CURRICULUM VITAE

1. **Name Surname** : İlhan KOCAARSLAN
2. **Place and Date of Birth** : Kirikkale, November 26, 1964
3. **Title** : Professor Doctor
4. **Marital Status** : Married, father of 4 children
5. **Foreign Languages** : German - Very Good
   English - Good

Contact Information:

Work : 0212-285 2930
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Area of Expertise: **Control and Automation Systems, Adaptive Control, Fuzzy Logic, Artificial Neural Networks, Support Vector Machines, Genetic Algorithms, Energy Generation Systems and Automation, Primary Frequency Control System, Railway Vehicles, Risk Analysis and Safety Management System in Railways, Risk Analysis in Industrial Systems, Modeling and Electrification of Railway Systems**

6. Education Status:

Degree	Alan	Institution	Year
Primary School		Yesilyazi / Kirikkale	1968-1973
Middle School		Sulakyurt / Kirikkale	1973-1976
High School	Electricity	Ankara Yenimah.Technical High School	1976-1979
High School		Istanbul Fatih Vatan High School	1981
Bachelor's degree	Electrical Engineering	Yildiz Technical University	1979-1983
Master's degree	Electrical Engineering	Yildiz Technical University	1983-1985
Master's degree	Control and Automation	Ruhr University Bochum	1985-1986
Doctorate	Control and Automation	Ruhr University Bochum	1986-1991

PhD Thesis: Real Time Application of a Modern Adaptive Control Concept in a 750 MW Natural Gas Cycle Power Plant, **Ruhr University Bochum/Germany,** 1991

Master Thesis: Compensator Design for the Control of Multi-Input and Multi-Output Systems, **Ruhr University Bochum/Germany, 1986**

Master Thesis: Feeding and Drive Systems of Electric Transportation (Railway) Systems. **Yildiz Technical University, Istanbul, 1985**

7. Academic Titles:

Title	University	Year
Associate Professor	Babcock Prozessautomation GERMANY	1993
	Kocaeli University Faculty of Engineering	1997
Professor	Kırıkkale University Faculty of Engineering	1999

8. Administrative Duties and Professional Experience:

2023 - ...	**Dean of Istanbul Technical University Faculty of Electrical and Electronics**
2023 - ...	**Director of ITU Advanced Vehicle and Technologies Research and Application Centre (ILATAM)**
2020 - 2023	**Istanbul Technical University Energy Institute Director**
2020 - ...	**Advisor to the Rector of Istanbul Technical University**
2020 - ...	**Istanbul Technical University Control and Automation Department Faculty Member**
2017 - 2020	**Chairman of the Board of Directors and General Manager of Turkish Wagon Industry Inc.**
2017 - 2019	**Turkish Atomic Energy Authority Nuclear Safety Advisory Committee**
2016 - 2017	**Istanbul University Energy Management Application and Research Center Director**
2015 - 2017	**Istanbul University, Department of Electrical and Electronics Engineering, Head of Control and Command Systems Division**
2015 - 2017	**Istanbul University Technology Transfer Office Project Manager**
2014 - 2017	**Advisor to TUBITAK Energy Institute**
2014 - 2015	**TUBITAK, Electrical and Electronic Technologies Working Group (ELOTEG) Executive Board Member**
2014 - 2015	**TCDD Marmaray Safety Management System and Electrification Systems Consultancy**
2014 - 2015	**Risk for Safe Operation on TCDD Conventional Lines Management and Development of Precautionary Suggestions Based on Scientific Methods Research and Development Project Consultancy**
2014 - 2017	**TCDD, National Train Project, Advisory Board Membership**
2014 - 2017	**International Congress on Advanced Railway Engineering, Congress President**
2013 - 2018	**Ministry of Transportation, Accident Investigation and Investigation Board Member**
2009 - 2010	**Istanbul University, Vice Presidency of University Industry Cooperation**
2009 - 2013	**Istanbul University Advanced Analyses Laboratory Executive Board Member**
2009 - 2017	**Istanbul University Scientific Research Projects Unit Executive Board Member**
2008 - 2017	**Istanbul University, Eng. Fak. Department of Electrical & Electronics Lecturer Membership**
2007 - 2015	**TCDD High Speed Train Project Consultancy**
2002 - 2004	**Kırıkkale University Faculty of Engineering Dean's Office**
2002 - 2004	**Member of Kırıkkale University Board of Directors**
2002 - 2004	**Member of Kırıkkale University Senate**
2000 - 2008	**Kırıkkale University Faculty of Engineering Faculty Board Member**
2000 - 2004 2006 - 2008	**Kırıkkale University Institute of Science and Technology Board Member**
1999 - 2008	**Member of the Board of Directors of Kırıkkale University Faculty of Engineering**
1999 - 2004 2006 - 2008	**Prof. Dr. and Kırıkkale Uni. Head of Electrical & Electronics Engineering Department**
1997 - 1999	**As Assoc. Prof. Dr., Head of the Department of Electrical Installations at Kocaeli University**
1990 - 1997	**Project and Department Manager at Babcock Prozessautomation in Germany**
1986 - 1990	**Research Assistant at Bochum Ruhr University, Department of Electrical Engineering, Command and Control Systems (Automation Engineering)**

9. Awards

1. Kırıkkale University Scientific Publication Award
2. At the Beginning of the 21st Century Kırıkkale Symposium Scientific Committee Chairmanship Award
3. TCDD High Speed Train Project Study Award

4. First Prize of Tübitak Formula-G 2010 Races
5. First Prize of Tübitak Formula-G 2011 Races
6. Eighth place in the World Solar Challenge Race
7. Istanbul University Award for Bringing in the Largest Industrial Project
8. First Prize in the Electromobile Category of TUBITAK Alternative Energy Vehicle Races
9. TUBITAK Alternative Energy Vehicle Races Electromobile Category Second Prize

10. Patents

10.1. Regulation of Speed of Coal Crushing Mill Having Fluid Torque Converter

Made at Babcock Prozessautomation in Germany

Regulation of speed of coal crushing mill having fluid torque converter

Inventor KOCAARSLAN ILHAN (DE)
Applicant: BABCOCK PROZESSAUTOMATION GMBH (DE) (BR)
EC: B02C13/30; F16D33/16; (+1)
IPC: ***B02C13/30; F16D33/16; G05D13/40(+7***)
Publication info: DE4342103 - 1995-06-14

