National Research University Higher School of Economics
National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)
Priboroteka R&D
Electron Devices Society of the Institute of Electrical and Electronics Engineers (IEEE ED-S)
The Tomsk Chapter of the Siberia Section of the IEEE

Moscow Workshop on Electronic and Networking Technologies (MWENT-2022)

June 9–11, 2022
Moscow, Russia

mwent.hse.ru

Preliminary Program

	Moscow Workshop on Electronic and Networking Technologies
	June 9–11, 2022
	Priboroteka R&D
	Moscow, 18k5 Andropova Pr.

Time	June 9, Thursday	
9:30 – 10:00	Registration of participants	
10:00 – 10:30	OPEN SESSION *Greeting remarks by the Co-Chair of the Organizing Committee* *Greeting remarks by the Co-Chair of the Technical Program Committee* Room 1	
	Track 1	Track 2
10:30 – 12:30	Testing I Room 1	Circuits I Room 2
12:30 – 13:00	Coffee Break	
13:00 – 14:30	Testing II Room 1	Circuits II Room 2
14:30 – 15:30	Luncheon	
15:30 – 16:45	Radiation Room 1	Materials Room 2
18:00 – 20:30	Get Together Party	
	June 10, Friday	
9:45 – 10:00	Registration of participants	
10:00 – 11:30	Reliability I Room 1	Robotics I Room 2
11:30 – 12:00	Coffee Break	
12:00 – 13:30	Reliability II Room 1	Robotics II Room 2
13:30 – 14:00	Coffee Break	
14:00 – 15:30	Networks Room 1	IoT Room 2
15:30 – 16:30	Luncheon	
16:30 – 18:00		Technologies Room 2
	June 11, Saturday	
	Social Program	

Organized by
- National Research University Higher School of Economics;
- National Research Nuclear University MEPhI (Moscow Engineering Physics Institute);
- Priboroteka R&D
- ProConf Ltd
- The IEEE Tomsk Chapter of the Siberia Section of the IEEE.

Sponsors
- National Research University Higher School of Economics
- Priboroteka R&D

Technical Sponsor
   Electron Devices Society of the Institute of Electrical and Electronics Engineers (IEEE ED-S)

General Information
   International Moscow IEEE-workshop on Electronic and Networking Technologies **MWENT-2022** devoted to the issues of electronics development and its integration into the modern network engineering technologies and also modern achievements in the field of creation of control and communication systems. The **Aim of MWENT** is to provide an international forum for discussion of recent scientific advances in the electronic industry.

Address of Organizing Committee and Correspondence
Contact information:
123458, Moscow, 34 Tallinskaya Str.
E-mail: mwent@hse.ru
General questions: Ilya Ivanov
Tel.: +7 (495) 7729590*15166, +7(926) 3830740, e-mail: mwent@hse.ru
Papers and special sessions: Oleg Stukach, e-mail: tomsk@ieee.org

Topics
   1. Testing of electronic devices.
   2. Electronic devices for aerospace purposes.
   3. Networks and telecommunications.

Registration fee
   8500 RUB – for IEEE members;
   9500 RUB – for students and postgraduate students;
   13500 RUB – for all other scientific speakers;
   27000 RUB - for commercial participants.
Registration fee includes publication in the conference proceedings, luncheon, coffee-breaks and gala-dinner.

Venue
   Priboroteka R&D

Participation
   To take part at the conference, it is necessary to send to Organizing Committee the full papers and to pay the registration fee. All participants of the conference should register at *mwent.hse.ru*

Proceedings
   All accepted papers will be published in conference Proceedings, registered in IEEE Xplore and indexed in scientific databases. The participants will be provided with the electronic version of the proceedings. Also the conference papers in English will be published at the Web http://ieeexplore.ieee.org/.

Registration
   Advance registration is performed through sending of full paper or paying of the registration fee. Final registration of participants will be held on sessions.

Conference Language

The working languages are English and Russian. No simultaneous translation will be provided. All materials concerning the conference should be written in English.

