



CONFERENCE PROGRAM

ADVANCED ENGINEERING TECHNOLOGIES AET 2026

International Scientific Conference

May 18 - 20, Saint Petersburg, Russia



Peter the Great St. Petersburg Polytechnic University
Institute of Machinery, Materials and Transport

ADVANCED ENGINEERING TECHNOLOGIES AET 2026
International Scientific Conference,
May 18 - 20, 2026, 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

Anton A. Naumov – Associate 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

Vladimir A. Polyanskiy – Professor, Director of the Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences, St. Petersburg, Russia

Vyacheslav V. Maksarov – Professor, Dean of the Faculty of Mechanics and Mechanical Engineering, St. Petersburg Mining University, St. Petersburg, Russia

Cheikh Salah – Honorary professor of Energy, University of Science and Technology Houari Boumediene, Algiers, Algeria

Djerdjar Boubakeur – Professor of Materials science, University of Science and Technology Houari Boumediene, Algiers, Algeria

Abdi Said – Professor of Materials science, University of Science and Technology Houari Boumediene, Algiers, Algeria

Djema Mohammed Amine – Professor of Materials science, University of Science and Technology Houari Boumediene, Algiers, Algeria

Zixi Wang – Professor, Head of the Sealing and Lubrication laboratory, Department of Mechanical Engineering, Tsinghua University, Beijing,

Peihu Gao – Professor, Xi'an Technological University, Xi'an, China

Dmitry Yu. Kolodyazhniy – Professor, MIREA – Russian Technological University, Moscow, Russia

Dmitry V. Vasilkov – Professor, Baltic State Technical University «Voenmeh» D.F. Ustinov, St. Petersburg, Russia

Andrey N. Volkov – Professor, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

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

Sergey N. Lezhnev – Professor, Rudny Industrial Institute, Rudny, Republic of Kazakhstan

Irina E. Volokitina – Professor, Karaganda Industrial University, Temirtau, Republic of Kazakhstan

Andrey V. Volokitin – Associate Professor, Karaganda Industrial University, Temirtau, Republic of Kazakhstan

Alexander N. Evgrafov – Associate Professor, 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:

Vasiliy 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:

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

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

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

Sergey A. Lyubomudrov – 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

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

Xenia S. Arsenyeva – 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

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

AET 2026 will be held at the Main Educational Building of SPbPU, located at 29 Politechnicheskaya str., St. Petersburg (near the Politechnicheskaya metro station).

May 18, Monday

**10:00-11:00 Registration of participants
room 159, Main Educational Building of SPbPU**

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 **Anton A. Naumov**

Director of «Research Center Pipe Metallurgical Company» LLC **Yaroslav I. Kosmatsky**

11:10 A.A. Naumov, A.D. Breki, E.A. Khlopkov, A.M. Tupikov, Y. Ma

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
A NOVEL EXPERIMENTAL METHOD TO ESTABLISH FRICTION COEFFICIENT
MODEL FOR NUMERICAL SIMULATION OF FRICTION STIR WELDING

11:35 N.V. Fokin, Y.I. Kosmatsky, B.V. Barichko

«Research Center Pipe Metallurgical Company» LLC, Chelyabinsk, Russia
IMPROVING THE QUALITY OF HOT-PRESSED PIPES OF CORROSION
RESISTANT STEELS DUE TO IMPROVEMENT OF THE FIRMWARE PROCESS

12:00 A.S. Fedorov, V.S. Karasev, A.I. Zhitenev, P.V. Kovalev

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg)
DEVELOPMENT OF METHODS AND CRITERIA FOR ASSESSING THE QUALITY
OF CAST DUPLEX CORROSION-RESISTANT STEELS IN ORDER TO IMPROVE
THEIR COMPOSITION AND PRODUCTION TECHNOLOGY

12:25 Photo Session

12:35 – 13:45 Lunch break

Chaired by:

Associate professor **Pavel A. Kuznetsov**, Associate professor **Xenia S. Arsenyeva**

13:45 I.U. Brovkina, T.A. Makarova, P.V. Romashov

(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia,
LLC " Northern Technopark", St. Petersburg, Russia)
RESEACH OF THE EFFECT OF THERMAL DEFORMATIONS AND WEAR
OF CUTTING TOOLS ON SURFACE ROUGHNESS WHEN TURNING A BATCH
OF PARTS

14:00 A.I. Popov, E.R. Kim, M.R. Kolkov, V.N. Kudryavtsev, A.P. Veselovsky,
V.S. Kobchikov, A.A. Moskalets, M.M. Radkevich

(Peter the Great St. Petersburg Polytechnic University, Saint Petersburg,
Russia)
ELECTROCHEMICAL SHARING OF THE CUTTING EDGE OF A DERMATOM