10.2. A Method for Conducting Primary Frequency Control Performance Tests with a Central Automation System

Inventor İlhan Kocaarslan

Application Number: 2015/11960	Document No: 2015-GE-352842	Registration No: 2015 11960
Application Date: 2015/09/29	Document Date: 2015/09/29	Registration Date: 2018/09/21
Application Form National App.	Protection Type: Patent	

10.3. Transformer Cooling System and Method

Inventor İlhan Kocaarslan

Application Number : 2016/01641	Document No: 2016-GE-49537	Registration No: 2016 01641
Application Date : 2016/02/08	Document Date : 2016/02/08	Registration Date : 2019/06/21
Application Form: National App.	Protection Type : Patent	

10.4. Ensuring Optimal Load Distribution and Reducing Carbon Emissions in Power Plants with Central Automation Method

Inventor İlhan Kocaarslan, Hasan Tiryaki

Application No: 2015/09434	Document No: 2015-GE-280386	Registration No: 2015 09434
Application Date : 2015/07/29	Document Date : 2015/07/29	Registration Date : 2019/02/21
Application Type : National App.	Protection Type : Patent	

11. Academic Activities

11.1. Supervised Master's Theses

1. Uluer, M., "Artificial Neural Networks Approach to Power System Stabilizers", Kırıkkale University, 2001.
2. Coşkun, G., "Investigation of Combined Heat and Power Generation Systems", Kırıkkale University, 2002.
3. Akbıyık B., "Evaluation of Wind Energy Potential in Turkey", Kırıkkale University, 2004.
4. Tiryaki, H., "Comparison of Fuzzy Logic Controller and PID Controller in an Electrical Thermal Power Plant", Kırıkkale University, 2005.
5. Filiz, C., "Investigation of Harmonics and Filtering in Power Systems" , 2006.

6. Kınalı, Ö., G., "Modeling and Fuzzy Logic Control of Generators in Regenerative Energy Systems", 2007.
7. Duman D., "Parallel Operation of Two Synchronous Generators with PLC" Istanbul University, 2010.
8. Pektaş, Ö., Ö., "Investigation of Mobile Bomb Disposal Robots and Prototype Robot Design", 2010.
9. Bal, E., "Applications and Alternatives of Power Systems Stabilizer in Voltage Control", 2012.
10. Gümüş, K., "Primary Frequency, Load Control in Power Plants", 2012. 4 / 16
11. Ertik, A., "Evaluation of Railway Systems According to Energy Efficiency", 2012.
12. Bulut İ., B., "Modeling the Coordination of Natural Gas Combined Cycle and Wind Power Plants with Modern Control Methods", 2013.
13. Karabacak S., A., "Application of Monitoring and Analysis Method in Railway Safety Management System", 2014.
14. Koçak Y., "Risk Analysis Methods of Railway Safety Management System", 2014.
15. Kamel H. A., "Comparison of MATLAB (Simulink) Implementation of Classical PID Controllers with PLC Implementation in Real Time in the Laboratory", 2016.
16. TOPCU N., "Factors Affecting Safety in Railways", 2016.
17. KARADENİZ O., "Battery Management System Design for Lithium Based Energy Storage Units", 2017
18. Pekdemir S., "Determination of the right lands for charging electric tractors with agro-voltaic systems",2023
19. Demir İ., "Charging management according to dynamic price and carbon emissions in public transportation fleets with electric buses",2023
20. Us K. Y., "Thrust controller design for liquid fuel rocket engines",2024
21. Atmaca Ş., " Modelling of future hydropower generation using WEAP: A case study in Ceyhan Basin", 2024

11.2. Supervised Doctoral Theses

1. Kurt A.G., "Load-Frequency Control in Power Systems", Kocaeli University, 2000.
2. Çam E., "Application of New Control Methods in Power Systems", Kırıkkale University, 2004.
3. Lüy M., "Application of Artificial Neural Networks in Thermal Power Plants Modeling", 2009.
4. Tiryaki H., "Application of Modern Control Methods in Load Distribution Systems", 2013.
5. Akçay M. T., "Design, Analysis and Energy Management of Optimum Electrification System in Railways", 2018
6. Kart, S.," Control of Double Deck Upgrading Da-Da Converter for Fuel Cell Systems",2021

12. Publications

12.1. Articles published in international refereed journals

1. Kocaarslan, İ., "Application of adaptive control concept in a 750 M W coal fired power plant", Control Engineering Practice, 2(6), 1076, (1994).
2. Çam, E., Kocaarslan, I., "Load Frequency Control in Two Area Power Systems Using Fuzzy Logic Controller", Energy Conversion and Management, 46(2), 233-243 (2005).
3. Çam, E., Kocaarslan, I., "A Fuzzy Gain Scheduling PI Controller Application for an Interconnected Electrical Power System", Electric Power Systems Research, 73(3), 267-274 (2005).
4. Kocaarslan, İ., Çam, E., "Fuzzy logic controller in interconnected electrical power systems for loadfrequency control", International Journal of Electrical Power and Energy Systems, 27(8), 542-549, (2005).
5. Kocaarslan, İ., Çam E., Tiryaki H., "A Fuzzy Logic Controller Application for a Thermal Power Plants", Energy Conversion and Management, 47(4), 442-458, (2006).

6. Kocaarslan, I., Çam E., "An adaptive control application in a large thermal combined power plant", Energy Conversion and Management, 48(1), 174-183, (2007).

7. Kocaarslan, I., Çam E., "Experimental Modelling and Simulation with Adaptive Control of Power Plant", Energy Conversion and Management, 48(3), 787-796, (2007).

8. Gözde H., Taplamacıoğlu M.C., Kocaarslan İ. and Şenol M.A., "Particle Swarm Optimization Based PI Controller for Load-Frequency Control of Two Zone Interheated Thermal Power System Journal of Thermal Science and Technology 2010 Volume 30 Issue 1, Pages 13-22.

9. Eke, İ., Taplamacıoğlu, M. C., Kocaarslan, İ., "Artificial Bee Colony Algorithm Based Stable Power System Balancer Design", Journal of The Faculty of Engineering and Architecture of Gazi University, (2011) 5 / 16

10. Gozde. H., Taplamacıoğlu, M. C., Kocaarslan, İ., "Comparative Performance Analysis of Artificial Bee Colony Algorithm in Automatic Generation Control for Interconnected Reheat Thermal Power System", Electrical Power and Energy Systems, 42, 167-178, (2012).

