



STRUCTURAL TECHNOLOGIES RESEARCH GROUP

STRUCTURAL TECHNOLOGIES RESEARCH GROUP YAPI TEKNOLOJİLERİ ARAŞTIRMA GRUBU

About

Structural Technologies Research Group is established to develop innovative approaches to structural technologies theoretically and experimentally. The research group conducts interdisciplinary studies by combining structural and material technologies. The aim of our group is to make qualified researches and publications in high-impact journals with motivated researchers by creating synergy.

Looking forward to new strong and fruitful collaborations/cooperations with national/international universities and industrial partners.

Hakkımızda

Yapı Teknolojileri Araştırma Grubu, yapı teknolojilerini kuramsal ve deneysel inceleyerek yenilikçi yaklaşımlar geliştirmek amacıyla kurulmuştur. Grubumuzun amacı, güçlü bir etkileşim alanı yaratarak konusunda uzman araştırmacılarla etki değeri yüksek nitelikli araştırmalar ve yayınlar yapmaktır. Bu kapsamda grubumuz, disiplinler arası kapsamlı çalışmalar yürütmekte olup kamu ve sanayi paydaşları ile ulusal/uluslararası yeni iş birliklerine açıktır.

Research Areas, Araştırma Alanları

Robust Structures, *Dayanıklı Yapılar*

Structural Engineering, *Yapı Mühendisliği*

Multi Storey Timber Structures and Connections, *Çok Katlı Ahşap Yapılar ve Birleşimleri,*

Masonry Structures and Modern Strengthening Techniques, *Yığma Yapılar ve Çağdaş Güçlendirme Teknikleri*

Advanced Concrete Technologies, *İleri Beton Teknolojileri*

Fiber Reinforced Composites, *Lif Takviyeli Kompozitler*

Sustainable Structural Technologies, *Sürdürülebilir Yapı Teknolojileri*

Group Members, Grup Üyeleri

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Asst. Prof. Ali Osman KURUŞCU

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Ms.C. Architect Mehmet KARA

Ms.C. Architect Enfal ÖZER

Referred Articles in SCI

SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

1. Güneş M. E. , Pekmezci B. Y. , Girgin Z. C. “**Durability of natural hydraulic lime (NHL) based TRM composites through hot water immersion method**” *Materials and Structures*, vol.54(1), 2021.
2. Ceylan A. , Girgin Z. C. “**Comparisons on withdrawal resistance of resin and phosphate coated annular ring nails in CLT specimens**” *Construction and Building Materials*, vol.238, 2020.
3. Girgin Z. C. “**Effect of slag, nano clay and metakaolin on mechanical performance of basalt fibre cementitious composites**” *Construction and Building Materials*, vol.192, pp.70–84, 2018.
4. Girgin Z. C. , Yıldırım M. T. “**Usability of basalt fibres in fibre reinforced cement composites**” *Materials and Structures*, vol.49, pp.3309–3319, 2016.
5. Köksal H. O. , Doran B. , Kuruşcu A. O. , Koçak A. “**Elastoplastic Finite Element Analysis of Masonry Shear Walls**” *KSCCE Journal of Civil Engineering*, vol.20, pp.784–791, 2016.
6. Guney D. , Kuruşcu A. O. , Arun G. “**Damage Evaluation of Masonry Buildings after Van Earthquakes in 2011**” *International Journal of Architectural Heritage*, vol.10, 269–280, 2016.
7. Girgin Z. C. , Girgin K. “**A Design-Oriented Combined Model(7Mpa to190MPa) for FRP-Confined Circular Short Columns**” *Polymers*, vol.7(10), pp.1905–1917, 2015.
8. Girgin Z. C. “**Modified Johnston Failure Criterion from Rock Mechanics to Predict the Ultimate Strength of Fiber Reinforced Polymer (FRP) Confined Columns**” *Polymers*, vol.6, pp.59–75, 2014.
9. Köksal H. O. , Aktan S. , Kuruşcu A. O. “**Elastoplastic Finite-Element Analysis of FRP-Confined Masonry Columns**” *ASCE Journal of Composites for Construction*, vol.16, pp.407–417, 2012.
10. Girgin Z. C. “**Modified Failure Criterion to Predict Ultimate Strength of Circular Columns Confined by Different Materials**” *ACI Structural Journal*, vol.106(6), pp.800–809, 2009.
11. Girgin Z. C. , Arioglu N. , Arioğlu E. “**Evaluation of strength criteria for very-high-strength concretes under triaxial compression**” *ACI Structural Journal*, vol.104(3), pp.278–284, 2007.
12. Arioglu N. , Girgin Z. C. , Arioglu E. “**Evaluation of ratio between splitting tensile strength and compressive strength for concretes up to 120 MPa and its application in strength criterion**” *ACI Materials Journal*, vol.103(1), pp.18–24, 2006.

