



## CURRICULUM VITAE

Ibrahim Sefa received the B.Sc. degree in Electrical and Electronic Education from Gazi University, Ankara, Turkey, in 1985, and the M.Sc. and Ph.D. degrees in electrical and electronic engineering from Erciyes University, Kayseri, Turkey, in 1993 and 1997, respectively. He is currently Professor in the Department of Electrical and Electronics Engineering, Faculty of Technology, Gazi University. He authored and coauthored several papers, authored chapters in two books. His current research interests include variable speed drives, power electronics, uninterruptible power supplies, Energy storage systems, renewable energy sources and their grid interfaces. He is a member of IEEE and consultant of an international UPS manufacturing company's RD center in Turkey.

### **Publications:**

#### **A. International Journal Papers (Science Citation Index, Science Citation Index-Expanded):**

- A1.** Çolak I., Bayındır R., **Sefa I.**, “Experimental Study on Reactive Power Compensation Using A Fuzzy Logic Controlled Synchronous Motor”, *Energy Conversion And Management*, Vol.: 45, Issues:15-16, Pages 2371-2391, September 2004.
- A2.** Çolak I., Çelik H., **Sefa I.**, Demirbas S., “On Line Protection System for Induction Motors” , *Energy Conversion and Management*, Vol.: 46, Issues:17, Pages 2773-2786, October 2005.
- A3.** **Sefa I.**, Kahraman H.T., “A Novel Control System for Air Conditioners” (EI), *Journal Of The Faculty Of Engineering And Architecture of Gazi University*, Vol.: 22, Issues: 3, Pages 339-347, 2007.
- A4.** Bayındır R., **Sefa I.**, “Novel Approach Based On Microcontroller To Online Protection Of Induction Motors”, *Energy Conversion and Management*, Vol.: 48, Issue: 3, Pages 850-856, March 2007.
- A5.** Bayındır R., **Sefa I.**, Çolak I, Bektas A., “Fault Detection and Protection of Induction Motors Using Sensors”, *IEEE Transaction on Energy Conversion*, Vol.: 23, Issues: 3, Pages 734-741, September 2008.
- A6.** Çolak I., Demirbas S., **Sefa I.**, Irmak E., Kahraman H. T., "Remote controlling and monitoring of a HVAC system over the Internet", *Journal of Scientific & Industrial Research*, Vol.: 67, Pages 680-684, September 2008.
- A7.** **Sefa I.**, Demirtas M., Garip I. and Çolak I., " Design And Implementation Of Parallel Operation Set Of Alternators For Educational Purpose", *Journal Of The Faculty Of Engineering And Architecture of Gazi University*, Vol: 23, Issues:3 Pages:729-739, 2008.

