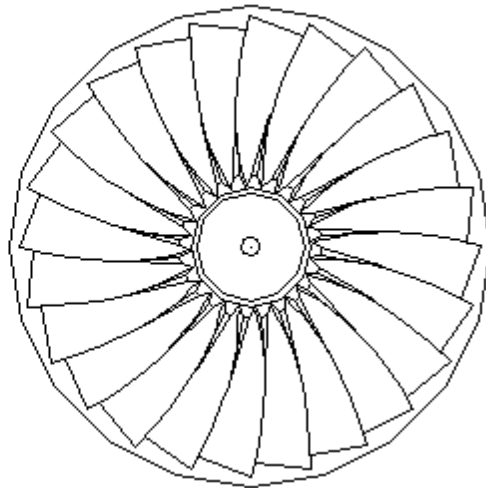
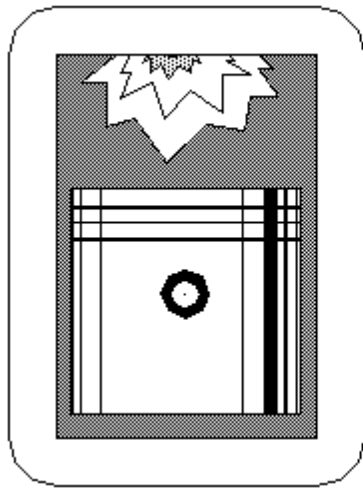


**National Aerospace University «KhAI»
National Technical University «KhPI»
State Enterprise «Ivchenko-Progress»
Joint Stock Company «Motor Sich»
Joint Stock Company «FED»**



**XXVIII
INTERNATIONAL
CONGRESS OF
PROPULSION ENGINEERING**

September 5-8, 2023

Invite letter and program

Kharkiv – Ukraine

WELCOME!

The Organizing Committee would like to cordially invite you to attend the XXVIII International Congress of Propulsion Engineering.

The Congress focuses scientific-technical communications, the determination of perspective ways to create and develop new equipment and technologies, finding new opportunities for designing the engines of non-standard schemes and sizes, making business and finding new commercial contacts.

The work will be organized in a distant form of video-audioconference, using Zoom platform.

ORGANIZING COMMITTEE:

- National Aerospace University «KhAI»;
- National Technical University «KhPI»;
- State Enterprise «Ivchenko-Progress»;
- Public Stock Company «Motor Sich»;
- Public Joint Stock Company «FED».

Languages of the Congress: Ukrainian, English.

Contact persons in Kharkiv, Ukraine:

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Regulations:

Report to the plenary session 25 min.
Report to the session 12 min.
Discussion 5 min.

Available technical facilities:

- Computer with Internet-link;
- Webcam with (or) microphone;
- Zoom software (is recommended to be installed beforehand);
- Power Point editor is recommended for presentations.

Registration of the Congress participants:

To approve participation in the congress, you need to fill the form following the link <https://forms.gle/WyFJ1XXDjNGV714CA>.

A link to the conference and more detailed information about the registration and the congress format can be found on our official website

<https://propulsioncongress.com>

as well as on the website of KhAI

<https://khai.edu/en/nauka/konferentsiyi/naukovi-konferencii-hai/mizhnarodnij-kongres-dvigunobudivnikiv3/>

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L. P. Klimenko	Rector of Petro Mohyla Black Sea State University, D.Sc., professor
I. F. Kravchenko	Head of Enterprise – General Designer of SE “Ivchenko-Progress” D.Sc.
A. P. Marchenko	Vice-Rector of the National Technical University “KhPI” D.Sc., Prof.
V. V. Popov	Chairman of the Board of PJSC “FED”, Ph.D.

ACADEMIC SECRETARY:

A. V. Bilohub	N. E. Zhukovsky National aerospace university “KhAI”, D.Sc., Prof.
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PROGRAM OF CONGRESS

September 5 10⁰⁰ – 13⁰⁰

PLENARY SESSION

Session Chair:	N. V. Nechiporuk,	Dr. Eng. (KhAI, Kharkiv);
	I. F. Kravchenko,	NASU (SE «Ivchenko-Progress»,
		Cor. Zaporizhzhya);
		Memb.
	V. V. Popov,	Dr. Eng. («FED», Kharkiv).
Секретар:	A. V. Bilohub,	Dr. Eng. (KhAI, Kharkiv).

