

## Assoc. Prof. Osman Taha Şen

### Personal Information

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**Address:** İTÜ Makina Fakültesi, İnönü Cad., No:65, Gümüşsuyu, 34437, Beyoğlu/İstanbul

### International Researcher IDs

ScholarID: 9nDzbW0AAAAJ

ORCID: 0000-0002-8604-3962

Publons / Web Of Science ResearcherID: B-7186-2013

ScopusID: 55314269300

Yoksis Researcher ID: 25921

### Education Information

Doctorate, The Ohio State University, United States Of America 2008 - 2012

Postgraduate, The Ohio State University, United States Of America 2008 - 2011

Postgraduate, Istanbul Technical University, Makine Fakültesi, Makine Mühendisliği Bölümü, Turkey 2005 - 2007

Undergraduate, Istanbul Technical University, Makine Fakültesi, Makine Mühendisliği Bölümü, Turkey 2000 - 2005

### Foreign Languages

English

### Dissertations

Doctorate, Dynamic analysis of speed-dependent friction-induced torque in a nonlinear brake system, The Ohio State University, 2012

Postgraduate, Mixed lubrication analysis of laser textured cylinder bores, İstanbul Teknik Üniversitesi, Makine Fakültesi, Makine Mühendisliği Bölümü, 2007

### Research Areas

Mechanical Engineering, Machine Theory and Dynamics, Vehicle Systems Dynamics, Acoustics and Noise Control, Modeling and Simulation of Dynamic Systems, Mechanical Vibrations, Engineering and Technology

### Academic Titles / Tasks

Associate Professor, Istanbul Technical University, Makina, Makina Mühendisliği, 2023 - Continues

Assistant Professor, Istanbul Technical University, Makina, Makina Mühendisliği, 2018 - 2023

Assistant Professor, Istanbul Technical University, Makina, Makina Mühendisliği, 2018 - 2018

Lecturer PhD, Istanbul Technical University, Makina, Makina Mühendisliği, 2013 - 2018

Research Assistant, Istanbul Technical University, Makina, Makina Mühendisliği, 2006 - 2013

Research Assistant, The Ohio State University, Mechanical And Aerospace Engineering, Mechanical And Aerospace Engineering, 2008 - 2012

## Advising Theses

Şen O. T., Dinamik dengesizlik probleminin algılanmasının deneysel olarak incelenmesi, Postgraduate, E.Takmaz(Student), 2022

Şen O. T., ASKERİ KARA SİLAH SİSTEMLERİNDE KULLANILAN BİRİM TUTUCU BRAKETİN RASTSAL TİTREŞİM YÜKLEMESİ ALTINDAKİ YORULMA DAVRANIŞININ TEORİK VE DENEYSEL OLARAK ANALİZİ, Postgraduate, C.Nehir(Student), 2022

Şen O. T., TİTREŞİM SÖNÜMLEMESİ VE İZOLASYONU İÇİN KULLANILAN FARKLI ELASTOMERLERİN STATİK VE DİNAMİK ÖZELLİKLERİNİN İNCELENMESİ, Postgraduate, U.Çalık(Student), 2022

Şen O. T., LENSİLERİN TİTREŞİM SEVİYELERİNİN DÜŞÜRÜLMESİ İLE YÜKSEK OPTİK PERFORMANSLI IŞIN GENİŞLETİCİ TASARIMI, Postgraduate, F.Nusret(Student), 2022

Şen O. T., Parallel hybrid electric truck design, Postgraduate, O.Darıcı(Student), 2022

Şen O. T., Sürtünmeli Yayların Matematiksel Modellenmesi, Parametrik Analizi ve Deneysel Doğrulanması, Postgraduate, T.Çakmak(Student), 2022

Şen O. T., EQUIVALENT CONSUMPTION MINIMIZATION STRATEGY FOR PLUG-IN HYBRID ELECTRIC VEHICLES, Postgraduate, F.Bilge(Student), 2022

Şen O. T., FONKSİYONEL GÜVENLİK KAPSAMINDA ELEKTRİK MOTORU TAKVİYELİ DİREKSİYON SİSTEMİNİN MODEL TABANLI YAZILIMININ GELİŞTİRİLMESİ, Postgraduate, C.Aydın(Student), 2022

