



***Ukrainian-Bavarian Higher
Education Day: our
proposals for cooperation***



***Odessa National
Polytechnic University***

***Vice-rector for science and
research professor Dmytryshyn
Dmytro***



Some facts about university

The Odessa National Polytechnic University was founded in 1918
Over years of its existence the University accumulated a reach deal of academic and scientific traditions

Nobel laureate in physics professor I. Tamm worked at our University

Since 1994 ONPU is a member of European University Association (EUA)

Since 1996 ONPU is a member of International Association of Universities (IAU)

Since 1998 ONPU is a member of European Association for International Education

Since 2008 ONPU is a member of Eurasian Universities Union (EURAS)

Today ONPU is the largest technical University in the Southern Ukraine



University Campus

University Academic Staff



150 Professors, Doctors of Science

500 Associated Professors, PhDs

21 Honored Scientists of Ukraine

During the ONPU existence about than 120 thousand graduates have been trained, here, including more than 10 thousand foreign students from 80 countries of the world

University Institutes and Departments



- Mechanical Engineering Institute
- Institute of Industrial Technologies, Design and Management
- Power Engineering Institute
- Institute of Information Security, Radioelectronics and Telecommunications
- Computer Systems Institute
- Institute of Business, Economics and Information Technologies
- Institute of Electromechanics and Energy Management
- Ukrainian-German Technical Institute
- Ukrainian-Spanish Institute
- Ukrainian-Polish Institute
- Chemical Engineering Institute
- Humanities Institute
- Extramural studies Institute
- Foreign Students Training Institute

66 Departments provide B.Sc., M.Sc.,
Ph.D. and D.Sc. degree programs





ONPU has a powerful scientific and research base
which includes

150 specialized scientific and research ***laboratories***, conducting scientific researches in the following fields:

- Nuclear physics and nuclear power-engineering ,*
- Resources and energy-saving technologies,*
- Environmental protection,*
- IT - technologies,*
- Radioelectronics,*
- Mechanics and Robotics,*
- Computer Science,*
- New materials and nanotechnologies,*
- Automation and Instrumentation,*
- Pharmacology and organic and inorganic chemistry*

Nuclear physics and nuclear power engineering



UNIT FOR DETECTING OF GAMMA-RADIATION BDMG-CZT

Function and field of application

It is designed for capacity measurement of equivalent gamma radiation dose as part of radiation safety control equipment on the principle of dose rate conversion in frequency of electric impulses passing.

This unit is applied as part of autonomous control equipment for radiation safety or with standard information and measuring devices, which give corresponding inputs.

Main advantages of R&D project

The energy range and measuring range of dose rate are expanded. Unit for detection meets modern requirements of electromagnetic compatibility.

State of R&D project preparedness

The model was designed, pilot batch and the set of design and technical documentation were produced.





WIND TURBINES ADAPTABLE TO WIND SPEED

Function and field of application

The R&D project is designed for efficiency improvement of wind turbines with horizontal axis of rotation, especially when low wind speeds.

Main advantages of R&D project

Wind engine operated across all range of wind speeds gives maximally possible power, that when low wind speeds is 3-4 times higher compared to wind turbines with stuck vanes.

State of preparedness of R&D project

Acting pilot plant is designed and experimental studies in wind tunnel and on the testing ground were conducted.



