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**POLYTECH**  
Institute of Machinery,  
Materials and Transport

## PROGRAMM

**«ADVANCED ENGINEERING TECHNOLOGIES AET 2024»**

### **International Scientific Conference**

dedicated to the 125th anniversary of Peter the Great  
St. Petersburg Polytechnic University and the 5th anniversary  
of the Higher School of Mechanical Engineering

May 13-17, Saint Petersburg, Russia



Peter the Great St. Petersburg Polytechnic University  
Institute of Machinery, Materials and Transport  
Higher School of Mechanical Engineering

ADVANCED ENGINEERING TECHNOLOGIES AET 2024  
International Scientific Conference,  
dedicated to the 125th anniversary of Peter the Great St. Petersburg Polytechnic  
University and the 5th anniversary of the Higher School of Mechanical Engineering  
May 13-17, 2024, Saint Petersburg, Russia

### **PROGRAMM COMMITTEE**

#### Co-chairs:

**Anatoliy A. Popovich** – professor, Director of Institute of Machinery, Materials, and Transport, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia  
**Dmitry P. Gasyuk** – professor, Director of Higher School of Mechanical Engineering, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

#### Members:

**Vasiliy V. Rubanik** – Associate Member of Belarus Academy of Sciences, Institute of Technical Acoustics, Academy of Sciences of Belarus, Head of Metal Physics Laboratory, Vitebsk, Belarus  
**Mikhail L. Kheifetz** – professor, Director of Institute of Applied Physics, Academy of Sciences of Belarus, Minsk, Belarus  
**Shuncaï Li** – professor, School of mechatronic Engineering, Jiangsu Normal University, Xuzhou, Jiangsu, China  
**Sergey N. Lezhnev** – professor, Rudny Industrial Institute, Rudny, the Republic of Kazakhstan  
**Mikhail V. Dudkin** – professor, D. Serikbayev East Kazakhstan technical university, Ust-Kamenogorsk, the Republic of Kazakhstan  
**Zixi Wang** – professor, Head of the Sealing and Lubrication laboratory, Department of Mechanical Engineering, Tsinghua University, Beijing, China  
**Djerdjar Boubakeur** – professor of Materials science, University of Science and Technology Houari Boumediene, Algiers, Algeria  
**Cheikh Salah** – professor of Energy, University of Science and Technology Houari Boumediene, Algiers, Algeria  
**Abdi Said** – professor of Materials science, University of Science and Technology Houari Boumediene, Algiers, Algeria  
**Dmitry Yu. Kolodyazhniy** – vice-rector for research activity of Moscow state university of technology STANKIN, Moscow, Russia  
**Dmitry V. Vasilkov** – professor, Baltic State Technical University "Voenmeh" D.F. Ustinov, St. Petersburg, Russia  
**Vyacheslav V. Maksarov** – professor, St. Petersburg Mining University, St. Petersburg, Russia

**Aleksandr N. Evgrafov** – Head of the Department of Mechanism and Machine Theory, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

### **ORGANISING COMMITTEE**

Chairman:

**Mikhail M. Radkevich** – professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Deputy chairman:

Leonid B. Aksenov – professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Vasily G. Teplukhin – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Tatiana A. Makarova – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Members:

Mikhail T. Korotkikh – professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Stanislav V. Mikhailov – professor, Kostroma State University, Kostroma, Russia

Hamouda Khaled – professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Sergey A. Lyubomudrov – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Dmitry N. Shabalin – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Artem A. Moskalets – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Elisey A. Khlopkov – associate professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Kirill V. Eliseev – senior lecturer, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

AET 2024 will be held at the Main Educational Building of SPbPU, located at 29 Politechnicheskaya str., St. Petersburg (near the Politechnicheskaya metro station).

**May 13, Monday**

**10:00-11:00 Registration of participants  
(room 224, Main Educational Building of SPbPU)**

The link to the online conference address (in the system <https://webinar.spbstu.ru/>) will be provided by sending an email specified in the questionnaire on the day of the Conference.