11. Kocaarslan İ., Akçay M.T., Ulusoy S.E., Bal E., Tiryaki H., "Creation of a dynamic model of the electrification and traction power system of a 25 kV AC feed railway line together with the analysis of different operation scenarios using Matlab/Simulink", Turkish Journal Of Electrical Engineering And Computer Sciences, Vol. 25, No. 5, 4254-4267, 2017

12. Kocaarslan İ., Akçay M. T., Akgündoğdu A., Tiryaki H., " The Comparison of the ANN and ANFIS Methods for the Prediction of Voltage Drop on an Electric Railway Line", Istanbul University-Journal of Electrical & Electronics Engineering, Accepted Paper, 19.04.2017.

13. Karaman S., Kocaarslan İ., Tiryaki H., Bal E., "The Modelling Recorded Faults In Railways and Prediction", Istanbul University-Journal of Electrical & Electronics Engineering, Vol. 17(2), pp. 3417-3423, June 2017.

14. Akçay M., T., Kocaarslan I., Determination of distance between ac traction power centers with a designed model depending on operational datas in a 25 kV AC railway line using artificial intelligence methods, International Journal of Engineering Research and Development, Vol. 13, Issue 11, 18-27, 2017.

15. Kocaarslan, İ., Akçay, M. T., "Analysis of electrical and operational effects of the supply voltage specification together with the comparison of 750 V and 1500 V DC option: A case study of a railway line", Journal of Scientific and Engineering Research , Vol. 4, Issue 12, 168-174, 2017.

16. Kocaarslan, İ., Akçay, M. T., Calculation of the Effects of the Effects of the Traction Force Curve to the Catenary Voltage With a Comparison of Two Different Curve Levels in a Railway Line, Journal of Scientific and Engineering Research , Accepted Paper, 1-10, 2017.

17. Kocaarslan, İ., Akçay, M., T., Akgündoğdu, A., Tiryaki, H., The comparison of the ANN and SVM Methods for the Prediction of Voltage Drop on a Subway Line, International Journal of Engineering Research and Advanced Development (IJERAD), 1-10, 2017.

18. Kocaarslan, I., Kart, S., Genc, N., Uzmus, H., Design and Application of PEM Fuel Cell-Based Cascade Boost Converter, Electrical Engineering, 101-4, 1323-1332, 2019

19. Akçay, M. T., & Kocaarslan, İ., Solution of Voltage Harmonic Problem in 1500 V DC Fed Rail Systems with AGT Based Parallel Active Power Fitting. International Journal of Advances in Engineering and Pure Sciences, 32(4), 365-373, 2020

20. Kocaarslan, I., Kart, S., Altun, Y., Genc, N., Lyapunov Based PI Controller for PEM Fuel Cell Based Boost Converter, International Journal of Renewable Energy Research,10-1, 275-280, 2020

21. Kart, S., Demir, F., Kocaarslan, I., & Genc, N., Increasing PEM fuel cell performance via fuzzy-logic controlled cascaded DC-DC boost converter, International Journal of Hydrogen Energy, 54,84-95,2024

12.2. Papers Presented at International Scientific Meetings and Published in Proceedings

1. Unbehauen, H., Kocaarslan, İ., "International Journal of Engineering Research and Advanced Development", Eurepean Simulation Multiconference (ESM), Nuremberg (GERMANY), 10-13, June 1990.
2. Unbehauen, H., Kocaarslan, İ., "Experimental Modeling and Adaptive Power Control of a 750 MW Once-Through Boiler", International Federation of Automatic Control (IFAC) 1st World Congress, Talling (USSR), August 13-17, 1990.
3. Unbehauen, H., Keuchel,U., Kocaarslan, I., "Real-time adaptive control of electrical power and enthalpy for a 750 MW once-through boiler", Proceedings IEE CONTROL 91, Edinburgh (GB) 42-47, 1991.
4. Kocaarslan, İ., "Application of adaptive control concept in a 750 MW coal fired power plant", International Federation of Automatic Control (IFAC) 12* World Congress, Sydney (AUSTRALIA), 711-718, 18-23 July 1993.
5. Kocaarslan, İ., Köhler T., "Regelkonzept für die Mühler NV40 mit Strömungskupplung", Energitechmischen Kollogium, Veranstaltung von TU DRESDEN, 22-23 October 1993.
6. Kocaarslan, İ., Becker, F., Fechner H., "The Concept and implications of closed loop shaft speed control tested on a NV40 shaft in a coal fired power plant", Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS'95), Istanbul -Turkey, 11-14 July 1995.
7. Yeğin, E.M., Kocaarslan, İ., Katircioğlu, A., "Application of Fuzzy Control Concept in a 750 MW Coal Fired Power Plant", European Control Conference ECC'99, KARLSRUHE,31 August - 3 September 1999.
8. Kocaarslan, İ., Akalın, G., Yeğin E.M., "Application of Fuzzy Reasoning to Load-Frequency Control in Power Systems", European Control Conference ECC'99, KARLSRUHE, 31 August - 3 September 1999.
9. Kocaarslan, İ. Coşkun G. "Design for The CHP/CC Plants and Increasing Efficiency", TPE-2002, The fırst International Conference on Technical and Physical Problems in Power Engineering, Baku - Azerbaijan Republic, 23-25 April 2002.
10. Çam E., Kocaarslan İ., "Generation Electricity By Means of a New Type Blade", First International Conference on Technical & Technical Problems in Power Engineering, Baku, Azerbaijan, 673-675, 2002.
11. Çam E., Kocaarslan I., İskender I., Taplamacıoğlu C., "Load Frequency Control in a Single Area Power System Using Fuzzy Logic Controller", 3rd International Advanced Technologies Symposium, Gazi University, Ankara, 10-17, 18-20 August 2003.
12. Çam E., Lüy M., Kocaarslan İ., Taplamacıoğlu C., "Defect Detection in a Cantilever Beam from Vibration Data", ELECO'03 Third International Conference on Electrical & Electronics Engineering, Bursa, 212-216, 3-7 December 2003.
13. Çam E., Kocaarslan İ., Lüy M., "A Fuzzy PI Controller Application for an Electrical Power System", 2nd International Conference on TPE, Tabriz, Iran 145-149, 6-8 September 2004.
14. Kocaarslan İ., Çam E., Tiryaki H., "An Investigation of Cleanness in Boilers of Thermal Power Plants with Fuzzy Logic Controller", 2nd International Conference on TPE, 668-672, 6-8 September 2004.
15. Kocaarslan İ., Çam E., Tiryaki H., Taplamacıoğlu M. C., "A Fuzzy PI Controller Application In Boilers Of Thermal Power Plants", ELECO'05 Fourth International Conference on Electrical and Electronics Engineering, Bursa, 7-11 December 2005.
16. Kocaarslan İ., Çam E., Tiryaki H., Akbıyık B., "Comparison of the Effects of Control Methods on Production in a Thermal Power Plant", 9th International Combustion Symposium, Kırıkkale, 402-414, November 16-17, 2006.
17. Lüy M., Kocaarslan I Çam E., Taplamacıoğlu M. C., "Load Frequency Control in a Single Area Power System by Artificial Neural Network (ANN)", 4th International Conference on TPE, 2008. 4- 6 September 2008 Pitesti, Romania.
18. Gözde H., Taplamacıoğlu M.C., Kocaarslan İ., Çam E., "Particle Swarm Optimization based Load Frequency Control in a Single Area Power System", ", 4th International Conference on TPE, 2008. 4-6 September 2008 Pitesti, Romania.

