

Furkan BAŞKURT

M.Sc. Electrical Engineer
Research/Teaching Assistant at ITU Power Electronics Laboratory

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Power Electronics Laboratory, 7206 Maslak / Istanbul / Turkey



DATE OF BIRTH : 05.09.1984
PLACE OF BIRTH : Istanbul
NATION : Turkish Republic

AREAS OF INTEREST :

- Power Electronics / DC-DC Converters (Modeling, Analysis, Control, Design)
- Medium/High Power Electronics Converter PCB Design
- Control of Electrical Machines
- Soft Switching Converters
- Power Factor Correction Circuits
- Semiconductor Switching Control Circuits

EDUCATION :

- **September 2012 – present**
Ph.D. – Istanbul Technical University – Electrical Engineering
(GPA: 3.88 – 4 courses)
- **September 2008 – May 2012**
M.Sc. – Istanbul Technical University – Electrical Engineering
(General GPA: 3.30 / Power Electronics Courses GPA: 3.67)
Thesis: INVESTIGATION OF A UTILITY-CONNECTED WIND ENERGY SYSTEM (TURKISH)
- **September 2003 – May 2008**
B.Sc. – Istanbul Technical University – Electrical Engineering
Graduation Work: SINUSOIDAL PWM INVERTER DESIGN (TURKISH)

SUCCEEDED M.Sc. & Ph.D. COURSES :

(Course details and project reports can be seen at my Professional Portfolio document)

- **Power Electronic Systems (M.Sc.)**
- **Dynamics of Electrical Machines (M.Sc.)**
- **Analysis and Design of SMPS (M.Sc.)**
- **Control of Induction Machines (M.Sc.)**
- **Resonant Power Converters (M.Sc.)**
- **Harmonics in Electrical Machines (M.Sc.)**
- **Brushless Servomotors and Their Applications (M.Sc.)**
- **Power Factor Correction Circuits (Ph.D.)**
- **Vector Control of AC Machines (Ph.D.)**
- **Electrochemical Conversion and Storage of Energy I (Ph.D.)**

WORKING EXPERIENCE :

- **November 2010 – present**
*Istanbul Technical University / Dept. of Electrical Engineering
Research/Teaching Assistant at Power Electronics Laboratory*
- **November 2009 – September 2010**
*Baran Electronic Systems
Power Electronics R&D Engineer*
- **June 2009 – September 2009**
*Detakom Telecommunication Systems
Power Electronics Project Engineer*

DETAILED EXPERIENCE :

ITU – Dept. of Electrical Engineering (2.5 years) *(More details can be found at my Professional Portfolio document.)*

• **Assisted Courses;**

- ELK331E – Power Electronic Circuits – English – (3 semesters)
 - ❖ *Related Projects:* Rectifier for LED lighting, AC chopper for Induction Motor drive, DC chopper for PMDC Motor drive, inverter for lamp lighting (incandescent and fluorescent).
- ELK453E – Industrial Applications of Power Electronics – English – (2 semesters)
- ELK498E – Photovoltaic Systems – English – (3 semesters)
 - ❖ *Related Projects:* Analysis, construction and test of a solar panel supplied race car.
- ELK334 – Electro-mechanic Energy Conversion – Turkish – (1 semester)
 - ❖ *Related Student Projects:* Analysis, construction and test of an Electromagnetic gun.
- ELK221 – Fundamentals of Electrical Engineering – Turkish – (1 semester)

• **Assisted Laboratories;**

- ELK342 – Power Electronics Laboratory – Turkish/English – (3 semesters)
 - ❖ *Related Experiments:* Characteristics of Semiconductor Devices, Single Phase Controlled & Uncontrolled Rectifiers, Single Phase AC Choppers, Class-A DC Choppers, SPWM & Square Wave Inverters.
- ELK431 – Electrical Machines Laboratory – Turkish – (3 semesters)
 - ❖ *Related Experiments:* Single Phase Transformers, Single Phase Induction Machines, Three Phase Wound Rotor and Squirrel Cage Machines, Parameter Measurement Of Machines, Synchronous Machines.

