
# National technical University “Kharkov polytechnic institute”
# Faculty “Electric Machine Building”
# Department of “Industrial and Biomedical electronics”

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# Department “Industrial and Biomedical electronics” of NTU "KhPI

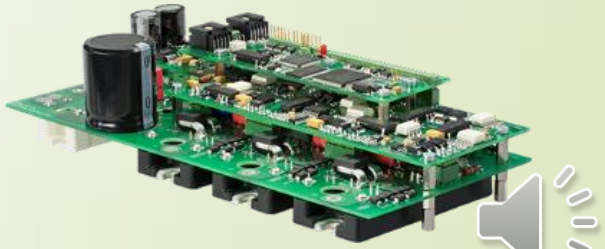
Yevgeny Sokol - *Ukrainian scientist, rector of the National Technical University "Kharkiv Polytechnic Institute" , corresponding member of National Academy of Sciences (2012), winner of the Prize. SA Lebedev's National Academy of Sciences of Ukraine, Professor , Doctor of Technical Sciences , Head of the department of industrial and biomedical electronics.*

# We train specialists in the field:

POWER ELECTRONICS

*Speciality 171 – «Electronics»*
*Specialization – «Industrial Electronics»*

*Speciality 153 – «Micro - and Nano Systems Technology»*
*Specialization – «Physical and Biomedical Electronics»*

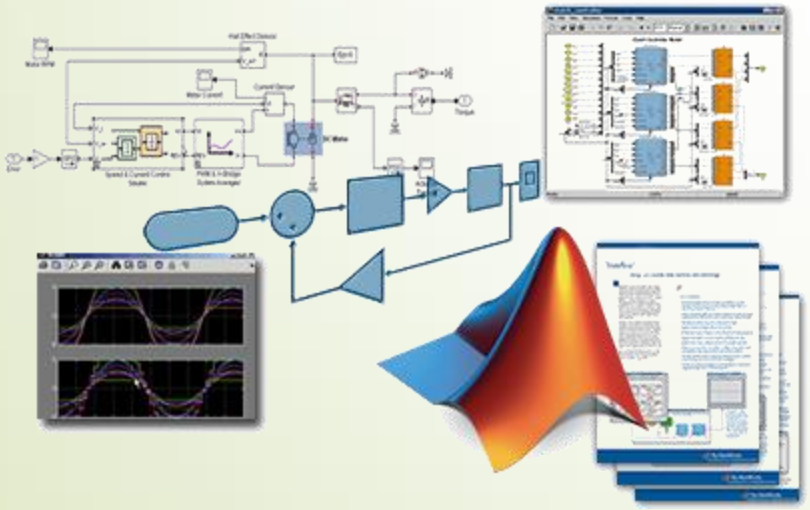


# General academic disciplines for the students of our department

POWER ELECTRONICS

*Speciality 171 – «Electronics»*
*Specialization – «Industrial Electronics»*

- Programming;
- Programming Embedded Systems;
- Software microcontroller systems;
- Computer-aided design;



- Theory of electrical and electronic circuits;
- Analog circuitry;
- Digital circuitry;
- Microprocessor technology.

# General academic disciplines for the students of our department

POWER ELECTRONICS

*Speciality 171 – «Electronics»*
*Specialization – «Industrial Electronics»*

- Information display systems;
- Signal transducers and interfaces;
- Computer-aided design of electronic devices;
- Information theory and coding;

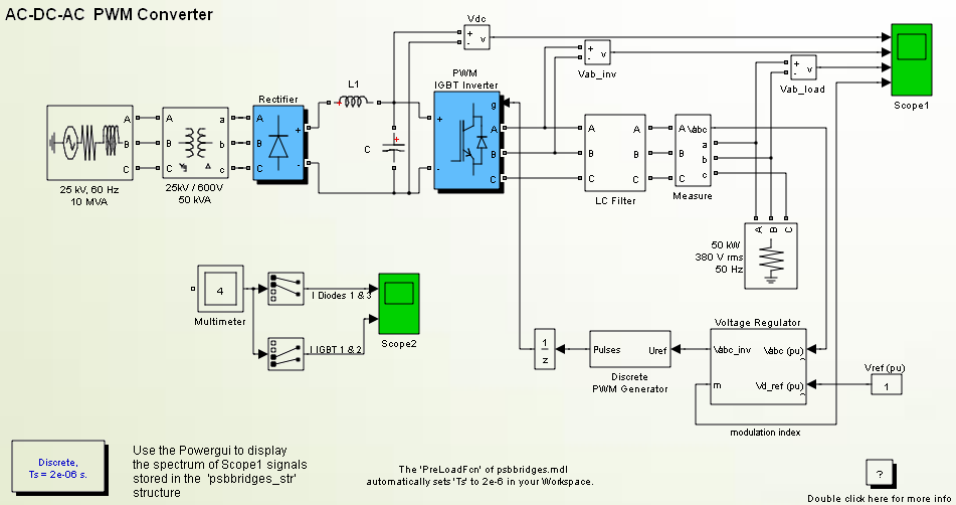

- Microcontrollers in applications of information technology;
- Digital signal processing;
- Power electronics;
- Power semiconductors.

# General academic disciplines for the students of our department

POWER ELECTRONICS

*Speciality 171 – «Electronics»*
*Specialization – «Industrial Electronics»*

- Power supplies;
- Electrical machinery and apparatus;
- Stand-alone converters;
- Microcontrollers in power electronics devices;
- Converters for electric drive.


# General academic disciplines for the students of our department

*Speciality 153 – «Micro - and Nano Systems Technology»*
*Specialization – «Physical and Biomedical Electronics»*

- Programming;
- Programming embedded medical electronic engineering systems;
- Analog electronics;
- Digital circuits;
- Microprocessor technology;
- Display means information.

# General academic disciplines for the students of our department

*Speciality 153 – «Micro - and Nano Systems Technology»*
*Specialization – «Physical and Biomedical Electronics»*

- Digital signal processing;
- Computer-aided design;
- Computer-aided design of electronic medical devices;
- Theory of automatic control;
- Information devices of medical electronics;

- Sources of supply of medical equipment;
- Physiotherapy apparatus;
- Biometrics;
- IEDs medical information processing;
- Medical diagnostics.

# Developments in the department

POWER ELECTRONICS

- Active rectifiers.
- Active power filters.
- Power Converters for systems with electrical energy storage devices.
- Uninterruptible Power Supply.
- Photovoltaic system with serial or parallel module connection, based on converters with or without galvanic isolation.
- Multi Pulse Rectifier with Electronic Phase Shifting.
- Two-stage dc/dc separated commutation converter.
- Single-phase solid state converter with a phase control method
- Converters for special applications.

# Scientific activities of the department

POWER ELECTRONICS

- Using the separated commutation in two-stage dc/dc converter in order to reduce of the power semiconductor switches' dynamic losses.
- About possibility of improvement of energetic characteristics of two-stage DC/DC converter with separated commutation.
- Energy-Efficient High-Voltage Switch Based on Parallel Connection of IGBT and IGCT.
- Perspectives of Improvement of AC Power Transmission Based on Achievements of Modern Power Electronics.
- Rectifiers with a combined filtration of primary current for high-frequency power systems.
- A Novel Multipulse Rectifier with Electronic Phase Shifting.
- Analysis of possibilities of technology transfer electrical energy single-phase high frequency quasi-rectangular shaped alternating current.
- Ratio non-sinusoidal voltage at the connection point of the active rectifier.
- Increased capacity AC power by changing sinusoidal signals with limited range meanders.
- etc.

Our contacts:

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