19. Gözde H., Taplamacıoğlu M.C., Kocaarslan İ., "A Swarm Optimization Based Load Frequency Control Application in a Two Area Thermal Power System", ELECO 2009, 6th International Conference On Electrical And Electronics Engineering, 5-8 November 2009, Bursa, TURKEY
20. Gözde H., Taplamacıoğlu M.C., Kocaarslan İ., Hardalaç, F., "A Small Hydro Power Plant Lfc With Quadratic Optimal Regulator Supported By Optimization Algorithms", TPE-Conference 5th International Conference on Technical and Physical Problems of Power Engineering ICTPE-2009 University of the Basque Country, 3-5 September 2009, Bilbao, Spain.
21. Kocaarslan, İ., Karaman, S., Apaydın, İ., Gör, E., "Railway Safety Management System and its Implementation in TCDD", I. International Rail Systems Workshop, 11-13 October 2012, Karabük.
22. Akçay M. T., Kocaarslan İ., 2013, Analysis of the Effect of Vehicle Current on Rail Ground Voltage in DA Fed Rail Systems, (ISERSE'13), 2nd International Rail Systems Engineering Symposium, October 9-11, 2013, Karabük, Turkey, 1-7.
23. Akçay M. T., Kocaarslan İ., 2014, Optimum voltage selection in a DC fed urban railway line, International Istanbul Transportation Congress and Fair (TRANSIST 2014), 19-20 December 2014, Istanbul, Turkey, Istanbul, IETT, 385-390.
24. Kocaarslan İ., Karabacak A., Tiryaki H., "PRISMA and FTA Applications on Railway Safety Management System", International Congress on Advanced Railway Engineering, Istanbul, 211-215, March 2-4, 2015.
25. Karaman S., Kocaarslan İ., Tiryaki H., "Application of Artificial Neural Networks for Safety Management Systems in Railways", International Congress on Advanced Railway Engineering, Istanbul, 262-267, March 2-4, 2015.
26. Kocaarslan İ., Karabacak A., Tiryaki H., Bal E., "Risk Matrix Application in Railways", International Congress on Advanced Railway Engineering, Istanbul, 279-283, March 2-4, 2015.
27. Kocaarslan İ., Kocak Y., Tiryaki H., "RAMS and Regression Analysis in Railway Safety Management System", TRANSIST 8th International Transportation Technologies Symposium and Exhibition, Istanbul, 361-370, 17-19 December 2015.
28. Kocaarslan İ., Akçay M. T., Tiryaki H., 2016, Modeling and analysis of the power system of a railway line with 1500 V DC supply, International Istanbul Transportation Congress and Fair (TRANSIST 2016), 01-03 December 2016, Istanbul, Turkey, Istanbul, IETT, 147-158.
29. Guzeller E., Akçay M. T., Albayrak B. B., Kocaarslan İ., Ersoy A., Tiryaki H., "Optimization of Transformer Layout of a 1500 V DC Fed Railway Line and Its Application to Sultangazi-Arnavutköy Line", International Istanbul Transportation Congress and Fair (TRANSIST 2017), ISTANBUL, 572-579, 02-04 November 2017.
30. Ünal, A., Kocaarslan, İ., Akkuş, H., Analysis of Brake Dynamics and Brake Pad Wear in Train Sets with the Help of Mapped Pressure Sensor, Iserse 4th International Symposium on Railway System Engineering, 2018
31. I. Kocaarslan, M. A. Zehir, E. Uzun, E. C. Uzun, M. E. Korkmaz and Y. Cakiroglu, "High-Fidelity Electric Vehicle Energy Consumption Modeling and Investigation of Factors in Driving on Energy Consumption," 2022 4th Global Power, Energy and Communication Conference (GPECOM), Nevsehir, Turkey, 2022, pp. 227-231.

12.3. Authored International Books or Chapters in Books

1. Kocaarslan, İ., Ordys, A., Grimble, M., "Automation and Control of Combined Processes", U.K, 2002.
2. Kocaarslan İ., "Application of Adaptive Control Concept in 750 MW Coal Fired Power Plant", Power Plant Applications of Advanced Control Techniques ISBN:978-3-902655-11-0 Publisher: Process Eng Engineering GmbH,Austria, 2010.
3. Kocaarslan İ., Çam E., "An Application of Fuzzy Logic for The Load-Frequency Control of Hydroelectrical Power Plants", Power Plant Applications of Advanced Control Techniques ISBN:978-3-902655-11-0 Publisher: Process Eng Engineering GmbH, Austria, 2010.Austria, 2010.
4. Tiryaki H., Kocaarslan I., "Modern Optimization Methods in Electrical Load Dispatch Systems", in: Academic Studies in Engineering, ISBN: 978-605-288-611-3, Prof. Murat HATİPOĞLU and Assist. Prof. Kadir GÜNDOĞAN, Eds., Gece Kitaplığı, Ankara, pp. 41-64, October 2018.