1. I. F. KRAVCHENKO (Zaporizhzhya).
Ecological programs of “Ivchenko-Progress” SE engines development
2. K. B. BALUSHOK (Zaporizhzhya).
Current state and prospects of “Motor Sich” SE
3. A. P. MARCHENKO, I. V. PARSADANOV, I. V. RYKOVA (Kharkiv).
Evolutionary development of motor vehicle diesels: environmental and economic indicators
4. I. I. PETUKHOV, A. Yu. LISITSA (Kharkiv).
The HYDEA project is a practical step to hydrogen aviation

Evening Meeting of Section

GENERAL PROBLEMS OF PROPULSION ENGINEERING

September 5 14⁰⁰ – 15³⁰

Chairmen: **A. G. Grebenikov,** Dr. Eng. (KhAI, Kharkiv);
V. V. Loginov, Dr. Eng. (FED, Kharkiv);
B. G. Timoshevskiy, Dr. Eng. (NUS, Mykolayiv);
Secretary: **V. V. Nerubaskyi** (SC «Element», Odesa).

1. **A. E. KHRULEV (Kyiv).**
Mathematical modelling and analysis of the parameters of the pneumatic catapult launch system with the effect of the characteristics of the engine and the unmanned aerial vehicle
2. **V. V. NERUBASKYI (Odesa).**
Current state and the future of the gas turbine engines for heavy helicopters
3. **O. Ye. PUSHYLIN, V. V. LOGINOV (Zaporizhzhya, Kharkiv)**
Analysis of the situation regarding the creation of hybrid turboelectric power plants for regional aircraft in the world
4. **LI QIJIE (China)**
A synergical structure for active management of innovative international R&D projects based on real case studies

Evening Meeting of Section

THEORY AND OPERATION PROCESSES

September 5 15³⁰ – 18⁰⁰

Chairmen: **Y. M. Tereschenko,** Dr. Eng. (NAU, Kyiv);
M. R. Tkach, Dr. Eng. (NSU, Mykolayiv);
V. I. Timoshenko, NASU (ITM of NASU and
Cor. Memb. NCAU, Dnipro).
Secretary: **O. V. Bondarenko,** (KhAI, Kharkiv).

1. **O. G. ANDRIETS, O. A. SHEVCHENKO, V. M. OHMAKEVYCH, M. V. KHYZHNIAK (Kyiv)**
Determination of energy efficiency and environmental indicators when using alternative fuels in heat engines

2. V. I. TIMOSHENKO, Yu. V. KNYSHENKO, V. M. DURACHENKO (Dnipro)
Mathematical modeling of the operation of a system of various-scale low-thrust rocket engines from a single fuel source
3. V. I. TIMOSHENKO, V. P. GALYNSKII (Dnipro)
March algorithms for calculating processes in a ramjet engine of a carrier rocket with an annular toroidal wing
4. V. V. KOROBKO, A. P. SHEVTSOV (Mykolaiv)
Application of thermoacoustic energy saving systems in hybrid marine power plants with fuel cells
5. V. V. KUZNETSOV, A. P. SHEVTSOV (Mykolaiv)
Increase of power plants efficiency and compactness by intensification of heat transfer in its elements
6. O. S. BORTSOV, A. P. SHEVTSOV (Mykolaiv)
Improving the contact gas of steam-turbine installations under boosting phase distribution in gas-vapor flows
7. O. M. FILIPSHCHUK, A. P. SHEVTSOV (Mykolaiv)
Efficiency of ship auxiliary boiler installations using water-fuel emulsions
8. SAI VIGNESS RAMASAMY, L. A. BAZYMA (Kharkiv)
Simulation methods of electric propulsion thrusters
9. K. PODGORS'KY, S. YEPIFANOV, Ye. KULISH (Zaporizhzhya, Kharkiv)
Analysis of accuracy of fan efficiency experimental determination

September 6

Morning Meeting of Section

THEORY AND OPERATION PROCESSES

September 7 9⁰⁰ – 13⁰⁰

Chairmen: **M. M. Mitrakhovych**, Dr. Eng. (SE «Ivchenko-Progress», Zaporizhzhya);
D. A. Dolmatov, Dr. Eng. (KhAI, Kharkiv).
Secretary: **T. P. Mikhaynenko** PhD (KhAI, Kharkiv).