Environmental protection



DOUBLE EFFECT CLOSED AIR CLEANING SYSTEM REMOVING POLYDISPERSE DUST

Function and field of application

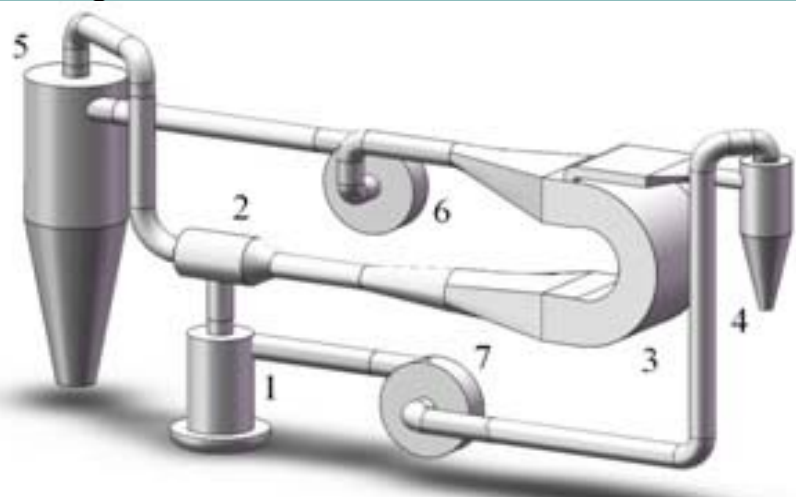
This double effect closed system is designed for air aspiration with removal of polydisperse dust at small and large enterprises

Main advantages of R&D project

Environmental effect is achieved through separate purifying of dust masses with diverse fractional composition and through total system isolation from environment. The technology does not require major investments.

State of preparedness of R&D project

The methodology of air purification system design is developed, that allows to perform both design calculation and the calculation of main indicators of cleaning quality.



Scheme for double effect closed cleaning system

- 1 – device for capture – return;
- 2 – mixing device;
- 3 – separating device;
- 4 – catcher of the main circuit
- 5 – catcher of the circular circuit;
- 6 – ventilator for the circular circuit;
- 7 – ventilator for the main circuit.



SMART-bus stop

1) гучномовець вуличний підвісний з Bluetooth, 3G, Wi-Fi, GPS.



Рис. 1 – Приклади гучномовців вуличних підвісних

Найдешевший варіант передбачає лише розміщення на зупинках (під дахом, направлено всередину зупинки) вологостійкого гучномовця з підтримкою Bluetooth, 3G, Wi-Fi, GPS. Вартість такого пристрою – від 300 грн. до 2000 грн. Більшість з них передбачають роботу від мережі, тому додатково варто поставити сонячні батареї (500-1000 грн.)

2) гучномовець -/- з камерою.



Рис. 2 – Приклади гучномовців вуличних підвісних з камерою

Відрізняється від попереднього наявністю пристрою для відео фіксації. Таке рішення дозволить по-перше значно знизити акти вандалізму щодо пристроїв, по-друге, дозволить фіксувати пасажиропотік і по-третє, знизить криміногенні ситуації. Вартість – 1500-4500 грн, сонячна батарея – від 1000 грн.

3) вбудований гучномовець в табло прогнозування прибуття транспорту.



Рис. 3 – Приклад Табло прогнозування прибуття транспорту на власній основі (приклад м. Житомир, проект м. Миколаїв).

Це рішення можливе при організованому переобладнанні існуючих зупинок. Вбудований гучномовець є найдешевшим варіантом (вартість пристрою 250 - 600 грн.), не потребує додаткового живлення від електромережі, адже буде працювати разом зі всією конструкцією.

Function and application field

Field of application: urban passenger transport (UPT); social improvements.

Main advantages of R&D project

Main advantages:

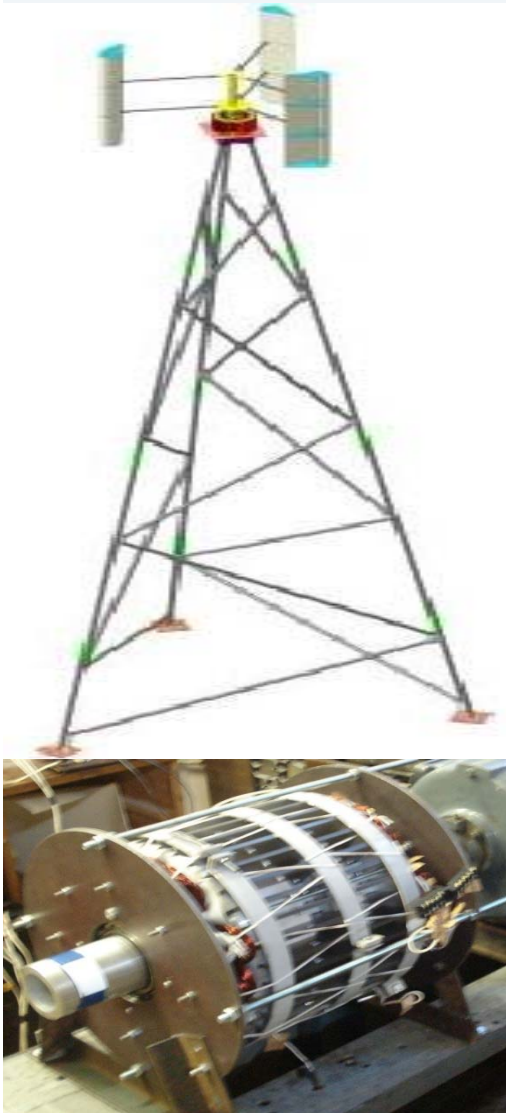
- easing for people with sight disabilities to use UPT;
- variety of realization (4 options proposed) depending on budget and objectives.

State of preparedness of R&D project

4 options (3 represented at figure illustrating) are proposed and calculated



LOW-SPEED DIRECT CURRENT GENERATOR FOR WIND POWER INSTALLATION



Function and field of application

The designed low-speed DC generator is operated as part of the wind power generating installation. Field of application : small wind energy market of Ukraine.

Main advantages of R&D project

Cheaper than equivalents low-speed low-inertia gearless generator with high overload capacity and improved heat sink.

State of preparedness of R&D project

The real scale model is designed with 1 kWh power and experimental studies were conducted.



ANTIFRICTION MULTI-COMPONENT ALLOY ON THE BASIS OF IRON AND COPPER

Function and field of application

R&D project is designed for service life increasing of car parts friction couples, for instance of camshafts, valve rockers, etc.

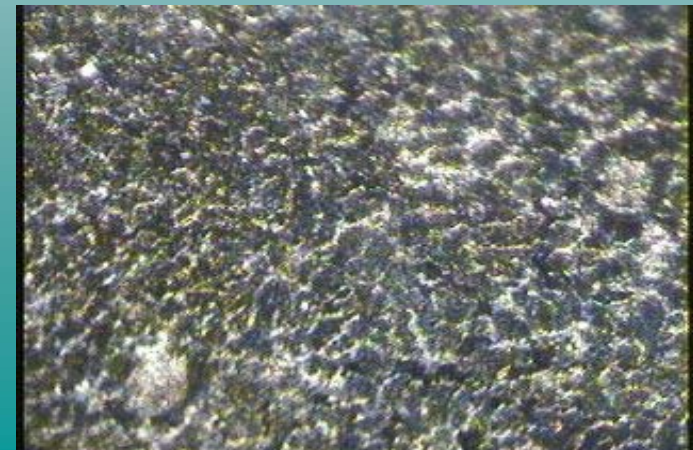
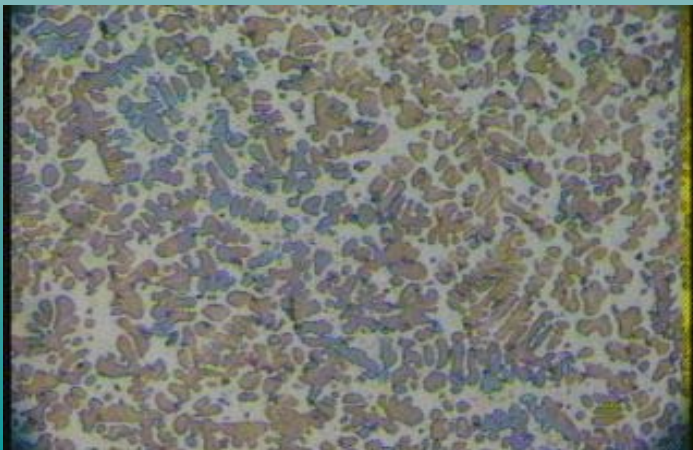
Main advantages of R&D project

This alloy is not expensive in production, because it does not contain rare elements. Also, the alloy can significantly increase the service life of friction couples, approximately double.