**11:00 Opening ceremony. Speaker:**

**Anatoliy A. Popovich** – professor, Director of Institute of Machinery, Materials, and Transport, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

**Chaired by:**

Professor, Director of Higher School of Mechanical Engineering **Dmitry P. Gasyuk**

Professor **Mikhail M. Radkevich**

**11:10 M.M. Radkevich**

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
HISTORICAL BACKGROUND HIGHER SCHOOL OF MECHANICAL  
ENGINEERING

**11:35 D.P. Gasyuk**, Director of Higher School of Mechanical Engineering

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
FEATURES OF DESIGN AND TECHNOLOGICAL SUPPORT FOR DISCRETE  
PRODUCTION IN MECHANICAL ENGINEERING

**12:00** Guo Tengda, Liu Hui, Guo Yuehong, **Wang Zixi** (Department of Mechanical Engineering, Tsinghua University, School of Mechanical Engineering, Beijing Institute of Petrochemical Technology, Beijing, China)

TYPICAL DEGRADATION BEHAVIOR OF GAS DIFFUSION LAYER  
IN PROTON EXCHANGE MEMBRANE FUEL CELL

**12:25 L.B. Aksenov**, S.N. Kunkin, X.S. Arsentyeva (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)

DEPARTMENT OF «MACHINES AND TECHNOLOGY OF METAL PRESSURE  
FORMING» AT SPbPU: FROM INDUSTRIALIZATION TO DIGITALIZATION

**12:50 Photo Session**

**13:00 – 14:15 Lunch break**

**Chaired by:**

Professor **Leonid B. Aksenov**, Professor **Abdrakhman B. Naizabekov**

**14:15 Hamouda Khaled**, Djema Mohamed Amine, Ininga Chiachia Regine Valone, Gasuk Dmitriy, Saidi Djamel, (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, University of Science and Technology Houari Boumediene, Polytechnic national schools, Algiers, Algeria)

INFLUENCE OF VIBRO-ABRASION SURFACE TREATMENT  
ON THE FUNCTIONAL QUALITY OF STEELS MECHANICALS METAL PARTS

- 14:30 **V.A. Ermishkin**, N.A. Minina, D.L. Mikhailov (FGBU Science IMET A.A. Baikov RAS, Moscow, OOO «Promdetal», Veliky Novgorod, Russia)  
STUDY OF INTERCRYSTALLITE CORROSION OF CORROSION-RESISTANT Ni-Cr-Mo-BASED ALLOYS USING PHOTOMETRIC ANALYSIS OF STRUCTURAL IMAGES
- 14:45 **S.V. Mikhailov**, Ho Yu jia, Tianshi yu (Kostroma State University, Kostroma, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
THE INFLUENCE OF THE ANGLE OF INCLINATION OF THE MAIN CUTTING EDGE ON THE SHAPE AND DIRECTION OF MOVEMENT OF THE SPIRAL-SHAPED DRAIN CHIPS
- 15:00 **Y.V. Auchynnika**, V.V. Mikhailov, A.Ch. Svistun, A.E. Ovchinnikov (GrSU named after Yanka Kupala, Grodno, Belarus, Institute of Applied Physics, Chisinau, Moldova)  
MODELS OF FORMATION OF ELECTROSPARK COATINGS PRODUCED BY VARIOUS TECHNOLOGICAL APPROACHES
- 15:15 Ya.Ig. Kosmatskiy, K.Yu. Yakovleva, **B.V. Barichko**, K.A. Usanov, A.N. Makovetsky, Ya.E. Zalavin (LLC «TMK Research», JSC «ChTPZ», Chelyabinsk, Russia)  
IMPROVING PROFILING TECHNOLOGY HEXAGONAL PIPE
- 15:30 **A.A. Shiryaev**, A.S. Milenin, V.V. Karmanov, O.A. Plehov (JSC "UEC-Aviadvigatel", Perm National Research Polytechnic University, Institute of Continuous Media Mechanics of the Ural Branch of Russian Academy of Science, Perm, Russia)  
EFFECT OF LASER SHOCK PEENING ON THE LEVEL OF RESIDUAL STRESSES AND HIGH-CYCLE FATIGUE OF SAMPLES WITH A TITANIUM ALLOY CONCENTRATOR
- 15:45 **S.A. Lyubomudrov**, E.A. Khlopkov (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
DEPARTMENT OF MECHANICAL ENGINEERING TECHNOLOGY
- 16:00 **P.A. Golovkin** (Pluton JSC, Moscow, Russia)  
INFLUENCE OF LIGHT SHADES IN THE MATERIAL OF OXYGEN-FREE COPPER BARS ON ITS VACUUM DENSITY
- 16:15 **Coffee break**
- 16:45 **I.D. Martinov**, X.S. Arsentyeva (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)  
METHOD FOR DETERMINING THE WORKING TOOLS POSITION DURING SHEET METAL STAMPING OF SMALL PARTS
- 17:00 A.I. Syatkovsky, E.S. Skoblya, **V.Y. Kirpichnikov** (OAO «Plastpolymer», FGUP «Krylov Scientific Centre», St. Petersburg, Russia)  
MODERN VIBRATION ABSORBING FILM MATERIALS FOR VIBRATION AND NOISE REDUCTION