Şen O. T., Farklı araç kalibrasyonlarının sürüş stili üzerindeki etkilerinin bulanık mantık yaklaşımı ile incelenmesi, Postgraduate, S.Akşit(Student), 2020

Şen O. T., Calibration of mobile device microphones and their use for sound source identification, Postgraduate, G.Berker(Student), 2020

Şen O. T., Experimental and numerical investigation of rear axle gear whine, Postgraduate, M.Demirel(Student), 2019

Şen O. T., Shift quality analysis of a powertrain model with semi - automatic transmission, Postgraduate, B.Akyol(Student), 2019

Şen O. T., DEMİRYOLU TAŞITI TEKERLEK TAKIMI SİNÜS HAREKETİNİN ANALİTİK VE HESAPLAMALI YÖNTEMLERLE İNCELENMESİ, Postgraduate, R.Akçay(Student), 2019

Şen O. T., Analysis of electrification on power consumption of a shuttle bus, Postgraduate, M.Ercan(Student), 2019

Şen O. T., Motor bağlantı elemanlarının titreşim geçirgenliği üzerindeki etkilerinin incelenmesi, Postgraduate, A.İsa(Student), 2019

Şen O. T., Parametric investigation of brake squeal problem through numerical and experimental methods, Postgraduate, S.Özekmekçi(Student), 2018

Şen O. T., Characterization of driving style and it's effects on fuel economy with eco-driving perspective on a heavy duty truck, Postgraduate, O.Aydoğan(Student), 2017

Şen O. T., Dynamic Investigation of Stick-Slip Oscillations on a Translating Friction Band, Postgraduate, A.Şengüler(Student), 2015

## Jury Memberships

Award, Uluslar Young Professional Award, International Institute of Noise Control Engineering, August, 2017

## Published journal articles indexed by SCI, SSCI, and AHCI

1. Feasibility of Using a Mobile Device to Identify the Axle Whine Noise in a Vehicle

Rahtuvan G. B., Yavuz A., Şen O. T.

International Journal of Acoustics and Vibrations, vol.28, no.2, pp.139-146, 2023 (SCI-Expanded)

- II. **Assessment of fuzzy logic approach for the prediction of dynamic stability on a mass-sliding belt experiment**

Yavuz A., Şen O. T.

JOURNAL OF INTELLIGENT AND FUZZY SYSTEMS, vol.1, pp.1-16, 2023 (SCI-Expanded)

- III. **INVESTIGATION OF THE PAD STIFFNESS EFFECTS ON THE INITIATION OF BRAKE SQUEAL PHENOMENON**

Yavuz A., Şen O. T.

Journal of Theoretical and Applied Mechanics (Poland), vol.61, no.2, pp.219-232, 2023 (SCI-Expanded)

- IV. **Comparison and investigation of inverse identification techniques for the material properties of a brake disc through experimental and numerical modal analysis**

BALCI Ö., Yavuz A., ÖZKAN M., Şen O. T.

PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART C-JOURNAL OF MECHANICAL ENGINEERING SCIENCE, vol.236, no.20, pp.10395-10412, 2022 (SCI-Expanded)

- V. **Dynamics of a simplified nonlinear model offering insights into the hammering type brake squeal initiation process**

Şen O. T., Singh R.

NOISE CONTROL ENGINEERING JOURNAL, vol.69, no.3, pp.243-261, 2021 (SCI-Expanded)

- VI. **Assessment of point and line contact stiffness formulations leading to the initiation of hammering type brake squeal**

Şen O. T., Singh R.

NOISE CONTROL ENGINEERING JOURNAL, vol.69, no.2, pp.146-161, 2021 (SCI-Expanded)

- VII. **Case study: Identification of brake squeal source mechanism through experimental and computational approaches**

Tozkoparan O. A., Şen O. T., Singh R.

NOISE CONTROL ENGINEERING JOURNAL, vol.68, no.1, pp.21-37, 2020 (SCI-Expanded)

- VIII. **Feasibility of controlling speed-dependent low-frequency brake vibration amplification by modulating actuation pressure**

Şen O. T., Dreyer J. T., Singh R.

JOURNAL OF SOUND AND VIBRATION, vol.333, no.24, pp.6332-6348, 2014 (SCI-Expanded)

- IX. **Low frequency dynamics of a translating friction element in the presence of frictional guides, as motivated by a brake vibration problem**

Şen O. T., Dreyer J. T., Singh R.