State of preparedness of R&D project

Documentation is prepared by 90% per cent.

Some samples of the alloy where obtained, research continues.





HIGH-EFFICIENCY ROLLER BIT

Function and field of application

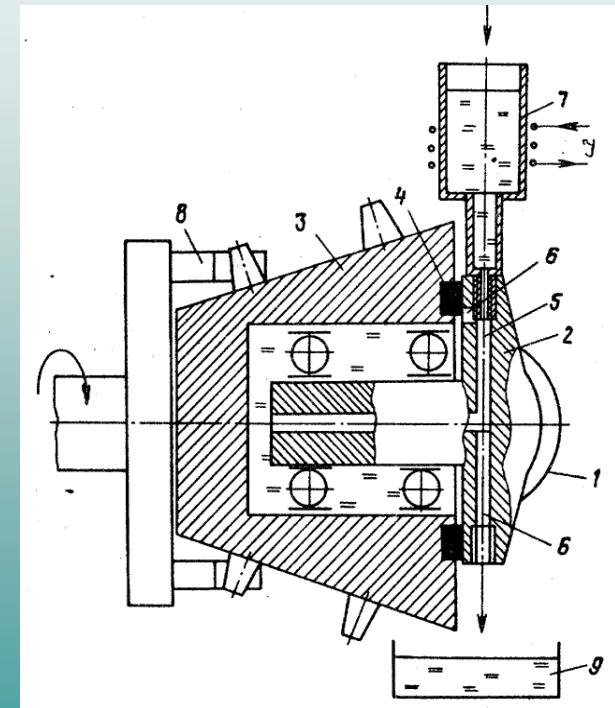
The R&D project is designed for efficient utilization in mining.

Main advantages of R&D project

The service life multiply, increases that does not require frequent upswing and pulling down of drilling rig from great deepness.

State of preparedness of R&D project

Experimental studies were conducted in lab conditions.





Horizon-2020 projects



In 2016 the ONPU research teams together with NUGENIA specialists and the National Ukrainian Academy of Sciences filed two applications for EU Horizon-2020 program projects :

1. Improved methods to analyse NPP safety and to substantiate severe accident management strategies in view of Fukushima-Daiichi accident lessons
2. Improvement of methodical support for control and maintenance of NPP safety-related systems



HORIZON 2020

Ukrainian-German Partnership

On June 22, 2017, the ONPU Centre for Energy Efficiency Technologies (CEET) started its activity. See Center details at website: ceet.opu.ua.

The center activity is supported also by partner companies:

The logo for VIESMANN, featuring the word "VIESMANN" in a bold, red, sans-serif font. The letter "S" is stylized with a vertical line through it.The logo for ISOVER SAINT-GOBAIN, featuring the word "ISOVER" in a bold, black, sans-serif font with a yellow circle above the "O", and "SAINT-GOBAIN" in a smaller, black, sans-serif font below it.The logo for IBC Heiztechnik, featuring a red stylized "M" shape above the text "IBC Heiztechnik" in a bold, black, sans-serif font, with "Festbrennstoffheizsysteme" in a smaller, black, sans-serif font below it.The logo for wilo, featuring the word "wilo" in a bold, green, lowercase, sans-serif font.The logo for OSRAM, featuring the word "OSRAM" in a bold, orange, uppercase, sans-serif font.