- A8.** Demirtas M., **Sefa I.**, Irmak E. and Çolak I., "Microcontroller Based DC/DC Boost Converter For Solar Energy Systems", *Journal of The Faculty Of Engineering And Architecture Of Gazi University*, Vol.: 23, Issue:3 Pages: 719-728, 2008.
- A.9 Sefa I.**, Altin N., "30 Pulse Rectifier Design For Grid Interfaces Of The Variable Speed Drives", *Journal Of The Faculty Of Engineering And Architecture Of Gazi University*, Vol:24, Pages 675-685, 2009.
- A.10 Sefa I.**, Altin N., "Grid Interactive Photovoltaic Inverters- A Review", *Journal Of The Faculty Of Engineering And Architecture of Gazi University*, Vol. 24, Pages 409-424, 2009.
- A.11 Sefa I.**, Demirtas M., Colak I., "Application of one-axis sun tracking system", *Energy Conversion and Management*, Vol.: 50, Pages 2709-2718 , 2009
- A.12 Sefa I.**, Altin N., "A novel approach to determine the interphase transformer inductance of 18 pulse rectifiers", *Energy Conversion And Management*, Vol.: 50, Pages 2495-2503 , 2009.
- A.13.** Altin N., **Sefa I.**, "dSPACE Based Adaptive Neuro-Fuzzy Controlled of Grid Interactive Inverter", *Energy Conversion and Management*, 56: 130-139 (2012).
- A.14** S. Ozdemir, N. Altin, **I. Sefa**, "Single stage three level grid interactive MPPT inverter for PV systems", *Energy Conversion and Management*, 80, 561–572, 2014.
- A.15** S. Ozdemir, N. Altin, **I. Sefa**, G. Bal, "PV Supplied Single Stage MPPT Inverter for Induction Motor Actuated Ventilation Systems", *Elektronika ir Elektrotechnika*, Vol. 20: 5, 2014.
- A16.** Komurcugil, H., Altin, N., Ozdemir, S., **Sefa, I.**, "An Extended Lyapunov-Function-Based Control Strategy for Single-Phase UPS Inverters, *IEEE Transactions on Power Electronics*, 30, 7, 3976 – 3983 (2015).
- A17.** **Sefa I.**, Altin N., Ozdemir S., Kaplan O., "Fuzzy PI controlled inverter for grid interactive renewable energy systems", *IET Renewable Power Generation*, 9(7), pp.729-738 (2015).
- A.18.** Komurcugil, H., Ozdemir, S., **Sefa, I.**, Altin, N., Kukrer, O., "Sliding Mode Control for Single-Phase Grid-Connected LCL-Filtered VSI with Double-Band Hysteresis Scheme", *IEEE Transactions on Industrial Electronics*, 63, 2, 864-873, (2016).
- A.19.** Komurcugil, H., Altin, N., Ozdemir, S., **Sefa, I.**, "Lyapunov-Function and Proportional-Resonant Based Control Strategy for Single-Phase Grid-Connected VSI with LCL Filter", *IEEE Transactions on Industrial Electronics*, 63, 5, 2838 – 2849, (2016).
- A.20** Balci, S., **Sefa, I.** and Altin, N., "Thermal Behavior of a Medium-Frequency Ferrite-Core Power Transformer", *Journal of Electronic Materials*, 45(8), pp.3978-3988. 2016.
- A.21** Balci, S., **Sefa, I.** and Altin, N., "An investigation of ferrite and nanocrystalline core materials for medium-frequency power transformers", *Journal of Electronic Materials*, 45(8), pp.3811-3821, 2016.
- A.22** Bayram, M.B., **Sefa, I.** and Balci, S., "A static exciter with interleaved buck converter for synchronous generators", *International Journal of Hydrogen Energy*, 42(28), pp.17760-17770. 2017.
- A.23** Gok, M. and **Sefa, I.**, "Research and implementation of a USB interfaced real-time power quality disturbance classification system", *Advances in Electrical and Computer Engineering*, 17(3), pp.61-70, 2017.
- A.24.** Ozdemir, S., Altin, N., **Sefa, I.**, "Fuzzy Logic Based MPPT Controller for High Conversion Ratio Quadratic Boost Converter", *International Journal of Hydrogen Energy*, 42, 28, 17748–17759, 2017.
- A.25.** Ozdemir, S., Balci, S., Altin, N., **Sefa, I.**, "Design and Performance Analysis of the Three-level Isolated DC-DC Converter with the Nanocrystalline Core Transformer", *International Journal of Hydrogen Energy*, 42, 28, 17801–17812, 2017.

- A.26. Sefa, I.,** Ozdemir S., Komurcigil, H., Altin, N., “Comparative Study on Lyapunov-function-based Control Schemes for Single-phase Grid-connected Voltage-source Inverter with LCL Filter”, *IET Renewable Power Generation*, 11, 11, 1473–1482, 2017.
- A.27. Balci, S., Sefa, I.** and Altin, N., “Design and analysis of a 35 kVA medium frequency power transformer with the nanocrystalline core material” *International Journal of Hydrogen Energy*, 42(28), pp.17895-17909, 2017.
- A.28. Sefa, I.,** Ozdemir S., Komurcigil, H., Altin, N., “An Enhanced Lyapunov-Function Based Control Scheme for Three-Phase Grid-Tied VSI with LCL Filter”, *IEEE Transactions on Sustainable Energy*, Doi: 10.1109/TSTE.2018.2833809, 2018.
- A.29. Altin, N.,** Ozdemir, S., Komurcigil, H., **Sefa, I.**, “Sliding-Mode Control in Natural Frame with Reduced Number of Sensors for Three-Phase Grid-Tied LCL-Interfaced Inverters”, *IEEE Transactions on Industrial Electronics*, 2018 Doi: 10.1109/TIE.2018.2847675.

