.4881-4894

Supported Projects

Özşahin O., Budak E., TÜBİTAK International Bilateral Joint Cooperation Program Project, Yüksek Hızlı Freze İş Millerinin En İyi Tasarımı Için Bütünleşik Bir Yaklaşım, 2021 - 2023

Özşahin O., Çalışkan H., Project Supported by Other Private Institutions, Eş Zamanlı Tornalama Operasyonlarında Stabilite ve Adaptif Tırlama Kontrolü Sistemi Geliştirilmesi, 2020 - 2021

Özşahin O., TUBITAK Project, Talaşlı İmalatta Verimliliğin Artırılması Amacıyla Takım Tasarımı Yöntemlerinin

Geliştirilmesi Ve Takım Geometrilerinin Eniyilemesi, 2017 - 2019

Scientific Refereeing

INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY, SCI Journal, November 2021
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE, SCI Journal, November 2021

Metrics

Publication: 22
Citation (WoS): 355
Citation (Scopus): 505
H-Index (WoS): 10
H-Index (Scopus): 11