- 14:15 **Jiayu He**, Faqin Xie (School of Civil Aviation, Northwestern Polytechnical University, Xi'an, China)
PREPARATION AND FRICTION WEAR PERFORMANCE OF ZrO₂/MoS₂ PEO COMPOSITE COATING
- 14:30 **Hanming Yang**, Faqin Xie (School of Civil Aviation, Northwestern Polytechnical University, Xi'an, China)
EFFECT OF PLASMA PULSE MICRO-ARC OXIDATION ON THE TENSILE PERFORMANCE OF TC6 TITANIUM ALLOY
- 14:45 **S.V. Mikhailov**, Guangchao Guo, E.O. Larionov
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Kostroma State University, Kostroma, Russia)
TECHNOLOGICAL SUPPORT FOR ROUGHNESS IN MACHINING CURVILINEAR SURFACES
- 15:00 E.N. Sosenushkin, E.A. Yanovskaya, **A.S. Zhelnov**
(FGAOU "MGTU "STANKIN", Moscow, Russia)
TRANSITION FROM A FRACTIONAL-DIMENSIONAL ROUGH SURFACE MODEL TO DIMENSIONAL FRICTION AND WEAR PARAMETERS
- 15:15 **I.V. Sliusareva**, N.S. Filon
(Moscow Institute of Physics and Technology, Moscow, Russia)
COMPARATIVE ANALYSIS OF CLASSICAL AND NEURAL NETWORK METHODS OF MULTI-VIEW 3D RECONSTRUCTION OF ORE MASS BASED ON SYNTHETIC DATA

15:30 – 16:00 **Coffee break**

Chaired by:

Professor **Stanislav V. Mikhailov**, Professor **Khaled Hamouda**

- 16:00 **T. Quyet Pham**, V.A. Rassokhin, Q. Toan Tran, M. Thang Ha
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Vietnam Naval Academy, Khanh Hoa, Vietnam, Le Quy Don Technical University, Hanoi, Vietnam)
PRINCIPLES OF CONTROL AND POWER DISTRIBUTION IN A LOW-FLOW HYBRID GAS TURBINE ENGINE
- 16:15 **K. Hamouda**, B. Boudali, D. Gasuk, M.A. Djema, D. Saidi, S. Bouti
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, University of Science and Technology Houari Boumediene, Algiers, Algeria, Polytechnic national schools, Algiers, Algeria)
DESIGN AND ANALYSIS OF A LINEAR VIBRATOR FOR INDUSTRIAL APPLICATIONS
- 16:30 S.V. Mikhailov, Yujia Ho, **Shuangyuan Shi**
(Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia, Kostroma State University, Kostroma, Russia)
INVESTIGATION OF THE INFLUENCE OF THE MAIN PARAMETERS OF THE SHAVING ZONE ON THE SHAPE AND SIZE OF THE CURLY SHAVING

- 16:45 **D.I. Goncharov**, I.R. Zhuravlev, D.N. Shabalin (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
INCREASE PRODUCTION EFFICIENCY BY CHOOSING THE OPTIMAL PRODUCTION STRATEGY
- 17:00 **K.A. Tukachev**, V.N. Tsemenko, P.A. Kuznetsov
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
RESEARCH OF MECHANICAL PROPERTIES OF POWDER BLANKS OBTAINED BY SELECTIVE LASER MELTING AFTER SPHERICAL STAMPING
- 17:15 **Guangchao Guo**, S.V. Mikhailov, Shuangyuan Shi
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Kostroma State University, Kostroma, Russia)
CHANGES IN THE GEOMETRIC PARAMETERS OF THE CUTTING LAYER WHEN TURNING CURVILINEAR SURFACES
- 17:30 Discussion of the results of the first Conference Day

May 19, Tuesday

10:00-15:00 A guided bus tour of Saint Petersburg city

May 20, Wednesday

room 346, Main Educational Building of SPbPU

Chaired by:

Associate professor **Alexander I. Popov**, Associate professor **Vasily A. Lobov**

- 10:00 **A.N. Danilov**, X.S. Arsenyeva, A.O. Prostorova (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
COMPUTER SIMULATION OF MULTI-STAGE BENDING OF A SHEET METAL BRACKET WITH ASYMMETRIC GEOMETRY
- 10:15 **G. Shesler**, X.S. Arsenyeva (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
ASSESSMENT OF METHODS FOR DETERMINING THE DIMENSIONS OF FLAT BLANKS FOR BOX-TYPE PARTS
- 10:30 S.A. Lyubomudrov, N.Y. Kovelonov, **K.D. Tikhomolov**
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Virial LTD., St. Petersburg, Russia)
PRODUCTIVITY AND QUALITY IMPROVEMENT IN PROCESSING OF CEMENTED CARBIDE RODS AND ROTARY TOOL BLANKS
- 10:45 L.A. Arestov, N.Y. Kovelonov, **K.D. Tikhomolov**
(Virial LTD., St. Petersburg, Russia, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
OPTIMIZATION OF MANUFACTURING METHODS FOR INDEXABLE CARBIDE THREADING INSERTS