### **B. International Scientific Meeting, Symposium and Conference Papers:**

- B1. Çolak I.** and Kosalay I., **Sefa I.**, “Comparison of high voltage open air isolated transformer centre and gas isolated transformer centre in terms of electromagnetic compatibility”, *3<sup>rd</sup> International Conference of Advanced Technologies*, Gazi University, Pages 362-367., Ankara-Turkey, 2003.
- B2. Çolak I.** and Kosalay I., **Sefa I.**, “Cooperation between municipalities and universities for controlling the electromagnetic interference caused by base stations”, *1<sup>st</sup> International Municipalities University and Industrial Sector Cooperation Symposium (ULYUSIS)*, Pages 363-367, Ankara-Turkey, 23-24 October 2003.
- B3. Çolak I.,** Bayındır R., **Sefa I.** and Demirtas M., “Design and Hybrid Energy Power System Using Solar and Wind Energy”, *2nd International Conference on Technical and Physical Problems in Power Engineering*, Pages 776-778, Tebriz-Iran, September 2004.
- B4. Çolak I.,** Irmak E., Bayındır R., Demirbas S. and **Sefa I.**, “Açık veya Kapalı Döngü Denetim Sistemlerinin Web Tabanlı Benzetimi”, *6 th International Educational Technology Conference, Eastern Mediterranean University*, Pages 446-451, Gazimagusa, Kuzey Kıbrıs Türk Cumhuriyeti, April 2006.
- B5. Çolak I.,** Irmak E., **Sefa I.**, Demirbas S. and Bayındır R., “Temel Elektrik Devrelerinin Analizi İçin İnternet Tabanlı Bir Eğitim Aracı”, *6 th International Educational Technology Conference, Eastern Mediterranean University*, Pages 452-461, Gazimagusa, Kuzey Kıbrıs Türk Cumhuriyeti, April 2006.
- B6. Çolak I.,** Demirbas S., Irmak E., **Sefa I.**, Bayındır R., "Remote Control Of DC Motor Over the Internet", *3rd International Conference on Technical and Physical Problems in Power Engineering*, Pages 216-219, Gazi University, ANKARA, May 29-31, 2006.
- B7. Çolak I.,** Bayındır R., Demirbas S., **Sefa I.**, Bal G., " Microcontroller based protection of induction motors ", *3rd International Conference on Technical and Physical Problems in Power Engineering*, Pages 164-167, Gazi University, ANKARA May 29-31, 2006.
- B8. Çolak I.,** Bayındır R., **Sefa I.**, Demirbas S., Bal G., " Developing of a control unit for the parallel operation of AC generators ", *3rd International Conference on Technical and Physical Problems in Power Engineering*, Pages 134-137, Gazi University, ANKARA, May 29-31, 2006.
- B9. Sefa I.,** Altin N. “Simulation of Current Controlled Grid Interactive Inverter” *TPE-2006 3rd Conference on Technical and Physical Problems in Power Engineering*, May 29-31, Gazi Üniversitesi, Ankara-Turkey, 2006.
- B10. Sefa I.,** Torun N., “Microcontroller Based Line Interactive Uninterruptible Power Supply” *TPE-2006 3rd Conference on Technical and Physical Problems in Power Engineering*, May 29-31, Gazi Üniversitesi, Ankara-Turkey 2006.