Referred Articles in ESCI, DAAI

ESCI ve DAAI İndekslerine Giren Dergilerde Yayınlanan Makaleler

1. Ceylan A. ,Girgin Z.C. “**Experimental Investigation of Structural Behavior for Cross Laminated Timber (CLT) Wall-to-Floor Connection**” *Megaron*, 14(4), pp. 521–529, 2019.
2. Yılmaz D.G. , Girgin Z.C. “**Past and Present of Wooden Truss Structures**” *Yapı 365*, Nisan, pp.100-113, 2012.

Referred Articles in Other Journals

Diğer Dergilerde Yayınlanan Makaleler

1. Girgin Z.C. “**Statistical Evaluation of Worldwide Sustainable Energy Production (2000–2010)**” *Journal of Energy and Power Engineering*, 6(10), pp.1575–1581, 2021.
2. Ergin Ö. ,Girgin, Z.C. “**New Approaches to Shape Memory Alloys in Adaptive Facade Systems**” *Aurum Muhendislik Sistemleri ve Mimarlik Dergisi*, 3(2), pp.169–181, 2019.
3. Demirbaş B. , Girgin, Z.C. “**Single Layer Reticulated Timber Shells**” *Aurum Muhendislik Sistemleri ve Mimarlik Dergisi*, 3(1), 9–21, 2019.

4. Es C.K. , Girgin Z.C. **"Factors Affecting Weathering Steel Durability as Facade Material"**, Aurum Muhendislik Sistemleri ve Mimarlik Dergisi, 1(2), pp. 109–120, 2017.
5. Girgin Z.C. **"High-Performance Lightweight Concrete and Prefabrication Applications"** Beton Prefabrikasyon, vol.121–122, April 2017, pp. 5–12, 2017.
6. Yolcu C. , Girgin Z.C. **"Expanded Lightweight Aggregates in the Worldwide Structural Concrete Applications and The Usability of Natural Pumice Aggregates"**, Aurum Muhendislik Sistemleri ve Mimarlik Dergisi,1(2), pp.59–67, 2017.
7. Girgin Z.C. **"High-Rise Structures and Suspended Curtain Walls"**, Panel Türk, March-April, 30–32, 2015.
8. Kuruşcu A.O. , Girgin Z.C. **"Efficiency of Structural Materials in Sustainable Design"** Journal of Civil Engineering and Architecture, 8(10), pp. 1260–1265, 2014.
9. Güney D. , Kuruşcu A. O. **"Optimization of The Configuration of Infill Walls in Order To Increase Seismic Resistance of Building Structures"** International Journal of Physical Sciences, vol.6(4), pp.698–706, 2011.
10. Girgin Z.C. , Seydiođlu S. **"Post-tensioned Precast Concrete Panel Walls with Improved Seismic Resistance"**, Beton Prefabrikasyon Dergisi, April,90, pp.5–12, 2009.