- 17:15 **S.V. Ivanova**, O.M. Astapchik (LSU named after A.S. Pushkin, SPb GBP OU "Izhorsky College", St. Petersburg, Russia)  
ENGINEERING AND PEDAGOGICAL EDUCATION: THE PERSPECTIVE OF QUALITY MANAGEMENT IN MECHANICAL ENGINEERING
- 17:30 **S.Yu. Prilipko**, Yu.A. Kudryavtsev, G.N. Golovan, I.I. Bryukhanova, V.V. Burkhovetsky  
(Galkin Donetsk Institute for Physics and Engineering, Donetsk, Russia)  
PROBLEMS OF MANUFACTURING CERAMIC SAMPLES SUITABLE FOR VARIOUS TYPES OF MECHANICAL PROCESSING
- 17:45 **K.S. Gorbunov**, I.P. Mazur (Lipetsk State Technical University, Lipetsk, Russia)  
THE EFFECT OF ASYMMETRY ON ROLLING LOW CARBON STEELS
- 18:00 **M.D. Mizurev**, X.S. Arsentieva  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
TECHNOLOGY SHEET PART MANUFACTURING WITH APPLICATION OF ASYNCHRONOUS BENDING ALONG SEVERAL BENDING LINES AT ONE TECHNOLOGICAL POSITION
- 18:15 Discussion of the results of the first Conference Day

**May 14, Tuesday**  
**(room 153, Main Educational Building of SPbPU)**

The link to the online conference address (in the system <https://webinar.spbstu.ru/>) will be provided by sending an email specified in the questionnaire on the day of the Conference.

**Chaired by:**

Associate professor **Sergey N. Kunin**

Associate professor **Xenia S. Arsentieva**

9:45 **Y.D. Shlionskaya**

(Polzunov Altai State Technical University, Barnaul, Russian Federation)

INTELLIGENT SYSTEMS FOR ASSESSING PROFESSIONAL RISKS ASSOCIATED WITH ELECTRICAL INJURY

10:00 **D. Bychenko**, S.A. Lyubomudrov, D.N. Shabalin (Peter the Great St. Petersburg Polytechnic University, AO «Armalit», St. Petersburg, Russia)

FUNCTIONAL GAUGING OF SQUARE HOLES

10:15 **A.I. Zaytsev**, A.V. Sotov, A.E. Abdrahmanova, A.A. Popovich (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)

ADDITIVE MANUFACTURING OF THERMOPLASTIC POLYMER COMPOSITES BY CONTINUOUS FIBRE COEXTRUSION

10:30 **S.A. Kislitsyn**

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)