Electronic Copyright Form (eCF)

Each author whose paper has been accpeted for publication will recieve email from IEEE regarding eCF (from copyrights@ieee.org with subject "Copyright Pending Notice for Article: ...title of your paper..."). This email will provide the authors with a link to the online eCF wizard, as well as a unique login name and password to access their own copyright forms. When an author completes the online copyright transfer process and submits the form, he/she will receive an automated confirmation email letting him/her know that the transfer has been completed successfully. Please use the link in the email invitation sent earlier in order to access your eCF, and complete the entire form. If you have any difficulty accessing the eCF site, please contact the IPR Office at copyrights@ieee.org

Technical Program

The technical program covers all aspects of electronic and networking: theory, fundamental, and applied studies. It will include plenary session and thematic sessions composed of oral presentations. Contributed papers will be 10 minutes in length, with 5 minutes for discussion. Multimedia projector will be available.

Guidelines for Oral Presentations

Please note that the overall time available for your presentation is limited to 10 minutes allowed for the actual presentation and 5 minutes for discussion. You should plan your presentation carefully. You should select your vocabulary to address as wide an audience as possible and avoid unfamiliar abbreviations or expressions. Your oral presentation should be performed and organized to answer the following questions:

Why was the project undertaken?
What was done?
What was learned?
What does it mean?

Please remember that the responsibility of having your paper ready for Presentation at the scheduled time is primarily in your hands as the presenter. Check the readability, completeness and order of your slides before your presentation. Arrive well in advance of the session, and acquaint yourself with the operation of the podium and location of the equipment. Conference staff will be present to assist you. There are no scheduled breaks in the agenda so it is mandatory that the presentations be loaded before the beginning of each session.

Be careful to speak in accordance with the sequence of your slides. Avoid making major modifications to your transparencies during your presentation. Do not use more than 1 slide per minute. Please stay within the time limit allocated for your presentation.

Technical equipment provided in the Conference room are:
- Multimedia video projector;
- Projection screen;
- Standard multimedia PC with USB drive.

The operating system for session computers is Microsoft Windows 10. The available software is Microsoft Office that includes Word, Excel, PowerPoint, Adobe Acrobat Reader, and Windows Media Player. Therefore, all presentationAlis must be compatible with the software.

Schedule and Scientific Program

June 9

tk01ani1	Effect of a series of voltage pulses on passive components and transistors	Andrei Anikin, Konstantin Epifantsev, Aleksandr Shemonaev, Petr Skorobogatov
tk02bor1	Modular Automated Test System for EOL Testing of Automotive ECUs	Alexey Borisov, Denis Mukhankov, Tigran Manukyan, Andranik Aghajanyan, Denis Urudzhev, Alexander Chekunov, Alexey Vorobev, Harutyun Hambarzumyan, Alexander Dzherippa
tk03bor1	Unified FCT-Fixture for EOL Testing of Automotive ECUs	Alexey Borisov, Denis Mukhankov, Ivan Stepanov, Denis Urudzhev, Dmitry Smirnov, Alexander Dzherippa
tk04che1	Effects of space radiation onresistive memoryand comparison with other types of non-volatile memory	Vyacheslav Chepov, Andrey Petrov, Ivan Shvetsov-Shilovskiy, Anna Boruzdina, Anastasiya Ulanova
tk05fro1	Screening of LEDs by the Results of Accelerated Tests Under the Action of Pulsed Current	Ilya Frolov, Viacheslav Sergeev, Oleg Radaev
tk06mal1	Automated test bench for monitoring electrical parameters of lithium-ion battery charge control chips	Sergey Malyuchenko, Maya Belova, Daria Pechenkina
tk08she1	Latch-up in Integrated Circuits Under Single and Periodic Electrical Overstress	Aleksandr Shemonaev, Andrey Anikin, Konstantin Epifantsev, Petr Skorobogatov
tk09sim1	Analysis of electromagnetic radiation of LCD monitor with DisplayPort interface	Egor A. Simakhin, Danil A. Shinyaev, Igor I. Kagin, Leonid N. Kessarinskiy, Anatoly P. Durakovskiy
tk10tua1	Application of Kohonen's algorithm in electrical diagnostics of analog circuits of radioelectronic devices	Nguyen Van Tuan, Chernoverskaya Viktoria Vladimirovna, Dao Anh Quan, Nguyen Cong Duc, Uvaysova Aida Saygidovna
te13tuy1	Testing the parameters of analog multiplexers	Timur Tuykin
tk12zav1	Hardware - software system for monitoring parameters of magnetic field converters	Dmirtii Zavorotnov, Mikhail Muzafarov, Sergey Lipatnikov, Anna Kolosova
tk11uko1	Laser scanning confocal IR microscopy for non-destructive testing of semiconductors	Denis S. Ukolov, Arseniy A. Baluev, Polina S. Gromova, Alexander A. Pechenkin, Roman K. Mozhaev
tk07nik1	The Concept of Implementing an Adaptive System for Testing and Monitoring High-Speed Electronic Products	Alexander Nikonov, Galina Nikonova