5. Tiryaki H., Kocaarslan I., "Modern Control Methods in Electrical Load Dispatch Systems", in: Academic Studies in Engineering, ISBN: 978-605-288-611-3, Prof. Murat HATİPOĞLU and Assist. Prof. Kadir GÜNDOĞAN, Eds., Gece Kitaplığı, Ankara, pp. 65-92, October 2018.
6. İlhan Kocaarslan, Berat Berkan Ünal, Oğulcan Durmuşoğlu, Adil Çakmak, Alper Emre Özden, Simay Akay & Tugrul Daim "Next Generation Roadmapping- Demand Response in Grid Operations" ISBN 978-3-031-38574-2, 2023

12.4. Articles Published in National Refereed Journals

1. Çam E., Kocaarslan İ., "Load-Frequency Control with Fuzzy Logic in Single Zone Power Systems", Technology, Z.K.Ü. Karabük Technical Education Faculty Journal, 6, 73-77, (2003).
2. Çam E., Kocaarslan İ., "Load-Frequency Control in Two Area Power System", Teknoloji, Z.K.Ü. Karabük Technical Education Faculty Journal, 7(2),197-205, 2004.
3. Lüy M., Kocaarslan İ., Çam E., "Investigation of the Effects of an Artificial Neural Network Controller in a Thermal Power Plant", Int.J.Eng. Research&Development, Kırıkkale University Journal of Faculty of Engineering, 1(1), 42-46, January 2009.
4. Kocaarslan İ., Tiryaki H., "Comparison of PSO-PID and FGPI Controllers on a Thermal Power Plant", Int.J.Eng. Research&Development", Kırıkkale University Journal of Engineering Faculty, 2(1), 42-46, January 2010, Pages 39-44.
5. Kocaarslan İ., Çam, E.,Tiryaki H., "An Investigation Of Productivity In Boilers Of Thermal Power Plants With Fuzzy Gain Scheduled PI Controller", Int.J.Eng. Research&Development, Kırıkkale University Journal of Engineering Faculty, 2(1), 42-46, January 2010, Pages 45-49.
6. Kocaarslan İ., Tiryaki H., " Optimization with Mixed Integer Programming Algorithm in Load Distribution System", Int.J.Eng.Research & Development,Vol.7, No.1, pp. 2-11, January 2015.
7. Tiryaki H., Çağışlar A. S., Akgündoğdu A., Kocaarslan İ., "Commutable Magnetic Field on Brushless Direct Current Motor for Electrical Vehicle", Int.J.Eng.Research & Development,Vol.8, No.2, pp. 37-45, June 2016.
8. Akçay M., T., Kocaarslan I., , Determination of distance between ac traction power centers with a designed model depending on operational datas in a 25 kV AC railway line using artificial intelligence methods, International Journal of Engineering Research and Development, Vol. 13, Issue 11, 18-27, 2017.
9. Kocaarslan, İ., Akçay, M. T., "Analysis of electrical and operational effects of the supply voltage specification together with the comparison of 750 V and 1500 V DC option: A case study of a railway line", Journal of Scientific and Engineering Research , Vol. 4, Issue 12, 168-174, 2017.
10. Kocaarslan, İ., Akçay, M. T., Calculation of the Effects of the Effects of the Traction Force Curve to the Catenary Voltage With a Comparison of Two Different Curve Levels in a Railway Line, Journal of Scientific and Engineering Research , Vol. 4, Issue 12, 394-400, 2017
11. Kocaarslan İ., Akçay M. T., Akgündoğdu A., Tiryaki H., "Comparison of ANN and SVM Methods for Prediction of Voltage Drop in a Metro Line", Int.J.Eng.Research & Development, Accepted Paper, 13.09.2017.
12. AKÇAY, M., KOCAARSLAN, İ, "Simulation of Multi-Vehicle Signaling System and Design of Train Timetable with Matlab/Simulink". Al-Jazari Journal of Science and Engineering , 6 (3) , 799-807 . 2019
13. Akçay, M. T., & Kocaarslan, İ., "Analysis of Catenary Short Circuit Condition in a 1500 V DC Fed Metro Line with Dynamic Model Algorithm.", Haliç University Journal of Science and Technology, 2(2), 143-160, 2019
14. Akçay, M. T., & Kocaarslan, İ., "Determination of Minimum Vehicle Operating Voltage on a 1500 V DC Fed Metro Line Based on Performance Data", Sinop University Journal of Science and Technology, 4(2), 84-92,2019.
15. Akçay M. T., Kocaarslan İ., "Investigation of Rectifier Parameters for Traction Power in DC Fed Rail Systems" Istanbul Sabahattin Zaim University Journal of Institute of Science and Technology, Accepted Paper, 13.03.2020

12.5. Papers Presented at National Scientific Meetings and Published in Proceedings

1. Kocaarslan, İ., Yeğin, M., Katırcıoğlu A., "Experimental modeling and simulation of a power plant", TOK'98 - Automatic Control Scientific Meeting, Istanbul- Turkey, October 15-16, 1998.
2. Akalın, G., Kocaarslan, İ., Yörükeren, N., Erfıdan T., "Fuzzy logic programming of the gain of PI controller used in load frequency control", TOK'98 - Automatic Control Scientific Meeting, Istanbul - Turkey, October 15-16, 1998.
3. Kocaarslan İ., Çam E., "Load-Frequency Control of Two Zone Interconnected Power Plants", TOK'02 Automatic Control National Meeting, 631-637, Ankara, September 9-11, 2002
4. Ünver, H. M. Kocaarslan, İ. Çelik V., Power Frequency Control in 60 KW Induction Steel Annealing Furnace with PLC TOK'02 -Automatic Control National Meeting, METU - Ankara, 237 - 244, September 9-11, 2002.
5. Kocaarslan, İ. Taplamacıoğlu, C. Eke, İ. Akbıyık, B., "Kırıkkale Region Hydroelectric Power Plants and Water Potential", Kırıkkale Symposium at the Beginning of the 21st Century, 533-539, June 10-11, 2003.
6. Kocaarslan,İ. Özden,M. Tiryaki H., "Cogeneration Power Plant Proposal for Kırıkkale Municipality and Machinery and Chemical Industry Institution", Kırıkkale Symposium at the Beginning of the 21st Century, 539-545, June 10-11, 2003.
7. İşler, M., Kocaarslan, İ., Taplamacıoğlu, C., Uslu M. F., "Evaluation of Petrochemical Facilities and Fertilizer Factory that can be Established in Kırıkkale, Kırıkkale Symposium at the Beginning of the 21st Century, 563-569, 10-11 June 2003.
8. Tiryaki H., Kocaarslan İ., Çam E., Akbıyık B., "Fuzzy Logic Control of Power and Enthalpy in a Thermal Power Plant", Symposium on Innovations and Applications in Intelligent Systems, Istanbul, June 23-25, 2004
9. Kocaarslan İ., Çam E., Eke İ., Tiryaki H., "Fuzzy Logic Controller Application in a Hydroelectric Power Plant", TOK'05 Automatic Control National Meeting, 563-568, Istanbul, June 2-3, 2005.
10. Gözde H., Kocaarslan İ., Taplamacıoğlu M.C., Çam E., "Optimization of Load-Frequency Control with Particle Swarm Algorithm in Two-Zone Power System", ELECO'08 Electrical-Electronics and Computer Engineering Symposium, Bursa, 212-216, 26-30 November 2008.
11. Tiryaki H., Bulut M., Kocaarslan İ., Taplamacıoğlu M.C., "Technological Developments and Efficiency in Control Systems of Thermal Power Plants", ELECO'08 Electrical-Electronics and Computer Engineering Symposium, Bursa, 212-216, November 26-30, 2008.
12. Kocaarslan, İ., Bal, E., Gümüş, K., Tiryaki, H., "Application of Particle Swarm Optimization (PSO) Method in Power System Stability (PSS)", ELECO'12, Bursa, November 29 - December 01, 2012.
13. Kocaarslan, İ., Gümüş, K., Bal, E., Tiryaki, H., "Load-Frequency Control with Modern Optimization Methods (ABC, PSO)", ELECO'12, Bursa, 29 November - 01 December 2012.
14. Kocaarslan İ., Kocak Y., Tiryaki H., "Relationship between RAMS Parameters and Risk Analysis in Railway Safety Management System of TCDD and EU Countries", ROTRASA 2015 Road and Traffic Safety for Sustainable Transportation National Congress Fair and Exhibition, Ankara, 442-447, 07-08 December 2015.