Research & Development Projects

Araştırma ve Geliştirme Projeleri

1. COST Action CA 20139, (2021–2025), **"Holistic Design of Taller Timber Buildings (HELEN)"**, WG2 and WG4 Member.
2. COST Action TU1404, (2015) **"Towards the Next Generation of Standards for Service Life of Cement-Based Materials and Structures"**, WG1 Member.
3. **Türkiyede Yetişen Yerli Ağaç Türleri ile Üretilen Çapraz Lamine Ahşap (CLT, Cross-Laminated Timber) Malzemenin Çivi Tutma Direncinin Belirlenmesi**
Yükseköğretim Kurumları Destekli Proje, 2022–2023.
4. **Sentetik Lifli Betonlara Alternatif Olarak Doğal Lifli Betonların Mekanik Karakteristiklerinin Geliştirilmesi**
Sanayi Tarafından Desteklenen Proje, 2021–2023.
5. **Yığma Yapıların Tekstil Donatılı Harçlarla Güçlendirilmesi**
Sanayi Tarafından Desteklenen Proje, 2019–2022.
6. **Çapraz Lamine Ahşap Panel Yapı Sistemleri ve Birleşim Özelliklerinin Deneysel İncelenmesi**
Yükseköğretim Kurumları Destekli Proje, 2018–2021.
7. **Hafif Agregalı Yüksek Performanslı Beton Üretilebilirliği ve Uygulamaları**
Sanayi Tarafından Desteklenen Proje, 2017–2018.
8. **Lif Donatılı Çimentolu Kompozitlerde Mekanik Büyüklükler ve Dayanıklılık**
Sanayi Tarafından Desteklenen Proje, 2015–2018.
9. **Lif Donatılı Çimentolu İnce Kompozitler -Mimaride Kullanımı**
Yükseköğretim Kurumları Destekli Proje, 2012–2014.
10. **Design and Application of Steel Fiber Reinforced Shotcrete via New Austria Tunnel Method (NATM) in Istanbul Ayazaga Tunnel Excavations**, Kamu Kurumları Destekli Proje, 2008–2010.
11. **Yüksek Dayanımlı Yüksek Performanslı Beton Üretimi (C100-C150)**
Sanayi Tarafından Desteklenen Proje, 2002–2004.
12. **Kendiliğinden Yerleşen Beton Projesi**
Sanayi Tarafından Desteklenen Proje, 2001–2003.
13. **Prefabrikasyonda Hafif Agregalı Beton Üretimi, Mekanik Karakteristikleri**
Sanayi Tarafından Desteklenen Proje, 2000–2002.

Research Projects

Araştırma Projeleri

1. COST Action CA 20139, (2021–2025), “**Holistic Design of Taller Timber Buildings (HELEN)**”, WG2 and WG4 Member.
2. COST Action TU1404, (2015) “**Towards the Next Generation of Standards for Service Life of Cement-Based Materials and Structures**”, WG1 Member.
3. **Türkiyede Yetişen Yerli Ağaç Türleri ile Üretilen Çapraz Lamine Ahşap (CLT, Cross-Laminated Timber) Malzemenin Çivi Tutma Direncinin Belirlenmesi**
Yükseköğretim Kurumları Destekli Proje, 2022–2023.
4. **Sentetik Lifli Betonlara Alternatif Olarak Doğal Lifli Betonların Mekanik Karakteristiklerinin Geliştirilmesi**
Sanayi Tarafından Desteklenen Proje, 2021–2023.
5. **Yığma Yapıların Tekstil Donatılı Harçlarla Güçlendirilmesi**
Sanayi Tarafından Desteklenen Proje, 2019–2022.
6. **Yüksek Yapılarda Yapı-Rüzgar Etkileşimi**
Yükseköğretim Kurumları Destekli Proje, 2015–2016.
7. **Developments of Several Models for FRP Confined Concrete Cylindrical Columns under Axial Compression**, 2005–2009.
8. **Seismic Risk Assessment of Historical Masonry Buildings Conservation, Repair and Rehabilitation of Stone Masonry Walls**, 2012–2013.
9. **Assesment of Failures and the causes in Masonry Structures**, 2011–2013.
10. **Repair and Restoration of Historical Masonry Buildings**, 2010–2013.
11. **Evaluation of Seismic Safety of the Historical Masonry Monuments**, 2003–2006.

Refereed Congress / Symposium Publications in Proceedings

Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar

1. Girgin, Z.C. , (2019) Keynote, “**Short and Long Term Flexural Characteristics of Basalt Fibre Cementitious Composites**”, First International Conference on Basalt Fibers and Composites (ICBFC–2019), Nov. 16–18, Nanjing, China.
2. Güneş, M.E. ,Girgin, Z.C. , Pekmezci, B.Y. (2018) “**Flexural Behaviour of Fabric Reinforced Cement-Based Composites in Strengthening of Masonry Walls**”, Int. Workshop on Advanced Materials and Innovative Systems in Structural Engineering: Seismic Practices IWAMISSE, Istanbul.
3. Girgin, Z.C. (2018) “**An Evaluation on Flexural Capacities of PVA, Basalt and GlassFibre Reinforced Cementitious Composites with Nano-Clay Replacement**”, 13th Int. Congress on Advances in Civil Engineering, Cesme-Izmir,12–14 September.
4. Girgin, Z.C. (2016) “**Usability of Basalt Fibers in Fibre Reinforced CementitiousComposites**”, Int. RILEM Conference on Materials, Systems and Structures in CivilEngineering Conference Segment on Service Life of Cement-Based Materials and Structures, 22–24 August, Technical Universityof Denmark, Lyngby, Denmark.
5. Girgin, Z.C. , Girgin, K. (2015) “**A Design-Oriented Model from Modified Hoek-BrownCriterion (7 to 170 MPa) in FRP Confined Columns**”, SMAR 2015, Third Conference onSmart Monitoring, Assessment and Rehabilitation of Civil Structures, 7–9 September, ID 75, Antalya.
6. Ceylan, A. , Girgin, Z.C.(2014) , Second EuropeanConference on Earthquake Engineering and Seismology, Istanbul, Aug. 25–29.