- B11.** I. Colak, R. Bayindir, A. Bektas, **I. Sefa**, G. Bal, "Protection of induction motor using PLC", *Powereng 2007, International Conference On Power Engineering - Energy And Electrical Drives Proceedings*, Pages 96-99, Setubal, PORTUGAL, Apr. 2007.
- B12.** **Sefa I.**, Altın N., Ozdemir S., Demirtas M., "dSPACE Based Control of Voltage Source Utility Interactive Inverter", *IEEE 19<sup>th</sup> International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pages 662-666, 11-13 June 2008, Ischia, Italy.
- B13.** Demirtas M., **Sefa I.**, Irmak E. and ÇOLAK I., "Low-Cost and High Sensitive Microcontroller Based Data Acquisition System for Renewable Energy Sources", *IEEE, 19<sup>th</sup> International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pages 196-199, 11 - 13 June 2008, Ischia, Italy.
- B14.** Demirbas S., Demirtas M., **Sefa I.**, and ÇOLAK I., "Building of W&S Energy System", *IEEE 19<sup>th</sup> International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pages 1466-1469, Ischia, Italy, 11-13 June 2008.
- B15.** **Sefa I.**, Altın N., "Simulation of Fuzzy Logic Controlled Grid Interactive Inverter" *4<sup>th</sup> International Conference on Technical and Physical Problems of Power Engineering*, Pages 30-35, Pitesti, Romanya, 4-6 September 2008.
- B16.** **Sefa I.**, Altın N., Ozdemir S., "dSAPCE Based Fuzzy Logic Controlled Boost Converter" *International Conference on Technical and Physical Problems of Power Engineering*, Pages 36-41, Pitesti, Romanya, 4-6 September 2008.
- B17.** **Sefa, I.**, Altın, N., Ozdemir, S., "Three Phase Grid Interactive Inverter for Renewable Energy Sources" *5<sup>th</sup> International Advanced Technologies Symposium (IATS'09)*, Pages 226-230, Karabük, Türkiye, 13-15 May, 2009.
- B18.** **I. Sefa**, S. Ozdemir, "Experimental study of interleaved MPPT converter for PV systems", *35<sup>th</sup> IEEE Industrial Electronics Conference, 2009. IECON '09.*, 456 - 461 pp., Porto, Portugal, November 2009
- B19 I. Sefa**, N. Altın, I. Colak, S. Ozdemir, "18 Pulse Controlled Rectifier: A Case Study on UPS", *EPE 2009 The 13<sup>th</sup> European Conference on Power Electronics and Applications*, 2935-2943, 8-10 September 2009 - Barcelona, Spain (2009).
- B.20 I. Sefa**, N. Altın, S. Ozdemir, "A Three Level Inverter for Grid Connected Renewable Energy Systems", *5. International Conference and Exhibition on Ecological Vehicles and Renewable Energies*, 10-334 pp., Grimaldi, Monaco, Mart 2010
- B.21 Sefa I.**, Ozdemir S., "Multifunctional interleaved boost converter for PV systems", *IEEE International Symposium on Industrial Electronics (ISIE)*, pp. 951-956, 4-7 July 2010, Bari, Italy
- B.22 Sefa I.**, Altın N., Ozdemir S., "An Implementation of Grid Interactive Inverter with Reactive Power Support Capability for Renewable Energy Sources", *IEEE International Conference on Power Engineering, Energy and Electrical Drives, POWERENG 2011*, May, 11-13. Torremolinos, Málaga, Spain.
- B.23 Sefa I.**, Balci S, Altın N., Ozdemir S., "Core Losses of PWM Excited Inverter Transformers with Finite Element Method", *7<sup>th</sup> International Conference on Technical and Physical Problems of Power Engineering*, 7-9 July 2011, Near East University, Lefkosa, TR Northern Cyprus.
- B.24 Sefa I.**, Ozsan A, Altın N., Görgünoglu S, Açıkğöz A.M., "A Microcontroller Based Power Units For Dynamic Reactive Power Compensation Systems", *7<sup>th</sup> International Conference on Technical and Physical Problems of Power Engineering*, 7-9 July 2011, Near East University, Lefkosa, TR Northern Cyprus.
- B.25.** Altın N., **Sefa I.**, "Simulation of Neuro-Fuzzy Controlled Grid Interactive Inverter", *XXIII International Symposium on Information, Communication and Automation Technologies*, October 27-29, 2011, Sarajevo, Bosnia Hercegovina (2011).