JOURNAL OF SOUND AND VIBRATION, vol.332, no.22, pp.5766-5788, 2013 (SCI-Expanded)

- X. **Envelope and order domain analyses of a nonlinear torsional system decelerating under multiple order frictional torque**

Sen O. T., Dreyer J. T., Singh R.

MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.35, pp.324-344, 2013 (SCI-Expanded)

- XI. **Order domain analysis of speed-dependent friction-induced torque in a brake experiment**

Sen O. T., Dreyer J. T., Singh R.

JOURNAL OF SOUND AND VIBRATION, vol.331, no.23, pp.5040-5053, 2012 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Stability Analysis of a Mass-Sliding Belt System and Experimental Validation as Motivated by the Brake Squeal Problem**

Yavuz A., Şen O. T.

Journal of Vibration Engineering and Technologies, vol.12, no.1, pp.395-414, 2024 (Scopus)

- II. **Investigation of the Series Hybrid Electric Powertrain Architecture with Wankel Engine as a Range**

#### **Extender**

ÖZKAN A., ARSLAN H., ŞEN O. T.

GAZI UNIVERSITY JOURNAL OF SCIENCE, vol.35, pp.1078-1089, 2022 (Scopus)

#### **III. A Fuzzy Logic Approach on the Evaluation of Driving Styles and Investigation of Drivability Calibration Effects**

AKŞİT S., YAVUZ A., ŞEN O. T.

GAZI UNIVERSITY JOURNAL OF SCIENCE, vol.35, pp.668-680, 2022 (Scopus)

#### **IV. Particle Swarm Optimization Method Based Controller Tuning for Adaptive Cruise Control Application**

Ozkaya E., Arslan H., Şen O. T.

GAZI UNIVERSITY JOURNAL OF SCIENCE, vol.34, no.2, pp.517-527, 2021 (ESCI)

#### **V. Assessment of a Simplified Wheel/Rail Contact Model and Kalker's Linear Theory from the Perspective of Hunting Instability**

ŞEN O. T.

Demiryolu Mühendisliği, vol.0, pp.87-98, 2021 (Peer-Reviewed Journal)

#### **VI. A Multiscale Cylinder Bore Honing Pattern Lubrication Model for Improved Engine Friction**

Şen O. T., Akalın Ö.

SAE INTERNATIONAL JOURNAL OF FUELS AND LUBRICANTS, vol.12, no.3, pp.155-166, 2019 (ESCI)

### **Books & Book Chapters**

#### **I. Arazi Taşıtları için Seri Hibrit Güç Aktarma Sistemi Tasarımı**

ŞEN O. T.

in: Modern Elektrikli, Hibrit Elektrikli ve Yakıt Hücreli Taşıtlar, Mustafa Aktaş, Editor, Akademisyen Yayınevi, Ankara, pp.431-455, 2021

#### **II. Geri Kazanımlı Frenlemenin Temelleri**

ŞEN O. T.

in: Modern Elektrikli, Hibrit Elektrikli ve Yakıt Hücreli Taşıtlar, Mustafa Aktaş, Editor, Akademisyen Kitabevi, Ankara, pp.377-395, 2021

### **Refereed Congress / Symposium Publications in Proceedings**

#### **I. Modal Analysis of Air Tube Bracket through Experimental and Numerical Approaches**

Hotamış C. B., Turhan M., Kendirci C., Altınel D., Yavuz A., Şen O. T.

INTERNATIONAL GRADUATE RESEARCH SYMPOSIUM IGRS'22, İstanbul, Turkey, 1 - 03 June 2022, pp.1

#### **II. Development of a unique experimental system investigating vibroacoustic characteristic of geared transmission systems**

Gök U. M., Şen O. T.

50th International Congress and Exposition of Noise Control Engineering, INTER-NOISE 2021, Washington, United States Of America, 1 - 05 August 2021

#### **III. Disc brake squeal analysis using nonlinear mathematical model**

Yavuz A., Şen O. T.