• **Academic Consultancies;**

- ITUGAE – ITU Solar Car Team (Sept 2012 – present)
 - ❖ <http://www.itugae.com>
- ANKA – Electrical System Design of a Scrubber Dryer (Oct 2012 – present)
- ISTIKLAL – Marti (Hydrogen Powered Boat) Project Member - (Apr 2011 – Jul 2012)
 - ❖ <http://www.istiklalprojesi.itu.edu.tr/>

• **Other Activities;**

- Power Electronics Laboratory Internship Coordinator
 - ❖ *Analysis and construction of closed loop Buck, Boost (fixed output voltage), Boost (fixed input current) and Buck-Boost Converters, construction of an AC chopper.*
- Design of Power Electronics Laboratory webpage
 - ❖ <http://www.powerelectronics.itu.edu.tr>
- ITU Power Electronics Video Channel
 - ❖ <http://www.youtube.com/itugucelektronigi>

Baran Electronic Systems (10 months)

"Baran Electronic Systems" is a project based company on Power Electronics area. Project demands especially from GSM companies are designed, constructed and tested. My hand and practical skills about "Semiconductor devices", "analog IC's", "SMPS controller circuits", "Multilayer PCB design for power converters", "high frequency inductor / transformer design" knowledge is improved at this company. I also built up the component list and database, and prepared datasheets for products of the company. Some of my projects at this company are listed below. Detailed descriptions of these projects can be found at "[Professional Portfolio](#)" PDF document.

Detakom Telecommunication Systems

"Detakom" produces telecommunication equipment for GSM companies. I worked here for a renewable energy project, "Medium Power Wind Energy System for Base Transceiver Stations". This system constructed on laboratory and tested. As a result, "power share" between utility and medium power wind turbine is realized and results are presented in my thesis work. My knowledge about medium power wind turbines, kW range DC converters, power share at DC point is increased. Detailed descriptions of these projects can be found at "[Professional Portfolio](#)" PDF document.

RELATED EXPERIENCE _____ :

My professional experiences are only listed here; detailed explanations can be downloaded from the link below.

Professional Portfolio: <http://web.itu.edu.tr/baskurtf/files/professional.pdf>

- **M.Sc. Thesis Work**
 - *Modeling and Dynamic Analysis of a CCM Boost Converter with non-ideal circuit parameters*
 - *50V @500W CCM Boost Converter with PID controller (constant output voltage)*
 - *450W Single Phase Half Wave Mosfet Rectifier with Current Sensing Method*
 - *Construction and Test of "2kW Power Share System" on a representative Base Transceiver Station*
- **Laboratory Work**
 - *1kW SPWM/Square Wave Inverter with 50Hz Transformer (in progress)*
 - *Brushless DC Motor Drive with MC33035*
 - *9V~15V @5W~30W Constant Current Battery Discharger*
 - *20V @100W CCM Boost Converter with PID controller (constant output voltage)*
 - *15kVA UPS Performance Test for Industry*
 - *0.6kVA UPS Performance Comparison Test (4 different UPSs) for Industry*
 - *ITU Power Electronics Laboratory YouTube™ Video Channel*
- **Participated Projects at Industry**
 - *160V @500W Interleaved CCM Boost Converter Design*
 - *3 Phase - 3 Phase Matrix Switch Design*
 - *Phase Selection Based Matrix Converter Design*
- **Course Work**
 - *48V @75W DCM Buck-Boost Converter (open loop)*
 - *12V @75W Quasi Resonant Half Wave Buck Converter (open loop)*
 - *Simulink Model of a PV Module from Datasheet values with Changing Irradiance and Temperature*
 - *Modeling and Analysis of a CCM Flyback Converter with non-ideal circuit parameters (Technical Report)*
 - *Modeling and MATLAB Simulation of an Induction Machine ($a\beta 0$ & $dq0$)*

OTHER INFORMATION :

- Languages
 - *Turkish (Native), English (Good), Spanish (Elementary)*
- Computer Skills
 - *Technical Software: Matlab/Simulink, PowerSIM, PLECS, LT Spice, Proteus, Eagle PCB*
 - *Graphical Software: XCircuit, Macromedia Fireworks, Inkscape*
 - *Programming: C (I will receive certificate on July), Assembly, HTML, CSS*

REFERENCES :

- **Asst. Prof. Dr. Deniz YILDIRIM**
Istanbul Technical University – Dept. of Electrical Engineering
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E-mail: yildiri1@itu.edu.tr
- **Asst. Prof. Dr. Özgür ÜSTÜN**
Istanbul Technical University – Dept. of Electrical Engineering
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- **Şükrü ERTİKE**
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- **Asst. Prof. Dr. Gökhan ŞEN**
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