HYDRODYNAMIC MODELING OF ELECTROLYTE FLOW DURING JET ELECTROLYTE-PLASMA PROCESSING

- 10:45 **E.A. Bolshevich**, A.V. Shabalina, N.V. Artyukhova, M.I. Kaftaranova, S. Pakholkina, S.G. Anikeev  
(National Research Tomsk State University, Tomsk, Russia)  
CORROSION RESISTANCE OF BIOCOMPATIBLE COMPOSITE ALLOYS  
BASED ON TITANIUM NICKELIDE
- 11:00 **A.V. Melnikov**, T.M. Nkungu, M.A. Sokolov, E.A. Khlopkov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
IMPROVING THE FUNCTIONAL CHARACTERISTICS OF RING-SHAPED FORCE  
ELEMENTS MADE OF SHAPE MEMORY ALLOYS THROUGH ACTIVE  
DEFORMATION
- 11:15 **N.I. Bushueva** (Ural Federal University named after the first President of  
Russia B.N. Yeltsin, Ekaterinburg, Russia)  
DEVELOPMENT OF TECHNOLOGY FOR THE BIMETALLIC STRIP  
PRODUCTION FROM COPPER PIPES NON-DIMENSIONAL SEGMENTS
- 11:30 **V.V. Kalistratov**, S.A. Lybomudrov (Peter the Great St. Petersburg Polytechnic  
University, AO NPK «Severnaya zarya», St. Petersburg, Russia)  
A METHOD OF CONTROLLING ELASTIC SPRINGBACK DURING BENDING  
IN COLD SHEET METALL FORMING PROCESS BY MACHINE VISION
- 11:45 **Coffee break**
- 12:15 **R.R. Gabbasov**, E.V. Galieva, V.A. Valitov, E.Y. Klassman (Institute for Metals  
superplasticity Problems of the Russian Academy of Sciences, Ufa State  
Petroleum Technological University, Ufa University of Science  
and Technology, Ufa, Russia)  
EFFECT OF HIGH-TEMPERATURE PRESSURE WELDING ON THE FORMATION  
OF SOLID-STATE JOINT OF EP741NP//VKNA-25 NICKEL-BASED  
SUPERALLOYS
- 12:30 **V.E. Gvindzhilia**, E.V. Fominov, V.A. Lebedev, A.A. Marchenko  
(Don State Technical University, Rostov-on-Don, Russia)  
DIAGNOSTIC INDICATORS OF TOOL WEAR DEVELOPMENT IN MODELING  
THE DYNAMICS OF THE CUTTING PROCESS
- 12:45 **A.V. Kasperovich**, V.V. Bobrova, A.A. Kadyko, S.A. Efremov, S.V. Nechipurenko  
(Belarusian State Technological University, Minsk, Republic of Belarus,  
Kazakh National University named after. Al-Farabi, Almaty,  
Republic of Kazakhstan)  
KINETIC CHARACTERISTICS OF ELASTOMER MATERIALS  
FOR THE PRODUCTION OF RUBBER PRODUCTS USED  
IN MECHANICAL ENGINEERING
- 13:00 **A.E. Abdrahmanova**, A.V. Sotov, A.I. Zaytsev, A.A. Popovich  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
ADDITIVE MANUFACTURING OF POLYMER FUNCTIONAL LATTICE  
STRUCTURES WITH SHAPE MEMORY EFFECT USING FDM TECHNOLOGY

- 13:15 **A.V. Kasperovich, V.V. Bobrova**, S.A. Efremov, S.V. Nechipurenko, S.N. Lezhnev (Belarusian State Technological University, Minsk, Republic of Belarus, Kazakh National University named after Al-Farabi, Almaty, Rudny Industrial Institute, Rudny, Republic of Kazakhstan)  
TECHNOLOGICAL PARAMETERS FOR PROCESSING RUBBER MIXTURES WITH CARBON-SILICON COMPOSITE BASED ON RICE PROCESSING WASTE
- 13:30 **D.V. Kuis**, N.A. Svidunovich, I.N. Stepankin, E.A. Panin (Belarusian State Technological University, Minsk, Belorusneft, Gomel, Belarus, Karaganda Industrial University, Temirtau, Kazakhstan)  
EFFECT OF SURFACE MODIFICATION OF 5KHV2S STEEL ON THE MECHANISM AND INTENSITY OF CONTACT WEAR
- 13:45 **A.A. Gritsiuk**, I.O. Koryakovskaya, P.V. Kovalev (JSC "Metallurgical Plant "Petrostal", Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
PRACTICAL EXPERIENCE IN THE PRODUCTION OF ESR INGOTS FROM NITRIDED STEEL GRADES IN THE CONDITIONS OF JSC "METALLURGICAL PLANT "PETROSTAL"

14:00 – 15:00 **Lunch break**

**Chaired by:**

Professor **Mikhail T. Korotkikh**, Associate professor **Sergey A. Lyubomudrov**

- 15:00 **E.N. Sosenushkin**, E.A. Yanovskaya, D.S. Gusev, S.A. Rogulin (Moscow State Technological University «STANKIN», Moscow, Russia)  
DETERMINATION OF DIVISION LINES OF VISCOPLASTIC FLOW IN A MONOCONNECTED REGION OF COMPLEX CONFIGURATION
- 15:15 **A.I. Verameichyk**, O.M. Mishchiruk, M.V. Neroda, B.G. Kholodar (Brest State Technical University, Brest, Belarus)  
INVESTIGATION OF THE EFFECT OF THE SCANNING SPEED OF A FIBER-OPTIC LASER ON THE CHARACTERISTICS OF 10G2 STEEL
- 15:30 M.M. Radkevich, **S.S. Grohovskii** (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
STRUCTURAL TRANSFORMATIONS OCCURRING DURING PROGRAMMED THERMO-MECHANICAL PROCESSING
- 15:45 **M.Y. Alwardat**, H.M. Alwan (Peter the Great Saint Petersburg Polytechnic University, Saint Petersburg, Mechanical Engineering Department, University of Technology, Baghdad, Iraq)  
KINEMATIC MODELING OF 6 - DOF ROBOTIC MANIPULATOR WITH A PRISMATIC JOINT
- 16:00 **Ch.A. Gimazetdinova**, A.G. Panov, I.F. Shaekhova, M.V. Zakiev, M.A. Makarova (Naberezhnye Chelny Institute (branch) K(P)FU, Naberezhnye Chelny, FGBOU VO «YAGTU», Yaroslavl, Russia)  
ASSESSMENT OF THE RESISTANCE OF ISOTHERMALLY HARDENED HIGH-STRENGTH CAST IRON TO SOLID PENETRATION INTO ITS SURFACE