11:00-11:30 **Coffee break**

- 11:30 **K.A. Nalimov, A.D. Magaev**, E.A. Khlopkov
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
IMPROVING THE MANUFACTURING PERFORMANCE OF THE "HEADSTOCK HOUSING" PART
- 11:45 S.A. Lubomudrov, F.L. Gluhih, S.A. Bytsan, **V.A. Ustik** (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
EVALUATION OF THE ACCURACY OF CYLINDRICAL SURFACES PRODUCED BY CUTTING METHODS
- 12:00 D.N. Shabalin, F.L. Gluhih, **S.A. Bytsan, E.A. Fedchenko** (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
EVALUATION OF THE EFFECT OF ELECTRODE BENDING ON THE PARAMETERS OF THE STITCHED HOLE
- 12:15 F.L. Gluhih, **S.A. Bytsan, G.I. Podkorytov** (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
THE TECHNIQUE OF ANCHORING THE ZERO POINT ON CNC MACHINES USING THREE-DIMENSIONAL SCANNING
- 12:30 **I.P. Shalamov**, M.M. Radkevich (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
TECHNOLOGICAL PROCESS OF FORGING IN CLOSED DIES

12:45 – 14:00 **Lunch break**

Chaired by:

Associate professor **Aleksandr V. Bakhshiev**, Associate professor **Vasily G. Teplukhin**

- 14:00 **K.K. Mashyanov**, O.A. Shmakov
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
INVESTIGATION OF ROBOTICS APPLICATION PROSPECTS IN THE CONSTRUCTION OF MAIN PIPELINES
- 14:15 **K.V. Eidelman**, I.A. Bzhikhatlov, D.V. Balandin
(ITMO University, St. Petersburg, Russia, Sirius University of Science and Technology, Sirius, Russia)
ADAPTIVE CONTROL OF A PROSTHETIC KNEE MODULE WITH A HYDRAULIC DAMPER
- 14:30 **E.A. Fedchenko**, S.A. Pulnev, A.I. Pryadko, E.A. Khlopkov
(Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Ioffe Institute, St. Petersburg, Russia)
INVESTIGATION OF DEFORMATION AND FORCE PROPERTIES OF RING-SHAPED ELEMENTS MADE FROM CuAlNi и TiNi SHAPE MEMORY ALLOYS UNDER THERMAL CYCLING
- 14:45 **E.D. Meshkov**, A.V. Bakhshiev (Federal State Autonomous Educational Institution of Higher Education SPbPU, St. Petersburg, Russia)
COMPARING APPROACHES TO PATTERN DETECTION AND CAMERA CALIBRATION IN ROBOTIC VISION SYSTEMS

- 15:00 **A.A. Prokhorov**, E.V. Semashkevich, V.I. Slatin (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
ENSURING THE RELIABILITY OF THE PROCESS OF ROTATIONAL MOLDED SURFACES IN AUTOMATED PRODUCTION
- 15:15 **A.S. Gerasimov**, N.A. Solodilova (Peter the Great St. Petersburg Polytechnic University, Saint Petersburg, Russia)
FULL-SCALE SIMULATION IN REVERSE ENGINEERING USING 3D SCAN DATA
- 15:30 **G.V. Kazantsev**, L.A. Stankevich (Central Research and Development Institute of Robotics and Technical Cybernetics, St. Petersburg, Russia, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)
INTELLIGENT MOTION CONTROL SYSTEM FOR A BIOMIMETIC UNDERWATER ROBOT USING THE SAC ALGORITHM
- 15:45 Discussion of the results of the second Conference Day

Poster section	
1	S. Bouti, K. Hamouda, B. Boudali, D. Gasuk, M.A. Djema, D. Saidi (University of sciences and Technology, Bab Ezzouar, Algeria, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia, Polytechnic National School, El Harrach, Algeria) IMPROVING SURFACE QUALITY AND PERFORMANCE OF PARTS BY VIBRATIONAL FINISHING-STRENGTHENING TREATMENT
2	A. Ouarghi, S. Zaidi, S. Venkatraman, A. Fernandes, T. Chaabane (Chemical Engineering Laboratory (LGR), University of Science and Technology (USTHB), BP 32 El-Alia 16111, Bab Ezzouar, Algiers, Algeria, Department of Civil Engineering, School of Engineering, Nagasaki University, 1-14 Bunkyo-machi, Nagasaki 852-8521, Japan, FibEnTech/UBI and Department of Chemistry, Universidade da Beira Interior, 6201-001, Covilhã, Portugal) ELECTROCOAGULATION ASSISTED FORMATION OF MgAl LAYERED DOUBLE HYDROXIDES FOR WATER TREATMENT APPLICATIONS