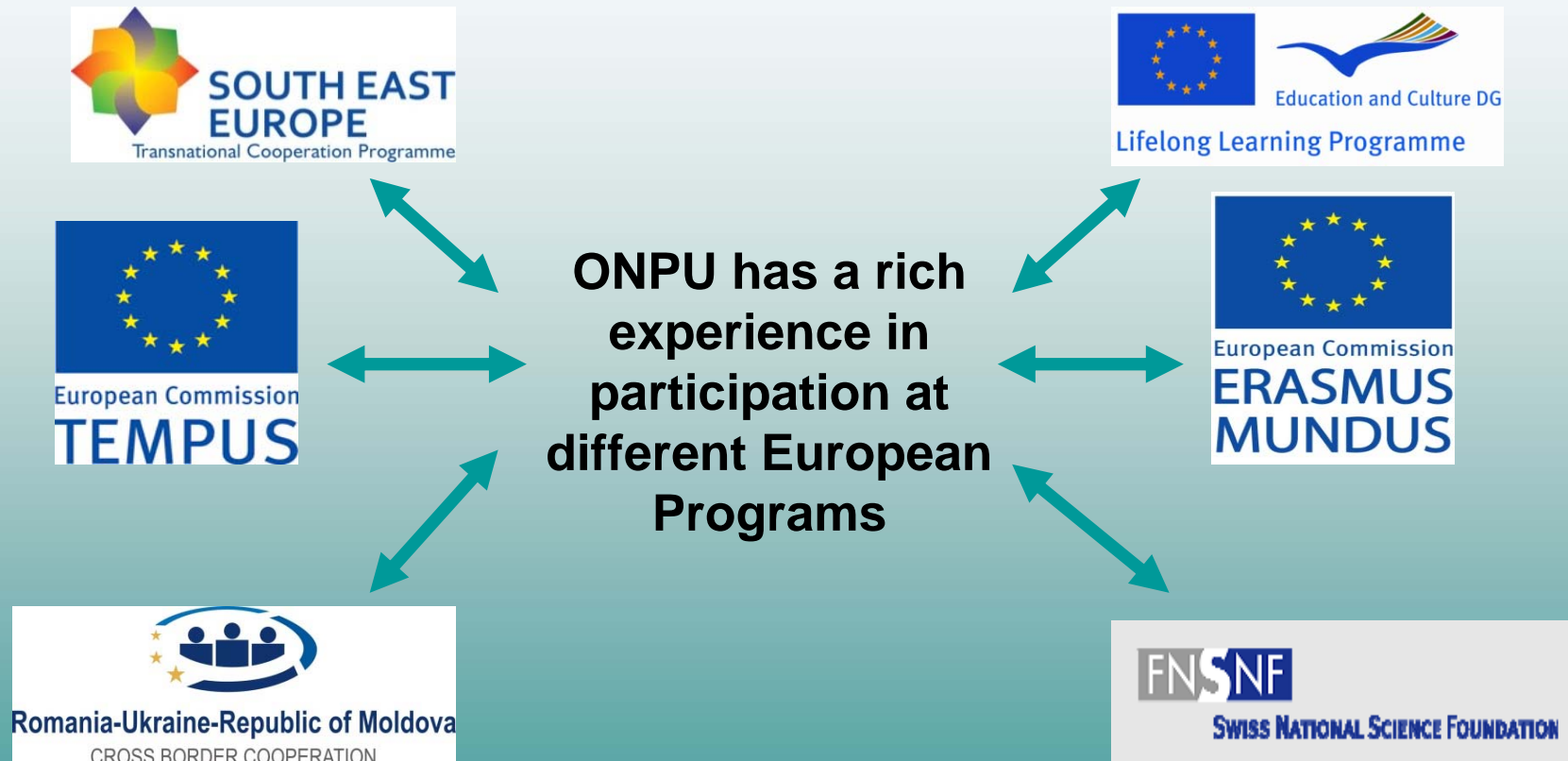
Training for students from company in the CEET

Cooperation with German organizations:



- Support from Integrated and Returning Experts CIM.
- Support with equipment, CEET opening, prizes at students competition in the field of energy efficiency during the CEET official opening, capacity building for ONPU employees, expertise.
- Consultancy support from Senior Expert at CEET establishment.

University European Education Programmes



Over the last 5 years ONPU participated in 20 European projects



Our contacts:

E-mail

opu@opu.ua

Telephone

+38 048 722 50 21

+38 048 705 84 60

Web-site

www.opu.ua

Fax

+38 048 734 42 74

Thank You
for Your attention!