- 16:15 **M.Y. Zaitceva**, D.P. Erutin, A.A. Popovich, V.S. Sufiiarov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
INFLUENCE OF SELECTIVE LASER MELTING PARAMETERS AND HEAT  
TREATMENT PROCESS ON STRUCTURE OF FERRITE-MARTENSITIC STEEL
- 16:30 V.S. Prokopov, **D.E. Melnikov**  
(Bauman Moscow State Technical University, Moscow, Russian Federation)  
STRUCTURE SHAPE AND MICROSTRUCTURE DESIGN USING TOPOLOGY  
OPTIMIZATION METHOD UNDER MULTIPLE LOAD CASES
- 16:45 **Coffee break**
- 17:15 **T.Q. Pham**, V.A. Rassokhin, V.V. Barskov, V.C. Chu  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
AUTOMATION OF THERMAL CALCULATION OF THE WORKING PROCESS  
OF HELICOPTER TURBOSHAFT GAS TURBINE ENGINES USING PYTHON  
PROGRAMMING LANGUAGE
- 17:30 **A.V. Reprin**, E.V. Borisov, A.A. Popovich  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
DYNAMIC LOSS OF STABILITY OF THIN-WALLED TUBE BLANKS AT AXIAL  
ROTARY FORGING
- 17:45 **D.P. Erutin**, A.A. Popovich, V.S. Sufiiarov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
PHASE COMPOSITION AND MAGNETIC PROPERTIES OF AMORPHOUS-  
NANOCRYSTALLINE SOFT-MAGNETIC COBALT-BASED ALLOY,  
OBTAINED VIA SELECTIVE LASER MELTING
- 18:00 K.S. Arsentieva, **I.V. Kalatozishvili**, V.S. Mamutov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
EVALUATION OF PRESSURE PARAMETERS OF THE COMBINED  
ELECTROHYDRAULIC SHEET METAL STAMPING PROCESS IN THE LS-DYNA  
COMPLEX
- 18:15 Discussion of the results of the second Conference day

### **May 15, Wednesday**

11:00-15:00 **A guided bus tour of Saint Petersburg city**

### **May 16, Thursday**

**(room 153, Main Educational Building of SPbPU)**

The link to the online conference address (in the system <https://webinar.spbstu.ru/>) will be provided by sending an email specified in the questionnaire on the day of the Conference.

**Chaired by:**

Associate professor **Pavel A. Kuznetsov**, Associate professor **Vasily G. Teplukhin**

- 9:45 **N.I. Kuznetsov, E.R. Kuznetsova** (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)  
DEVELOPMENT OF THE ANALYTICAL MODEL OF THE PROCESS OF PRODUCTION OF CONTROL CABINETS
- 10:00 **T.S. Novikov**, S.A. Vologzhanina, I.K. Morozov, I.V. Tarasyuk (St. Petersburg Mining University of Empress Catherine II, St. Petersburg, Russia)  
IMPROVING THE PERFORMANCE CHARACTERISTICS OF GAS TURBINE ENGINE BLADES
- 10:15 **K.A. Semenov**, T.A. Makarova  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
COMPARISON OF METHODS FOR CALCULATING THE STRENGTH OF A STRAIGHT-TOOTH GEAR
- 10:30 **Yujing Li**, Shunca Li, S.A. Lyubomudrov, V.I. Slatin (JSNU-SPbPU Institute of Engineering, Jiangsu Normal University, Jiangsu, China, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, School of Mechanical and Electrical Engineering, Jiangsu Normal University, Jiangsu, China)  
STUDY OF THE CORRELATION PROPERTIES BETWEEN SOUND PRESSURE AND VIBRATION DURING MILLING OF TITANIUM ALLOY TC4
- 10:45 **A.D. Mishin** (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)  
PRACTICAL ADVANTAGES OF APPLYING TECHNOLOGY OF ELECTROLYTE-PLASMA PROCESSING OF METALS
- 11:00 **A.A. Prokhorov**, E.V. Semashkevich, D.A. Kulikov, V.I. Novikov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
DEVELOPMENT AND CALCULATION OF THE MAIN PARAMETERS OF THE STANDARD ROW FOR THE HIGH-PRESSURE TRANSFER DEVICE OF JET CEMENTATION OF SOILS
- 11:15 A.M. Belyakov, N.Y. Kovelonov, **M.S. Shulga** (OOO «Virial», Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
DEVELOPMENT OF ADVANCED MANUFACTURING TECHNOLOGY FOR REPLACEABLE CARBIDE THREADED PLATES
- 11:30 **A.A. Lisin**, K.L.M. Diato, A.A. Moskalets, A.I. Popov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
INFLUENCE OF JET ELECTROLYTE-PLASMA DISCHARGE VOLTAGE ON THE MORPHOLOGY OF STAINLESS-STEEL SAMPLES
- 11:45 **Coffee break**
- 12:15 N.V. Burkin, P.A. Kuznetsov, A.O. Prostrova, **K.V. Lepetan**  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
ANALYSIS OF THE COMBINED TECHNOLOGY OF ELASTOSTATIC PRESSING AND HOT STAMPING OF SINTERED COLLARS PRODUCTS