7. Özata, S. , Girgin, Z.C. (2014) **"Innovation Technologies in Green Buildings and Certification"** ICONARCH-II International Congress of Architecture, Selcuk University, Nov. 20–22, Konya, Turkey.
8. Girgin Z.C. (2013) **"Modified Failure Criteria from Rock Mechanics to Predict the Ultimate Strength of FRP Confined Column"**, SMAR 2013, Second Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, 9–11 September, ID 75, Istanbul Technical University.
9. Kuruşcu, A.O. ,Girgin Z.C. (2013) **"Effective Use of Structural Materials in Sustainable Design"**, SCMT3 Third International Conference on Sustainable Construction Materials and Technologies, 18–21 August, Kyoto.

Thesis

Tez Çalışmaları

1. M. Esat GÜNEŞ, (2022), **"Strengthening of Masonry Members with Textile Reinforced Mortars"**, Ph.D. Thesis, Yildiz Technical University, Istanbul.
2. Aygül CEYLAN, (2021), **"Cross Laminated Timber (CLT) Panel Structural Systems and Experimental Investigation of Connections"**, Ph.D. Thesis, Yildiz Technical University, Istanbul.
3. Tayfun KARA, (2019), **"Structural Evaluations of Single-Layer Reticulated Shells Based on Specifications"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
4. Özge ERGİN, (2019), **"Current Approaches in Adaptive Facade Systems and Usage of Smart Materials"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
5. Can YENİDOĞAN, (2019), **"Production of Structural Concrete with Lightweight Aggregate and Performance Evaluation"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
6. Mozghan JAFARI, (2019), **"Research of Architectural and Structural Properties of Traditional Yazd Houses within the Sustainability Framework"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
7. Saadet ÖZKAT, (2019), **"Comprasion of 2007 and 2018 Earthquake Regulations Regarding Masonry Buildings on a Sample Building"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
8. Nihan DURAN, (2019), **"Investigation and Evaluation of Kinetic Structure Applications in the Context of Kinetic Architecture"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
9. M. Ezgi GÜNER, (2019), **"Comparison of Steel, Concrete and Timber Materials Used as Carrier in Construction Systems in Terms of Sustainability"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
10. Cihan YOLCU, (2018), **"Usability, Mechanical Characteristics and Application Criteria of Pumice Aggregates in the Production of High Performance Lightweight Structural Concrete"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
11. K. Cansu ES, (2018), **"Utilization and Durability Conditions of Weathering Resistant Steels as Facade Panel Under Atmospheric Conditions"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
12. Göktuğ GÖKGÖZ, (2018), **"Use of Glass as Column, Beam and Flooring in Construction"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
13. M. Emin IŞIK, (2018), **"Investigation of Comfort due to Vibration in Buildings"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
14. H. Merve TUNCER, (2015), **"Building-Wind Interaction in Tall Buildings"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.
15. Neşe ATASOY, (2014), **"Current Design Approaches for High-Rise Buildings"**, Ms.C. Thesis, Yildiz Technical University, Istanbul.

16. Mehtap YILDIRIM, (2014), “**Fiber Reinforced Cementitious Composites-Architectural Applications**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
17. Özden M. VARDAR ÖZ, (2012), “**Design of Latticed Shell Structures**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
18. Nazlı DEMİR, (2011), “**Tall Buildings and Sustainable Energy**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
19. Didem Güneş YILMAZ, (2011), “**Investigation of Wide Span Structural Systems Composed of Wooden Composites**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
20. Halil İbrahim AYIŞ, (2010), “**Applicability of Steel Fiber Sprayed Concrete in Tunnel Excavation Techniques**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
21. Selma ÖZCAN, (2009), “**Performance Evaluation of Viscous Fluid Dampers and Seismic Base Isolation Systems with Rubber Bearing**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.
22. Sunay SEYDİOĞLU, (2008), “**Worldwide Developments of Precast Frame Structures and Innovative Methods in Earthquake Resistant Design**”, Ms.C. Thesis, Yildiz Technical University, Istanbul.

Collaborations, İşbirlikleri



Contact, İletişim

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