sx01abr2	Engineering methodology for the selection of a composite polymer dielectric that ensures the absence of electrostatic discharges in the design	Dmitrii Abrameshin, Sergei Tumkovskiy, Vladimir Saenko, Evgenii Pozhidaev

	of the onboard electronic equipment of the spacecraft	
sx06iva2	Forecasting the technical condition of an electronic device	Sergey Demchenko, Ilya Ivanov, Saygid Uvaysov
sx03chu2	CJFET OpAmp on "Folded" Cascode with Compensation Channel for the Systematic Component of the Zero Bias Voltage	Vladislav Chumakov, Nikolay Prokopenko, Anna Bugakova, Ilya Pakhomov
sx04den2	Sallen-Key Band-pass Filters with Independent Tuning of General Parameters	Darya Yu. Denisenko, Nikolay N. Prokopenko, Yuri I. Ivanov, Nikolay N. Butyrlagin
sx05den2	Active RC and RLC Rejection Filters of the Sallen-Key Class Based on Voltage Followers	D. Yu. Denisenko, N.N. Prokopenko, Yu. I. Ivanov, Vladislav Chumakov
sx07khv2	Method for Fast Evaluation of the Circuit Performance After Structural Resynthesis for RSoC	Vasilii M. Khvatov
sx08luc2	Issues of Implementation and Application of Planar Structures in Millimeter Band Antenna and Feedline Devices	Dmitry V. Luchin, Dmitry V. Filippov, Alexander M. Plotnikov, Alexander P. Semibratov and Vyacheslav V. Yudin
sx09rav2	Investigation Of A Parallel Matrix Scheme With Reduced Weight And Size Indicators	Dilshod Ch. Ravshanov, Abdulmusavvir A. Karimov, Chorshanbe B. Ravshanov, Khusen Kh. Begimov
sx02art2	Analysis of Operation of the non-Energy Parameter Meter of the Useful Signal under the Influence of Additive and Multiplicative Noises	Vladimir Mikhaylovich Artyushenko, Vladimir Ivanovich Volovach
sx10sak2	Parameters Monitoring of a Radio Transmitter Power Amplifier in Transient Modes	Pavel Sak, Galina Nikonova

Radiation	Track 1
15.30-16.45, Room 1	

tr01amb1	The Microwave Test and Measurement System for On-wafer Investigation under Irradiation	Konstantin Amburkin, Nikolay Usachev, George Chukov, Vadim Elesin, Alexander Kuznetsov, Denis Sotskov
tr02dan1	Total Ionizing Dose Tolerance Estimation for an All-MOS Temperature-Insensitive Voltage Divider	Igor A. Danilov, Maxim S. Gorbunov, Alexandra I. Khazanova, Alexander Y. Nikiforov
tr03gri1	The Problems of Microassemblies Constructional Adaptation for SEE Heavy Ion Testing	Denis Gritsaenko, Alexander Tararaksin, Ekaterina Glazunova, Artem Murygin, Vitaly Napalkov, Anna Boruzdina, Andrey Yanenko, George Chukov
tr04tep1	Influence of X-ray Source Spectrum on TID Degradation of CMOS Devices	A. O. Teplyakova, A. Yu. Egorov, V. D. Kalashnikov, A. V. Ulanova, V. A. Marfin, M. A. Rogovaia
tr05tor1	Total Ionizing Dose Effects in High-Speed 16-bit Analog-to-Digital Converter	Roman Torshin, Dmitry Bobrovsky, Anastasia Ulanova, George Sorokoumov, Maria Kalashnikova, Dmitry Titovets
tr06vas1	A Methodical Approach To The Study Of The Radiation Hardness Of Transceivers Under The Total Dose Effect And Heavy Ions Exposure	Roman Vaskin, George Sorokoumov, Vasikina Saprykina