- 12:30 **K.V. Lepetan**, K.A. Tukachev, P.A. Kuznetsov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
EXPERIMENTAL EVALUATION OF THE SHAPE ERROR OF CONICAL POWDER  
PRODUCT DURING ELASTOSTATIC PRESSING
- 12:45 **N.I. Sorokopud**, A.I. Keksin, I.A. Filipenko  
(Saint Petersburg Mining University, Saint Petersburg, Russia)  
INVESTIGATION OF THE POSSIBILITY OF REMOVING OXIDE FILM  
FROM THE SURFACE OF AMZ ALLOY PRODUCT BY ABRASIVE BLASTING  
IN A MAGNETIC FIELD
- 13:00 **E.G. Deeva**, D.P. Gasyuk (Peter the Great St. Petersburg Polytechnic  
University, Saint Petersburg, Russia)  
THE METHODOLOGY OF RATIONAL CHOICE OF MEANS OF PRODUCTS  
TECHNICAL QUALITY CONTROL
- 13:15 **D.I. Goncharov, I.R. Zhuravlev**, D.N. Shabalin (Peter the Great St. Petersburg  
Polytechnic University, Saint Petersburg, Russia)  
INCREASING PRODUCTIVITY THROUGH THE APPLICATION OF ARTIFICIAL  
INTELLIGENCE WHEN DESIGNING TECHNOLOGICAL OPERATIONS  
OF THE “BUSHING” PART FOR THE GRINDING OPERATION

13:30 – 15:00 **Lunch break**

**Chaired by:**

Associate professor **Aleksandr V. Bakhshiev**, Associate professor **Svetlana Yu. Perepelkina**

- 15:00 A.V. Kozhevnikov, **D.L. Shalaevsky**, I.A. Kozhevnikova, K.P. Korepina  
(Federal State Budgetary Educational Institution of Higher Education  
“Cherepovets State University”, Cherepovets, Russian Federation)  
INFLUENCE OF CONDITIONS FOR ASYMMETRICAL ROLLING  
ON THE FLUCTUATION OF TENSION VALUE, TAKEN INTO ACCOUNT  
OF DIFFERENCES IN THE THICKNESS OF THE ROLLER
- 15:15 **D.L. Shalaevsky** (Federal State Budgetary Educational Institution of Higher  
Education «Cherepovets State University», Cherepovets, Russian Federation)  
EVALUATION OF THE FLATNESS OF HOT-ROLLED STEEL STRIPS BASED  
ON THE PARAMETERS OF THEIR CONTINUOUS HOT ROLLING PROCESS
- 15:30 **Yan Chuanchao**, Zhang Xunpeng, A.N. Volkov, M.V. Zhavner, Shi Shuangyuan  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg)  
DEVELOPMENT AND RESEARCH OF A TYPE OF NON-LINEAR SPRING  
ACCUMULATOR AS ENERGY RECOVERABLE ACTUATOR
- 15:45 **G.S. Ivanov**, A.I. Kruglov, D.N. Novikov, D.A. Kovalenko (Peter the Great  
St. Petersburg Polytechnic University, Saint Petersburg, Russia)  
APPLICATION OF MACHINE LEARNING FOR PREDICTIVE ANALYTICS  
OF LATHE MACHINE BREAKDOWNS