50th International Congress and Exposition of Noise Control Engineering, INTER-NOISE 2021, Washington, United States Of America, 1 - 05 August 2021

#### **IV. Bir Toplu Taşıma Otobüsü İçin Yakıt Ekonomisi Sağlayacak Vites Seçim Algoritması**

YANGIN V. B., AKALIN Ö., ŞEN O. T.

IMSMA TEC 2019 - The International Conference on Materials Science, Mechanical and Automotive Engineerings and Technology, Nevşehir, Turkey, 21 - 23 June 2019

#### **V. Development of a new low order nonlinear system experiment motivated by brake squeal problem**

Şen O. T., Singh R.

48th International Congress and Exhibition on Noise Control Engineering, INTER-NOISE 2019 MADRID, Madrid, Spain, 16 - 19 June 2019

- VI. **Cylinder Bore Honing Pattern Optimization for Improved Engine Friction and Wear**  
Akalin Ö., Şen O. T.  
44th Leeds-Lyon Symposium on Tribology, Lyon, France, 4 - 06 September 2017, pp.118
- VII. **Frequency domain investigation of brake squeal problem using a low order nonlinear model**  
ŞEN O. T., SINGH R.  
INTER-NOISE 2017, 27 - 30 August 2017
- VIII. **Experimental and computational investigation of disc brake squeal**  
TOZKOPARAN O., YENERER H., ŞEN O. T., GÜNEŞ S., ÖZMEN B., HAACK M., İPEKOĞLU M., WALTHER F.  
INTER-NOISE 2017, 27 - 30 August 2017
- IX. **A minimal order model to investigate the hunting stability of a bogie with mechanically connected wheelsets**  
Şen O. T.  
45th International Congress and Exposition on Noise Control Engineering: Towards a Quieter Future, INTER-NOISE 2016, Hamburg, Germany, 21 - 24 August 2016, pp.2516-2525
- X. **Kinematik ve sürtünme gibi doğrusal olmayan etmenlerin yüksek frekanslı fren gürültüsü problemine etkisi**  
Şen O. T.  
11. Ulusal Akustik Kongresi, İstanbul, Turkey, 19 - 20 October 2015
- XI. **Insight into brake squeal source mechanism considering kinematic nonlinearity and pad-disc separation**  
Şen O. T., SINGH R.  
44th International Congress and Exposition on Noise Control Engineering, INTER-NOISE 2015, California, United States Of America, 9 - 12 August 2015
- XII. **Stability analysis of a constrained railway wheelset**  
Şen O. T.  
International Congress on Advanced Railway Engineering, İstanbul, Turkey, 2 - 04 March 2015, pp.1
- XIII. **Estimation of nonlinear frequency response for a system with backlash nonlinearity using multi-term harmonic balance method**  
Şen O. T.  
5th Conference on Nonlinear Vibrations, İstanbul, Turkey, 2 - 04 July 2014
- XIV. **Suppression of Multiple Order Friction Torque Fluctuations with Modulated Actuation Pressure**  
Şen O. T., Dreyer J. T., Singh R.  
32 International Modal Analysis Conference on Structural Dynamics, Florida, United States Of America, 3 - 06 February 2014, pp.223-230
- XV. **Disk yüzey profilinden kaynaklanan, hıza bağlı sürtünmeden doğan momentin yarattığı düşük frekanslı fren titreşimleri için analitik çözüm yöntemleri**  
Şen O. T.  
10. Ulusal Akustik Kongresi, İstanbul, Turkey, 16 - 17 December 2013
- XVI. **An improved brake squeal source model in the presence of kinematic and friction nonlinearities**  
Şen O. T., DREYER J. T., SINGH R.  
42nd International Congress and Exposition on Noise Control Engineering 2013: Noise Control for Quality of Life, INTER-NOISE 2013, Innsbruck, Austria, 15 - 18 September 2013, vol.1, pp.229-237
- XVII. **Comparative signal processing analyses of a speed dependent problem as motivated by brake judder problem**  
ŞEN O. T., DREYER J., SINGH R.  
The Journal of the Acoustical Society of America, Montreal, Canada, 2 - 07 June 2013, vol.133, pp.3299
- XVIII. **Effect of disc-pad contact modification on the brake judder source using a simplified elasto-kinematic model**

Dreyer J., DRABISON J., LIETTE J., SINGH R., Şen O. T.