1. K. V. BALALAIEVA, A. V. BALALAIEV,
G. G. GOLEMBIYEVSKYY, A. A. KOVTUN (Kyiv)
Calculation of the quadrocopter's propeller characteristics
2. V. Yu. USENKO, M. M. MITRAKHOVYCH,
K. V. BALALAIEVA (Zaporizhzhya, Kyiv)
Thrust performances estimation of a single-row fan with fixed ring
3. Yu. O. ULITENKO, M. A. MINENOK, I. F. KRAVCHENKO
(Zaporizhzhya)
Analysis of the influence of the place of water injection on the performance of turbofan engine with afterburner
4. A. O. KHOROKHORDIN, I. F. KRAVCHENKO,
M. M. MITRAKHOVYCH, K. V. BALALAIEVA, A. V. BALALAIEV
(Zaporizhzhya, Kyiv)
Methodological aspects of the choice and justification of the supersonic inlet duct
5. I. I. YUDIN (Kyiv)
Passive control of the boundary layer in the diffuser channel
6. R. V. MAJBORODA (Kyiv)
Influence of a three-cir engine nacelle on the thrust force of a turbofan attachment
7. R. V. MAJBORODA (Kyiv)
Analysis of the influence of the temperature difference of a two-tier impeller on the pressure ratio

8. A. A. DULIEPOV, Ye. V. HLOBIN, A. A. KOVTUN,
M. V. KHYZHNIAK, K. V. BALALAIEVA (Kyiv)
Simulation of the flow in the rotor 37 compressor stage
9. O. G. SELEZEN, M. V. SHLYAKHOV, R. S. ORLOV (Kharkiv)
**Coefficient of hydraulic resistance of capillary friction
at low Reynolds numbers**
10. Ye. E. ROGOVYI (Kharkiv)
**The effect of non-condensable gases on the positive suction head
in a two-phase ammonia heat transfer circuit**
11. A. M. GODUNOV, G. O. GORBENKO (Kharkiv)
**Study of critical operating modes of the two-phase heat transfer
circuit for the satellite thermoregulation system**
12. I. I. PETUKHOV, A. V. KOVALIOV (Kharkiv)
**Peculiarities of modeling the wall oil film in the GTE bearing
chamber**
13. I. I. PETUKHOV, O. Yu. LISITSA, M. C. GUMANOV (Kharkiv)
**Regarding the formation of a condensed phase during heating
of cryogenic liquids in recuperators**
14. T. P. MIKHAYNENKO, O. V. GORYDKO, I. I. PETUKHOV
(Kharkiv, Zaporizhzhya)
**Peculiarities of heat exchange during oil cooling in an aircraft
gas turbine engine**
15. D. DOLMATOV, A. KUKURUDZA, S. NYZHNİK (Kharkiv)
**High temperature unbalanced chemical kinetics mathematical
modeling and its peculiarities**
16. D. DOLMATOV, S. YEPIFANOV, O. KONONYKHYN,
Ye. KONONYKHYN (Kharkiv)
Pulse detonation afterburner for UAV mini engine

Evening Meeting of Section

DESIGN AND STRENGTH

September 6

14⁰⁰ – 16⁰⁰

Chairmen: S. V. Yepifanov, Dr. Eng. (KhAI, Kharkiv);
M. G. Shulzhenko, Dr. Eng. (IPMash, Kharkiv);
S. V. Filipkovskii, Dr. Eng. (KhAI, Kharkiv)
Secretary: A. A. Brunak (KhAI, Kharkiv).

1. O. B. GALENKOVA, O. V. OVCHINNIKOV, T. O. MITINA
(Zaporizhzhya)
Comparison of strength characteristics of a turbine blade obtained from standard and promising alloys based on titanium aluminide
2. S. KRYHIN, Yu. HUSYEV, Yu. TORBA (Kharkiv, Zaporizhzhya)
Measurement of static and thermal stresses of details at temperatures up to 700 °C using a strain gauge tension meter (rectangular rosette)
3. Ye. V. MARTSENIUK, S. V. YEPIFANOV, S. Yu. SVEZHENTSEV
(Kharkiv)
Research of influence of a heat exchange boundary conditions in oil chambers on thermal-stress state in discs critical areas
4. O. L. DERKACH, M. G. SHULZHENKO, A. S. OLKHOVSKII
(Kharkiv)
Analysis of the influence of the disorder of the frequency of oscillations of the blade rows on the vibration tension of the impellers of turbomachines
5. Ye. O. NEMANEZHYN, G. I. LVOV, Yu. I. TORBA
(Zaporizhzhya, Kharkiv)
Evaluation of the dependence of GTE turbine blade vibrations on anisotropy of elastic properties of monocrystal