- 16:00 **A.V. Leshchyova**, T.T. Isakov, A.V. Bakhshiev  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
COMPARATIVE ANALYSIS OF LEARNING AND ADAPTATION  
ALGORITHMS OF HEXAPOD ROBOT LOCOMOTION
- 16:15 **E.D. Pykhalov**, A.V. Bakhshiev, A.S. Gabriel (Peter the Great St. Petersburg  
Polytechnic University, Saint-Petersburg, Russia)  
APPROACHES TO THE IMPLEMENTATION OF AN UNMANNED VEHICLE  
COMPUTER VISION SYSTEMS FOR SOLVING THE ROAD SITUATIONS  
ANALYSIS PROBLEMS
- 16:30 **Coffee break**
- 17:00 **A.S. Sluzhaev**, D.V. Shabanov  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
CONSIDERATION OF NONLINEARITY OF FRICTION AND ROLLING  
RESISTANCE COEFFICIENTS IN DESIGNING MOBILE ROBOTS
- 17:15 **E.R. Zorkin**, V.V. Titov (Peter the Great St. Petersburg Polytechnic University,  
Central Research Institute RTK St. Petersburg, Russia)  
REMOVAL OF A BIOSIGNAL USING MAGNETO MICROMETRY TO CONTROL  
A BIONIC PROSTHESIS
- 17:30 **D.O. Belekhov**, I.N. Khrustaleva (Peter the Great St. Petersburg Polytechnic  
University, OOO «ZZI», Saint-Petersburg, Russia)  
IMPROVING THE RELIABILITY OF THE LEVER LOCK DESIGN  
AND THE EFFICIENCY OF MANUFACTURING ITS INDIVIDUAL ELEMENTS
- 17:45 **I.V. Ivanov**, M.S. Ananyevsky  
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)  
DEVELOPMENT OF A SYSTEM OF SOIL TEMPERATURE AND HUMIDITY  
SENSORS FOR INDOOR PLANTS
- 18:00 **V.A. Shchelkanova**, S.A. Solnishkin (Peter the Great St. Petersburg  
Polytechnic University, Russian state scientific center for robotics  
and technical cybernetics, St. Petersburg, Russia)  
RESEARCH OF THE METHOD OF SYNTHESIS OF HYDROACOUSTIC IMAGES  
FOR DEVELOPMENT OF ALGORITHMS FOR RECOGNITION OF UNDERWATER  
OBJECTS
- 18:15 Discussion of the results of the Conference Day.  
Session closing

<b>Стендовые доклады</b>	
1	Rouibah Hassen, Kenane Mohamed (Laboratory of Materials Science and Engineering, Department of Materials Science, Faculty of Mechanical Engineering and Process Engineering, University of Science and Technology Houari Boumediene (USTHB), BP32 –1611El-Alia, Algiers, Algeria) THE EFFECTS OF ALKALI–OXIDATION TREATMENT ON THE TENSILE AND FLEXURAL PROPERTIES OF WOVEN ALFA REINFORCED EPOXY COMPOSITES