12.6. Other Publications

1. Kocaarslan,İ., "Decoupling for Decentralized Adaptive Control", ESR-8707, Intemal Report, Control Engineering Laboratory, Ruhr-University Bochum (GERMANY), 1987.
2. Kocaarslan,İ., "Application of Multivariable Adaptive Control in a Steam Power ESR-8807, Intemal Report, Control Engineering Laboratory, Ruhr-University Bochum (GERMANY, 1988).
3. Kocaarslan,İ., "Modelling and Identification for a 750 MW Once-Through Boiler", ESR-8904, Intemal Report, Control Engineering Laboratory, Ruhr-University Bochum GERMANY, 1989
4. Kocaarslan,İ., "Aplication of Adaptive Concept for Voltage and Frequency Control Of Isolated and Interconnected Power Plant. ESR-8904, Intemal Report, Control Engineering Laboratory, Ruhr University Bochum GERMANY, 1989.

13. Projects

13.1. Projects Realized in the Energy Sector

1. **Installation and operation of a 750 MW gas and coal fired alternating gas and coal fired power plant with complete command and control system (1985-1990 Westfalen Electric Power Authority, WEW, Germany)**
   The various products manufactured at BAYER are particularly sensitive and state-of-the-art, and are made up of a mixture of raw materials and substances. The processes that realize these products must function precisely in order to produce what is envisaged (Pharmaceutical Industry). In order to run such processes, a computer program has been developed for the analysis of multi-input and multi-output systems and their command and control.

2. **More efficient use of solid fuels at the Megalopolis Thermal power plant in Greece**
   In 1991, the modeling and simulation of Unit IV of the Megalopolis Power Plant, which is fired with lignite coal in Greece, was carried out. Due to the low heat value of lignite coal in this country, there are great difficulties in burning this coal in power plants (as in Afşin Elbistan in our country). With the modeling and simulation studies, it has been shown that this coal can be burned efficiently in such power plants.

3. **Establishment of a fluidized bed thermal power plant in Germany Bayer Chemicals sector**
   In order to meet energy needs (electricity, steam and heat), especially in industry, environmentally friendly thermal fluidized bed power plants with low and controllable emission values are installed. The project design of the 130 MW coal-fired "fluidized bed thermal power plant" built for Bayer Chemical Industry was completely designed. Then the engineering of the control system was done and it was installed and adapted to Siemens hardware and put into operation. The concept of bed temperature control was then developed to reduce the emission value.

4. **Process and control engineering of the sugar factory established in Germany Süd-Zücker company and making the plant operational**
   Process engineering of the 150 MW coal fired fluidized bed thermal power plant built for the sugar factory of Süd-Zücker company was carried out. In addition, the measurement, control and control engineering of the power plant was carried out and the list of necessary equipment was prepared. All necessary engineering services were provided until the commissioning of the plant. In addition, the process engineering, control and control engineering of the gas-fired backup boiler required for the power plant was carried out and commissioned.

5. **Coal-fired power plant project in the Czechoslovak Republic**
   The project management of a 120 MW coal fired thermal power plant in Czechoslovakia was undertaken and the plant was co-installed with Czech Bruno Machinery Factory. 5. Increasing the efficiency of Chemnitz city thermal power plant in former East Germany The central heating of the city of Chemnitz in former East Germany is carried out by an old coal-fired power plant. This power plant was modernized to increase its efficiency. In this context, the number of revolutions of coal mills was controlled with compact controllers. In addition, a PATENT has been obtained on this subject.

6. **Command and control of the natural gas power plant of the Wiesloch paper mill in Germany**
   The conversion of the Wiesloch paper mill's oil-fired power plant, which was built to produce electrical energy and process steam, to be fired with natural gas and the renewal of all measurement, control and control parts were undertaken and commissioned.

7. **Modernization project of the Hagenwerder Power Plant in the former East Germany**
   The Russian-made coal mills used at the Hagenwerder Power Plant in the former East Germany were modernized and put into operation by replacing their electrical and electronic devices and adapting them to the new equipment.

8. **Organic waste utilization project**
   Due to the scarcity of space and the importance of the environment in Western European countries, waste disposal is always on the agenda as a very important issue. Various methods are developed to utilize the wastes as cost-effectively and even profitably as possible. The project design, control, control engineering and commissioning works of the accelerated composting gas production and electrical energy generation plant from organic wastes, which is one of such methods, have been carried out.

9. **Domestic waste utilization project in Berlin, Germany**
   In the construction of two complete units of the Berlin Municipal Waste Incineration Electricity Generation Plant, he took part as project manager in the engineering (plant design and automation) and commissioning phases.

10. **Automation project of a thermal power plant in Taiwan**
    Design, automation engineering and documentation of a coal, gas and oil mixed-fired thermal power plant in Taiwan.

11. **Desalination project in Abu Dhabi**
    Modeling, simulation and optimization of the command and control system of 32 gas and oil fired boilers and associated seawater desalination plants in Abu Dhabi, including modernization. In addition, customer training was provided and extensive documentation was prepared in this context.

12. **1400 MW Huaneng coal power plant project in CHINA**
    The entire command and control engineering and project management of the 4x350 MW coal-fired units generating heat, electricity and process steam. In this context, coordination and documentation works were carried out between the instrumentation list, turbine operation system, software, hardware and engineering.