- B.26. Sefa, I.,** Ozsan, A., Altin, N., Görgünoglu, S. and Ozdemir, S., “Dynamic Reactive Power Compensation System for Wind Turbines”, *7. International Conference and Exhibition on Ecological Vehicles and Renewable Energies, EVER'12*, Monaco, 1–6 (2012).
- B.27.** Ozdemir, S., Altin, N. and **Sefa, I.**, “Single Stage Three-Level MPPT Inverter for Solar Supplied Systems”, *IEEE 21th International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Sorrento, Italy, 103– 108 (2012).
- B.28. Sefa, I.,** Balci S., Altin, N. and Ozdemir, S., "A Comprehensive Analysis of Inductors for Interleaved Buck Converter", *IEEE 15th International Power Electronics and Motion Control Conference and Exposition*, 1-6, Novi Sad, Serbia, (2012).
- B.29** Balci S., Altin, N., Ozdemir, S. and **Sefa, I.**, “FEM Based Parametric Analysis of AC Line Reactors”, *IV. IEEE International Conference on Power Engineering, Energy and Electrical Drives, POWERENG 2013*, Istanbul, Turkey, 1–6 (2013).
- B.30 Sefa, I.,** Battal, F., and Balci S., “Modeling and Implementation of dsPIC Based Interleaved Buck Converter”, *IV. IEEE International Conference on Power Engineering, Energy and Electrical Drives, POWERENG 2013*, Istanbul, Turkey, 1–6 (2013).
- B31. Sefa I,** Altin N, Ozdemir S., “Z-Source Inverter For Renewable Energy Systems”, *EWRES – II. European Workshop on Renewable Energy Systems*, 1-6, Antalya, TURKEY, 20-30 Sep. 2013.
- B32. Sefa, I.,** Altin, N., Asa, E., Colak, K., “Power quality analyzer for three phase systems”, *International Conference on Renewable Energy Research and Applications (ICRERA)*, 1222 – 1227 (2013).
- B33.** Altin, N., Balci, S.;Ozdemir, S.;**Sefa, I.** “A comparison of single and three phase DC/DC converter structures for battery charging”, *International Conference on Renewable Energy Research and Applications (ICRERA)*, 1228 – 1233 (2013).
- B34.** Ozdemir S., Bayhan S, **Sefa I.**, Altin N., “Three-Phase Multilevel Grid Interactive Inverter for PV systems with Reactive Power Support Capability” *Ist Workshop on Smart Grid and Renewable Energy*, 1-6, March 22-23, (2015).
- B.35. Sefa, I.** and Battal, F., “A harmonic analysis using parallel computing”, *23th Signal Processing and Communications Applications Conference (SIU), 2015* (pp. 1965-1968), 2015.
- B.36.** Gok, M., Gorgunoglu, S. and Sefa, I., “Design of a real-time USB interfaced multi-channel power system harmonics detection system” *9th International Conference on In Electrical and Electronics Engineering (ELECO), 2015* (pp. 521-524). 2015.
- B.37.** Balci, S., Altin, N., Komurcugil, H. and **Sefa, I.**, “Performance analysis of interleaved quadratic boost converter with coupled inductor for fuel cell applications”, *42nd Annual Conference of the IEEE in Industrial Electronics Society, IECON 2016*, pp. 3541-3546, 2016.
- B.38.** Ozdemir S., Altin, N., **Sefa, I.**, “MPPT Capable Quadratic Boost Converter for PV Systems” *ECRES – 4. European Conference on Renewable Energy Systems, Istanbul, Turkey*, 826-831, 28-31 August, (2016).
- B.39.** Ozdemir S., Balci, S., Altin, N., **Sefa, I.**, “Three-Level Isolated DC-DC Converter For High Power Applications” *ECRES – 4. European Conference on Renewable Energy Systems, Istanbul, Turkey*, 872-877, 28-31 August, (2016).
- B.40.** Komurcugil, H., Altin, N., Ozdemir, S., **Sefa, I.**, “Sliding-Mode and Proportional-Resonant Based Control Strategy for Three-Phase Grid-Connected LCL-Filtered VSI”, *IEEE 42nd Annual Conference of the Industrial Electronics Society, IECON 2016*, 1-6, 24-27 October, Florence, Italy.
- B.41.** Komurcugil, H., Ozdemir, S., Altin, N., **Sefa, I.**, “A Modified Lyapunov-Function Based Control Strategy for Three-Phase Grid-Connected VSI with LCL Filter”, *IEEE 42nd*

*Annual Conference of the Industrial Electronics Society, IECON 2016*, 1-6, 24-27 October, Florence, Italy.