2	Ameur Mohamed Faycal, Zitoune Redouane, Kenane Mohamed, Habak Malek (Ecole Nationale Supérieure des Technologies Avancées, Algiers, Algeria, Laboratoire de mécanique Appliquée, Faculté de Génie Mécanique et Génie des Procédés Université USTHB, USTHB, BP 32, El-Allia, Bab Ezzouar, Algeria, Université Paul Sabatier de Toulouse IUT-A of Toulouse French, Laboratoire des Technologies Innovantes (LTI), IUT d'Amiens, Dépt GMP, Université de Picardie Jules Verne, Avenue Facultés Bailly 80001 Amiens, French) EXPERIMENTAL AND NUMERICAL APPROACH OF DRY DRILLING OF HYBRID MATERIALS (CARBON/EPOXY) / ALUMINUM
3	S.V. Mikhailov, E.O. Larionov, T.A. Larionova, A.A. Sokolov (Kostroma State University, Kostroma, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia) THEORETICAL AND EXPERIMENTAL MODELING OF CHIP SHRINKAGE DURING TURNING
4	D.A. Pisakov, M.L. Begunov (Mikhailovskaya Military Artillery Academy, St. Petersburg, Russia) ANALYSIS OF THE STRENGTH OF THE METAL STRUCTURE OF A SEMI-TRAILER FOR TRANSPORTING A SPECIAL PURPOSE PRODUCT
5	D.A. Pisakov, M.L. Begunov (Mikhailovskaya Military Artillery Academy, St. Petersburg, Russia) ANALYSIS OF THE STRENGTH OF THE METAL STRUCTURE OF A SEMI-TRAILER FOR TRANSPORTING A SPECIAL PURPOSE PRODUCT, TAKING INTO ACCOUNT WIND AND WEIGHT LOAD
6	A.V. Rjabova, T.A. Makarova (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia) ISSUE OF ENGINEERING A SEALING CLAMP FOR LEAK REPAIR IN A DEEP-SEA PIPELINE
7	Boudali Badr Eddine, Bouti Samir, Hamouda Khaled (University of science and technology Houari Boumediene, Bab Ezzouar, Algeria, Peter the Great St. Petersburg Polytechnic University, Russia) SUPERFICIAL HARDENING OF 316L ALLOY WELDED BY ROTARY FRICTION USING THE VIBRATORY ABRASION PROCEDURE
8	I.E. Volokitina, A.V. Volokitin, E.A. Panin (Karaganda Industrial University, Temirtau, Kazakhstan) DEVELOPMENT OF DEFORMATION TECHNOLOGY FOR CARBON STEEL BARS
9	A.B. Naizabekov, I.E. Volokitina, E.A. Panin (Rudny Industrial Institute, Rudny, Karaganda Industrial University, Temirtau, Kazakhstan) STUDY OF THE EFFECT OF COMBINED THERMOMECHANICAL TREATMENT ON THE MICROSTRUCTURE EVOLUTION AND THE MICROHARDNESS CHANGE OF BRASS
10	A.V. Volokitin, I.E. Volokitina, E.A. Panin (Karaganda Industrial University, Temirtau, Kazakhstan) DEVELOPMENT OF COPPER WIRE DEFORMATION TECHNOLOGY

11	Dif Sofiane, Bouzouane Belaïd, Tahi Mohamed, Miloudi Abd elhamid (University of Science and Technology Houari Boumediene, Bab Ezzouar, Algeria) PERCEPTUAL STUDY OF ROTATIONAL SPEED INFLUENCE ON THE DETECTION OF BEARING DEFECTS IN ROTATING MACHINES
12	Djema Mohamed Amine, Saidi Djamel, Bouti Samir, Hamouda Khaled (CMP-FGMGP USTHB, Polytechnic national schools, Algiers, Algeria, Peter the Great St. Petersburg Polytechnic University, St. Petersburg) ADVANTAGES AND APPLICATIONS OF A NEW DRIVE STRAIN WAVE GEARING
13	S.N. Lezhnev, E.A. Panin, V.E. Pischikov (Rudny Industrial Institute, Rudny, Karaganda Industrial University, Temirtau, Kazakhstan) EFFICIENCY OF RADIAL-SHEAR ROLLING TO OBTAIN A GRADIENT ULTRAFINE-GRAINED STRUCTURE IN 5KHV2S TOOL STEEL
14	E.A. Panin, I.E. Volokitina, G.E. Akhmetova (Karaganda Industrial University, Temirtau, Kazakhstan) ANALYTICAL STUDY OF ENERGY-POWER AND KINEMATIC PARAMETERS OF THE COMBINED ROLLING-ECAP PROCESS WITH COMBINED ROLLS
15	E.M. Stepukhov, E.V. Galieva, V.A. Valitov, E.Yu. Klassman, A.A. Ganeev, R.R. Gabassov (Institute for Problems of Superplasticity of Metals, Ufa University of Science and Technology, Ufa State Petroleum Technical University, Ufa, Russia) EFFECT OF DEFORMATION ACCORDING TO UNIAXIAL COMPRESSION ON THE MICROSTRUCTURE OF HEAT-RESISTANT NICKEL ALLOYS EP741NP AND EK61
16	A.A. Ivanov, A.A. Khatunkin (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia) DEVELOPMENT OF AN INTELLIGENT QUALITY MANAGEMENT SYSTEM FOR PERSONNEL TRAINING IN MAINTENANCE OF GAS SEPARATION EQUIPMENT
17	A.A. Ivanov, P.S. Isaev (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia) FEATURES OF DETERMINING THE DISADVANTAGES OF PRODUCTION PROCESSES IN THE MANUFACTURE OF HYDRAULIC CAPACITIES OF THE EMERGENCY COOLING SYSTEM OF THE REACTOR CORE
18	O.D. Rasskazova, V.I. Novikov, V.P. Tretyakov (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia) STUDY OF THE INFLUENCE OF CASTING MATERIAL ON THE LEVEL OF POROSITY