13. **Automation project of Yang Liu 700 MW coal-fired power plant in CHINA**
    Project management and project management of all control and control engineering of 2X350 MW units in coal fired thermal power plant. In this context, coordination and documentation works were carried out between the instrumentation list, turbine operation system, software, hardware and engineering.

14. **Commissioning of the Schkopau Thermal Power Plant in East Germany**
    A project for the commissioning of auxiliary boiler fired with fuel oil and optimization of control systems at Schkopau Thermal Power Plant in Eastern Germany.

15. **Design of the process of connecting Seyitömer Thermal Power Plant to the electricity system.**
    Project design works were carried out for the renovation of the mills of Seyitömer Thermal Power Plant and for the operation of the power plant with the interconnected system.

16. **Feasibility and privatization project of Orhaneli Thermal Power Plant**
    Preparation of bid and feasibility files for the privatization of Orhaneli Thermal Power Plant.

17. **Feasibility and privatization project of Seyitömer Thermal Power Plant**
    Preparation of bidding and feasibility files for the privatization of Seyitömer Thermal Power Plant.

18. **Feasibility and privatization project of Tunçbilek Thermal Power Plant**
    Preparation of bid and feasibility files for the privatization of Tunçbilek Thermal Power Plant.

19. **Conducting a joint thesis with Paderborn University in Germany within the framework of university-industry cooperation**
    Joint Master's thesis work has been directed with the University of Paderborn for the measurement and monitoring of flue fluid in fluidized bed coal-fired thermal power plants.

20. **Electricity generation from medical waste in Istanbul Metropolitan Municipality**
    Consultancy, feasibility study, preparation of reports and documentation required for commissioning and improvement of the facility established in Istanbul for the disposal of medical waste by incineration and generation of electrical energy at the same time.

21. **In 15 provinces in Turkey, the need for natural gas in housing and industry has been determined (through surveys and statistics).**

22. **SEAŞ Soma Elektrik Üretim ve Ticaret A.Ş. General Directorate Thermal Power Plant Plant primary frequency control performance tests**
    Primary Frequency Control Performance Tests of units 1, 2, 3 and 4 of SEAŞ Soma Elektrik Üretim ve Ticaret A.Ş. General Directorate Thermal Power Plant were performed. The reports required by TEİAŞ for these tests were prepared.

23. **Çolakoğlu Metalurji A.Ş. Thermal Power Plant primary frequency control performance tests**
    Primary Frequency Control Performance Tests of GT-1 Unit of Çolakoğlu Metalurji A.Ş. OP1 Natural Gas Combined Cycle Power Plant were performed. The reports required by TEİAŞ for these tests were prepared.

24. **Ova Elektrik A.Ş. Thermal Power Plant primary frequency control performance tests**
    Ova Elektrik A.Ş. Natural Gas Combined Cycle Power Plant GT-2 Unit Primary Frequency Control Performance Tests were performed. The reports required by TEİAŞ for these tests were prepared.

25. **Petkim Petrokimya Holding A.Ş. Thermal Power Plant primary frequency control performance tests**
    Petkim Petrokimya Holding A.Ş. Thermal Power Plant G5 Gas Turbine Unit Primary Frequency Control Performance Tests were performed. The reports required by TEİAŞ for these tests were prepared.
26. **Blockchain Based Renewable Energy Resource Guarantee System Software, (2021-2023)**

27. **Improvement of the technological infrastructure of Turkey's electricity transmission networks (2021-2022)**

28. **Researching Hydrogen Energy Technologies (2022-2023)**
    Sustainable energy transition in developed and developing economies focuses on environmental impacts, energy security, fossil fuel costs and depletion. Sustainable energy technologies have the potential to improve the socio-economic situation and research has been conducted on hydrogen energy technologies.

13.2. Projects Realized in the Railways Sector

1. **TCDD Ankara-Eskişehir line High Speed Train Signalization and Electrification Project**
   All stages of the catenary system of the High Speed Train Project, which is operating on the Ankara-Eskişehir line, have been examined and the German TÜV company has been the controller and consultant at all stages.

2. **TCDD Ankara-Konya line High Speed Train Signalization and Electrification Project**
   All stages of the catenary system of the High Speed Train Project, which is operating on the Ankara-Konya line, have been examined and he has been a controller and consultant at all stages.

3. **TCDD Eskisehir-Istanbul line High Speed Train Signalization and Electrification Project**
   All stages of the catenary system of the High Speed Train Project, which is operating on the Eskisehir-Istanbul line, have been examined and he has been a controller and consultant at all stages.

4. **Installation of Safety Management System (SMS) for TCDD HSR**
   Establishment of Safety Management System for Ankara-Eskişehir High Speed Train Line according to European Union norms 2004/49 has been realized.

5. **TCDD Ankara-Istanbul High Speed Train Project Inonu-Vezirhan Section T26 Tunnel Risk Analysis**
   The Monte-Carlo Method was used for the economic risk analysis of the T26 Tunnel and a report was prepared as a result of detailed investigations for the physical risk analysis.

6. **Construction of pvc snow guard on TCDD Polatli-Konya YHT line in order to prevent snow drift in winter conditions**
   In order to prevent snow drifts, which cause problems for train operations on the line in question, the most appropriate method was investigated and it was determined that it was appropriate to construct snow shelters in accordance with world standards. In addition, supervision and consultancy services were provided in the design and production processes of snow guards.

7. **TCDD Marmaray safety management system and electrification systems consultancy**
   Within the scope of this project, Marmaray Safety System has been analyzed and compared with similar applications in the world and solutions to the problems experienced in LV-MV systems have been produced.

8. **Research and development project for risk management and development of precautionary proposals based on scientific methods for safe operation on TCDD conventional lines**
   Within the scope of this work, risk assessments were completed and reported for 7 regions of TCDD. In addition, a risk assessment report was prepared for TCDD in general and a Risk Software was created for TCDD for the first time in Turkey.

9. **The project of risk analysis of the derailment incident that occurred on the M02 switch of the 10023 train between Ayrılık Çeşmesi-Üsküdar, where Marmaray operation is carried out, and determination of the deficiencies that may pose a danger in the operation**
   Within the scope of this work, the deficiencies that may pose a danger in operation were identified by conducting scientific examinations within the scope of switches, signaling, electrification, telecommunication and electromechanical systems and risk analysis of proactive and reactive systems in this field based on scientific methods.