**B.42.** Altın, N., Ozdemir S., Balci, S., **Sefa, I.**, “Series-Parallel Resonant Converter With Current Limiting Ability For Renewable Energy Source”, *ECRES – 5. European Conference on Renewable Energy Systems*, 483-488, 27-30 August, Sarajevo, Bosnia-Herzegovina, (2017).

**B.43.** Balci, S., Battal, F., **Sefa, I.**, Bayram, M. B., Ozdemir S., Altın, N., “Loss Behaviour of the Dry-type Power Transformer According to the Load Type”, *ECRES – 5. European Conference on Renewable Energy Systems*, 49, 27-30 August, Sarajevo, Bosnia-Herzegovina, (2017).

**B.44.** Balci, S., **Sefa, I.**, Ozdemir S., Altın, N., “An Investigation On Coupled Inductors of Quadratic Boost Converters”, *ECRES – 5. European Conference on Renewable Energy Systems*, 507-513, 27-30 August, Sarajevo, Bosnia-Herzegovina, (2017).

**B.45.** **Sefa I.**, Altın N., Ozdemir S., Balci S., Bayram M., Kelebek H., “Design and Loss Analysis of LCL Filter Inductors for Two-Level and Three-Level Inverters”, *22nd IEEE International Conference on Applied Electronics*, 5-7 Sept., Pilsen, Czech Republic, (2017).

**B.46.** **Sefa I.**, Komurcugil, H., Demirbas, S., Altın N., Ozdemir S., “Three-Phase Three-Level Inverter With Reduced Number of Switches for Stand-Alone Pv Systems”, *6th International Conference on Renewable Energy Research and Applications, ICRERA 2017*, 1119-1124, 5-8 Nov. San Diego, CA, USA, (2017).

**B.47.** Bayram, M. B., **Sefa, I.**, “A LabVIEW based volt/hertz controller for synchronous generator excitation systems” *IEEE 58th International Scientific Conference on Power and Electrical Engineering*, pp. 1 5, Riga, 2017.

**B.48.** Balci, S., **Sefa, I.**, Altın, N., Ozdemir S., “Mesh Quality Effects Of The FEA Simulation Applied on a Transformer”, *7th International Conference on Advanced Technologies (ICAT'18)*, 28 April - 1 May, Antalya, Turkey, (2018).

**B.49.** Ozdemir S., **Sefa, I.**, Balci, S., Altın, N., “Bidirectional Three Phase Two Leg Inverter With PR Current Controller”, *7th International Conference on Advanced Technologies (ICAT'18)*, 28 April - 1 May, Antalya, Turkey, (2018).

**B.50.** Altın, N., **Sefa, I.**, Komurcugil, H., Ozdemir, S., “Three-Phase Three-Level T-type Grid Connected Inverter with Reduced Number of Switches”, *6th International Istanbul Smart Grid and Cities Congress*, 25-26 April, Istanbul, Turkey, (2018).

**B.51.** Altın, N., Ozdemir, S., Komurcugil, H., **Sefa, I.**, Biricik, S., “Two-Stage Grid-Connected Inverter for Pv Systems”, *IEEE CPE-POWERENG*, pp. 10-12 April, Doha, Qatar (2018).

**B.52.** Balci, S., **Sefa, I.**, Altın, N., Ozdemir S., “An Analysis on Cooling Requirements of the High Power Medium Frequency Transformer”, *IEEE CPE-POWERENG*, Doha, Qatar (2018).

### **C. International book chapters:**

**C1.1.** Power Electronics (circuits, devices and applications), Muhammad H. Rashid, 4. Edition, (Translated to Turkish), Nobel Press, 2015.

**C1.2.** **Sefa, I.**, Altın, N., Ozdemir S., “Energy Harvesting and Energy Efficiency: Technology, Methods, and Applications. Maximum Power Point Tracking Algorithms for Partial Shaded PV Systems” Switzerland, Springer (English).