6. S. V. FILIPKOVSKIY, V. S. CHIGRIN, O. O. SOBOLIEV,
YE. T. VASILEVSKIY, M. S. TOPAL, L. O. FILIPKOVSKA
(Kharkiv, Kyiv)
Stability of auto-rotation of a turbofan engine with a broken fan blade
7. Ye. A. RYMARENKO (Kyiv)
Results of experimental research of acoustic characteristics of acoustic liners for turbofan engines

Evening Meeting of Section

TECHNOLOGY

September 6 16⁰⁰ – 18⁰⁰

Chairmen:	A. I. Dolmatov, Dr.Eng. (KhAI, Kharkiv); A. F. Sanin, Dr.Eng. (DNU, Dnipro); V. F. Sorokin, Dr.Eng. (KhAI, Kharkiv);
Secretary:	V. V. Tretyak PhD (KhAI, Kharkiv).

1. S. G. MAKOVSKIY, V. L. GRESHTA, V. A. SHALOMEYEV,
D. V. TKACH (Zaporizhzhya)
Influence of carbon nanoparticle inoculation on the structure of ML5 casted magnesium alloy
2. S. V. ADJAMSKI², G. A. KONONENKO, R. V. PODOLSKIY,
S. I. BADUK (Dnipro)
Investigation of the efficiency of electrochemical polishing of samples with open structure from AISI 316l steel made by SLM technology
3. O. V. SHORINOV, A. I. DOLMATOV, S. O. POLYVIANY,
K. B. BALUSHOK (Kharkiv, Zaporizhzhya)
Assurance of the adhesion strength of cold spray nickel-based coatings
4. V. V. TRETYAK, O. O. BLIZNIUK (Kharkiv)
Synthesis of technological processes for three-dimensional parts using the structural-analytical method of similarity recognition

September 7

Morning Meeting of Section

PISTON INTERNAL COMBUSTION ENGINES

September 7 9⁰⁰ – 13⁰⁰

Chairmen: **A. P. Marchenko,** Dr. Eng. (KhPI, Kharkiv);
 I. V. Parsadanov, Dr. Eng. (KhPI, Kharkiv);
 A. A. Lisoval, Dr. Eng. (KPI, Kyiv)
Secretary: **A. V. Bilohub,** Dr. Eng. (KhAI, Kharkiv).

1. **A. A. LISOVAL (Kyiv)**

Prerequisites for the use of hydrogen in Ukraine in the energy and automobile industries

2. **V. O. PYLYOV, A. P. MARCHENKO, O. Yu. LINKOV,
V. V. PYLYOV, S. V. LYKOV (Kharkiv)**

Problems and latest trends in the use of transport internal combustion engines as long-term energy-generating means

3. **P. S. SUVOROV, T. V. TARASENKO, V. I. ZALOZH
(Odesa, Ismail)**

Features of vessels energy efficiency assessment in the inland shipping

4. **O. M. KONDRATENKO, K. R. UMERENKOVA,
A. M. LEVTEROV, O. P. STROKOV, V. Yu. KOLOSKOV
(Kharkiv)**

Mathematical apparatus for simulation of thermophysical properties of alternative motor fuels with the purpose of ecologization of internal combustion engines

5. **A. V. TRYNOV, D. G. SIVYKH (Kharkiv)**

Justification of the composition of the pneumatic system for local multi-circuit cooling of auto-tractor diesel parts

6. M. Ie. RYBALCHENKO, Ie. V. BILOUSOV,
A. P. MARCHENKO, V. P. SAVCHUK, V. P. BUDKO (Kherson,
Kharkiv, Odesa)
**Processing of indicator diagrams in the tasks of building digital
profiles of the working process of ship engines**
7. R. A. VARBANETS, D. S. MINCHEV, I. V. SAVELYEVA,
A. A. RODIONOV, T. M. MAZUR, S. P. PSARIUK,
V. V. BONDARENKO (Odesa, Mykolaiv)
**Advanced diagnostic methods for marine diesel engines:
achieving IMO decarbonisation compliance**
8. A. P. MARCHENKO, O. Yu. LINKOV, V. V. PYLYOV,
S. V. LYKOV (Kharkiv)
**Assessment of the thermally stressed state of internal
combustion engine pistons taking into account the creep
threshold of their side surface**
9. V. O. PYLYOV, O. Yu. LINKOV, S. V. LYKOV (Kharkiv)
**Determination of the time-varying creep threshold of AL25 and
AK4 aluminum alloys under the influence of thermal loads**
10. O. V. BILOHUB (Kharkiv)
Piston external surface profiling
11. L. P. KLYMENKO, O. F. PRYSHCHEPOV, V. I. ANDRIEIEV,
O. V. SHCHESIUK, O. I. SLUCHAK (Mykolaiv)
**Application of vacuum suction casting for the production of
cast iron parts of internal combustion engines**
12. I. V. GRITSUK, D. S. POGORLETSKII, A. P. POLIVIANCHIUK,
I. V. HUDYAKOV (Kharkiv, Kherson)
**Features of the method of determining fuel consumption and
emissions of harmful substances of vehicle engines with
gasoline and gas supply systems (vehicle engine with gasoline
and liquefied petroleum gas supply systems)**
13. I. V. GRITSUK, O. O. SULIMA (Kharkiv)
**Ensuring and developing the organization of teaching the
discipline "Piston Engines Testing" in the conditions of
distance learning**