10. **Investigation of High Speed Trains in Electric Railway Systems, Project No: 27141**

11. **Preliminary Discussions and Reporting of the International Annual Conference on Railway Sector, Project No:41003.**

12. **Development of Computer Aided Railways CER Simulation Program, Project No: 33244.**

13. **ITEA e-INDEX project Turkey coordinator**
    This project, carried out with Sweden, Germany, Canada, Portugal, Romania, aims to optimize the use of renewable energy and conventional energy sources using intermediate storage elements such as train sets.

14. **Production of National Electric Train Set**
    The first National Electric Train Set of our country, which has a speed of 160 km/h, was designed in TSI standards and its prototype was produced.

15. **Design of the Electric High Speed Train Set**
    The High Speed Train Set with a speed of 225 km/h was designed according to TSI standards and made ready for production.

16. **Other Projects in the Railway Sector**
    - Railway Vehicles (Metro, Tram, Suburban, Fast and High Speed Train) Establishment of aluminum body factory
    - Establishment of Railway Vehicles interior cladding factory
    - Establishment of Robotic Bogie production line
    - Modernizing the aluminum body test stand and making it compliant with the standards
    - K type composite brake lining project with spindle welds
    - Design and production of personnel wagons

13.3. Advanced Vehicle Technologies Projects

1. **Investigation of the automatic driving systems of the vehicles serving on the Avcılar-Söğütlüçeşme line**
   The process of examining the automatic driving system that should be on the Philieas brand vehicles serving on the Avcılar-Söğütlüçeşme route as hardware and software and reporting the cost issues has been carried out.

2. **Investigation of the additional propulsion systems of the vehicles in service on the Avcılar-Söğütlüçeşme line.**
   Technical examination of the additional hydraulic drive system in Philieas brand metrobus vehicles and reporting of the cost issues were carried out.

3. **Magnetless Motor and Drive Development for Electric Light Commercial Vehicles Project, Project Consultant**
   With the project accepted within the scope of TÜBİTAK 15011-OTO-HEAT 2015-2, it is aimed to design and develop a motor and motor driver that does not use rare elements such as magnets for use in electric vehicles, to make it ready for mass production and to use it in an application vehicle determined as the project output.

4. **Istanbul University SOCRAT (Solar Car Racing Team) project**

5. **Production of Brushless DC Motor and Driver with Switchable Magnetic Field (Researcher), Project No: 52033.**

6. **Development of a Solar Vehicle for Long Road Racing, Project No: 16359.**

7. **Investigation and Reporting of a Solar Powered Vehicle in Long Road Races, Project No: 19206.**

8. **Development of Electric Passenger Car, Project No: 28029.**

9. **Unmanned Aerial Vehicle Design and Application (Executive), Project No: FBA-2016-20972 (ongoing).**

10. **10. Tübitak 1507- Development of High Accuracy Person Counting System with Direction Detection Algorithm and "termopil" Technology and Integration into Public Transport Systems, Academic Consultancy (2017-2017)**

11. **Tübitak 1507- Development of New Generation Electronic Fare Collection Methods and Integration into Public Transport Systems, Academic Consultancy (2017-2018)**

12. **Tübitak 1003- Development of Fuel Efficiency Improving and Innovative Technologies for Internal Combustion Engine Vehicles (2018-2022)**

13. **Development of an Energy Management System for Electric Vehicles that Estimates Energy Consumption with High Accuracy and Performs Vehicle Control and Grid Services Considering Battery Health (2022-2025)**
    A system that estimates the energy consumption of electric vehicles with high accuracy by taking into account different state conditions and provides energy management according to these estimates will be developed.

14. **ITU KASVA (2023-2024)**
    In this project, it is aimed to design, analyse and produce an electric vehicle in which many different components are produced locally.

15. **Development of Blockchain-based Platform and Subcomponents for Leading Applications of Mobility Ecosystem (2023-2026)**
    Within the scope of the project, mobility ecosystem technologies focused on the blockchain-based digital platform are being developed.

16. **Tübitak 1004- Centre of Excellence Support Programme, Environmentally Sustainable Advanced Vehicle Technologies Project, APYK-1 Responsible (2023-2027)**

13.4. Other Projects

1. **European Union project titled "Cities for People (Cities -4- People)" and numbered 723194, Project Coordinator**
   Cities for People project is a 3-year Research and Innovation project, which has been accepted under the European Commission Horizon 2020 "Mobility for Growth" call. In five developed and emerging city regions (Üsküdar-Turkey, Hamburg-Germany, Budapest-Hungary, Budapest-Hungary, Oxfordshire-UK, Trikala-Greece), citizens, city authorities and innovation experts will work together as a "community" to understand transport and mobility challenges and priorities, generate ideas and concepts, test these concepts in real life and develop their potential.

2. **Realization of the Control Laboratory and Preparation of its Content, Project No: 4645.**

3. **Development of Control and Automation Systems Laboratory and Enrichment of Content Project No: 9547. 6. Occupational Health and Safety, Project No: 34462.**

4. **Cultural and statistical research on the settlements of Turks living in Germany was conducted through a questionnaire survey.**

5. **MKE Weapon Museum Establishment of electronic security system.**

6. **Occupational Health and Safety, Project No: 34462**

14. Courses Offered

14.1. Undergraduate Courses Offered

Academic Year	Period	Course Name	Hours per week	
			Theoretical	Application
1997- 2017	Fall	System Modeling and Automatic Control 1	3	2
		Energy Systems 1	3	2
		Microprocessors 2 (PLC)	3	
		Introduction to Engineering	3	
		Automation	3	2
		System Modeling	3	
	Spring	Control Systems	3	
		Energy Systems 2	3	
		Microprocessors 1	3	
		System Modeling and Control 2	3	2
		Programmable Logic Control (PLC)	3	2
2021 -	Fall	Process Control	3	

14.2. Graduate Level Courses Offered

Academic Year	Period	Course Name	Hours per week	
			Theoretical	Application
1997- 2017	Fall	Command and Control Technique Applications in Railway Systems	3	
		Renewable Energy Sources	3	
		Power System Planning	3	
	Spring	Energy Supply and Propulsion Devices in Electric Railway Systems		
		Digital Control		
		Control Techniques and Applications in Energy Systems		
		Special Specialties		
		Seminar		
2021 -	Fall	Advanced Control Methods in Mechatronics	3	
		App.of Con.&A.Sy.in The.Po.Pl.	3	
		Automotive Elect.&Cont.Systems	3	
		Special Topics in Mechatr.Eng.	3	
		Energy Science & Technology Advanced Topics	3	
	Spring	Scientific Research, Ethics and Seminar		