SAE 2013 Noise and Vibration Conference and Exhibition, NVC 2013, Grand Rapids, MI, United States Of America, 20 - 23 May 2013, vol.4

**XIX. Forced response of a nonlinear translating brake band in the presence of friction guides**

Şen O. T., DREYER J. T., SINGH R.

31st IMAC, A Conference on Structural Dynamics, 2013, Garden Grove, CA, United States Of America, 11 - 14 February 2013, vol.1, pp.135-143

**XX. Improved mathematical models of vehicle brake judder and experimental observations**

Sen O. T., SINGH R.

41st International Congress and Exposition on Noise Control Engineering 2012, INTER-NOISE 2012, New-York, United States Of America, 19 - 22 August 2012, vol.2, pp.944-955

## Supported Projects

Şen O. T., Project Supported by Higher Education Institutions, INSİGHT İNTO BRAKE SQUEAL SOURCE MECHANİSM CONSIDERİNG KİNEMATIC NONLİNEARİTY AND PAD-DİSC SEPARATİON, 2015 - 2018

Şen O. T., Project Supported by Higher Education Institutions, Suppression of multiple order friction torque fluctuations with modulated actuation pressure, 2013 - 2018

Şen O. T., Project Supported by Higher Education Institutions, Forced Response of a Nonlinear Translating Brake Band in the Presence of Friction Guides, 2013 - 2018

Şen O. T., Project Supported by Higher Education Institutions, Dynamic Analysis of Stick-Slip Oscillations on a Translating Friction Band, 2015 - 2016

## Scientific Refereeing

Journal of Sound and Vibration, SCI Journal, December 2017

TUBITAK Project, November 2017

TUBITAK Project, November 2017

TUBITAK Project, July 2017

Nonlinear Dynamics, SCI Journal, April 2017

Noise Control Engineering Journal, SCI Journal, January 2017

Mechanical Systems and Signal Processing, SCI Journal, August 2016

TUBITAK Project, June 2016

TUBITAK Project, May 2016

Journal of Sound and Vibration, SCI Journal, April 2016

TUBITAK Project, April 2016

TUBITAK Project, December 2015

TUBITAK Project, December 2015

TUBITAK Project, November 2015

TUBITAK Project, November 2015

TUBITAK Project, September 2015

Noise Control Engineering Journal, SCI Journal, July 2015

TUBITAK Project, June 2015

TUBITAK Project, May 2015

TUBITAK Project, March 2015

Journal of Sound and Vibration, SCI Journal, December 2014

Noise Control Engineering Journal, SCI Journal, September 2014

TUBITAK Project, August 2014

TUBITAK Project, August 2014

Journal of Sound and Vibration, SCI Journal, July 2014  
TUBITAK Project, July 2014  
TUBITAK Project, June 2014  
TUBITAK Project, March 2014  
Journal of Sound and Vibration, SCI Journal, December 2013  
Noise Control Engineering Journal, SCI Journal, November 2013  
Noise Control Engineering Journal, SCI Journal, February 2013

## **Scientific Consultations**

Mercedes-Benz TÜRK, Project Consultancy, Istanbul Technical University, Makina, Makina Mühendisliği, Turkey, 2016 - 2017

## **Metrics**

Publication: 44  
Citation (WoS): 35  
Citation (Scopus): 71  
H-Index (WoS): 3  
H-Index (Scopus): 4

## **Congress and Symposium Activities**

INTER-NOISE 2017, Attendee, Victoria-City, Hong Kong, 2017  
11. Ulusal Akustik Kongresi, Attendee, İstanbul, Turkey, 2015  
INTER-NOISE 2015, Attendee, California, United States Of America, 2015  
International Congress on Advanced Railway Engineering, Attendee, İstanbul, Turkey, 2015  
5th Conference on Nonlinear Vibrations, Attendee, İstanbul, Turkey, 2014  
IMAC XXXII, Attendee, Florida, United States Of America, 2014  
10. Ulusal Akustik Kongresi, Attendee, İstanbul, Turkey, 2013  
INTER-NOISE 2013, Attendee, Innsbruck, Austria, 2013  
IMAC XXXI, Attendee, California, United States Of America, 2013  
INTER-NOISE 2012, Attendee, New-York, United States Of America, 2012

## **Non Academic Experience**

İstanbul Teknik Üniversitesi  
The Ohio State University