Evening Meeting of Section
AUTOMATIC CONTROL SYSTEMS AND DIAGNOSTICS

September 8 9⁰⁰ – 13⁰⁰

Chairmen:	S. O. Dmytriev,	Dr. Eng.	(NAU, Kyiv);
	M. S. Kulyk,	Dr. Eng.	(NAU, Kyiv);
	G. S. Ranchenko,	PhD	(SC “Element”, Odesa);
Secretary:	O. V. Bondarenko		(KhAI, Kharkiv).

1. S. V. YEPIFANOV, O. V. BONDARENKO (Kharkiv)
Turbofan engine dynamics simulation at analysis and synthesis of automatic control systems
2. S. V. YEPIFANOV, O. V. BONDARENKO (Kharkiv)
Features of the turboshaft engine dynamic model formation
3. O. Ye. KHRULEV (Kyiv)
Mathematical modelling and analysis of the parameters of the pneumatic catapult launch system with the effect of the characteristics of the engine and the unmanned aerial vehicle
4. S. S. TOCKACH (Kyiv)
Control laws of an aviation gas turbine engine with a turbofan additional unit
5. Ya. S. VEKLICH, O. V. BONDARENKO, S. V. YEPIFANOV (Kharkiv)
Research of the synchronization algorithm of the helicopter power plant engines
6. V. F. MYRHOROD, I. M. HVOZDEVA (Одеса)
Application of the synthesis method of regulators with robustness properties
7. TRAN MANH HUNG (Vietnam)

Determination of diagnostic features of the aggregate on the test bench

September 8

Morning Meeting of Section

AUTOMATIC CONTROL SYSTEMS AND DIAGNOSTICS

September 8 14⁰⁰ – 17⁰⁰

Chairmen:	V. F. Myrhorod,	Dr. Eng. (“Element”, Odesa);
	S. V. Yepifanov,	Dr. Eng. (KhAI, Kharkiv);
	O. M. Reva,	Dr. Eng. (UkrISTEI, Kyiv);
Secretary:	Ye. V. Martsenyuk	(KhAI, Kharkiv).

1. G. S. RANCHENKO, A. G. BURYACHENKO, V. M. GRUDINKIN, D. S. BURUNOV, V. V. DANILOV (Odesa)
Overview of the development process of the helicopter turboshaft engine regulator
2. A. G. BURYACHENKO, V. M. GRUDINKIN (Odesa)
Provision of tests of the start-up unit and control of the small gas turbine generator
3. A. G. BURYACHENKO (Odesa)
Development of control and verification equipment to ensure tests of the regulator of a small gas turbine
4. S. R. VIALOV, A. V. DUNAI (Odesa)
Search of the most optimal STM32 series microcontroller programming environment for application in avionics
5. A. V. DUNAI, S. R. VIALOV (Odesa)
Analysis of the methods of sensors failures parrying of a small-sized aircraft engine and choosing the optimum

6. I. V. OGANYAN, S. V. YEPIFANOV (Kharkiv)
Analysis of parametric diagnostics methods of hydromechanical units
7. V. F. MYRHOROD, I. M. HVOZDEVA (Odesa)
Selection of random and trend criteria in time series
8. S. P. BORSUK, O. M. REVA, L. A. SAHANOVSKA
(Kyiv, Kropyvnytskyi)
Air traffic control students' aspiration levels distributions
9. P. V. KOROLIOV, V. M. OKHMAKEVYCH (Kyiv)
Optimization of maintenance regulations for inlet ducts of heat engines

PLENARY MEETING

September 8 18⁰⁰

1. **Reports of section chairmen about the meetings**
2. **Summarizing the work of XXVIII International Congress of Propulsion Engineering**
3. **Approving the Congress resolution**

**Close
of the XXVIII International Congress of Propulsion Engineering**