	Materials 15.30-16.45, Room 2	Track 2
mt01aga2	Field Stability Investigation of Electrical Conductivity of a Dielectric Filled with a Conductive Compound	Ilya Agapov
mt02and2	Programmable set to monitor charge state change of MIS devices under high-fields	Dmitrii V. Andreev, Gennady G. Bondarenko, Vladimir V. Andreev, Sergey A. Loskutov
mt03che2	Coherent States in a Problem with Infinitely Multiple Spectrum	Victor Chetverikov, Igor Mamsurov
mt04chu2	Monitoring system for plasma-electrolyte synthesis of oxides, which are the functional medium of resistive switching in metal-oxide-metal structures	Chudinov Danila Borisovich, Zhukov Sergey Vladimirovich, Suminov Igor Vyacheslavovich, Semenishchev Evgeny Alexandrovich, Voronin Vyacheslav Vladimirovich, Zhukova Olga Alekseevna
mt05ego2	Pulsed Laser Single-Event Effect Simulation in AD8400 using Two-Photon Absorption	Andrey N. Egorov, Oleg B. Mavritskii, Alexander A. Pechenkin, Dmitry V. Savchenkov, Marta S. Kholina
mt06mit2	Durability of intelligent textile fabrics and composite materials	Mikhail F. Mitsik, Marina V. Byrdina, Igor M. Maltsev, Viktor P. Bezrukov

June 10

	Reliability 10.00-13.30, Room 1	Track 1
nd01iva1	Different Approaches to Digital System Debugging	Alexander Ivannikov
nd06kor1	Research of Mathematical Models for Assessing the Pumping Flashtubes Failure Rate	Aivar Urkunov, Sergey Polesskiy, Pavel Korolev, Anton Sosnin, Ilya Ivanov, Kirill Sedov
nd04kof1	The Method of Fault Tolerance Evaluation of Reconfigurable Navigation System	Yury N. Kofanov, Nikita E. Kuznetsov, Vadim M. Novichkov, Svetlana Y. Sotnikova
nd05kof1	The Principle of Increasing Reliability in The Operation of Electronic Craft-Equipment of Cyberphysical Systems	Yury N. Kofanov, Nikita E. Kuznetsov, Svetlana Y. Sotnikova
nd02kar1	Probabilistic approach to determining the transient upset level of digital integrated circuits	Andrei Karakozov, Vladimir Marfin, Kirill Moskalenko
nd03kha1	Extension of the capabilities of SPICE analysis tools for electro-thermal simulation of power electronic circuits	Igor Kharitonov, Gleb Klopotov, Valentin Kobyakov, Michael Tegin, Evelina Silchenko, Konstantin Ivlev, Dmytry Loktionov
nd07kos1	Non-Contact Temperature Setting System for VLSI with High Heat Dissipation	Denis Kostyuchenko, Dmitriy Bobrovskiy, Alexandr Pechenkin, Vladimir Marfin, Artem Tsirkov, Andrey Karakozov
nd08max1	Research of the program injection method for determing the SEFI cross section of STM32 microcontroller	E.S. Makhinov, A.Yu. Egorov, I.O. Loskutov, P.V. Nekrasov
nd09ser1	Thermal model of a heterojunction bipolar transistor taking into account	Viacheslav A. Sergeev, Alexander M. Hodakov

	the voltage drop on the emitter fingers of metallization	
nd10tsi1	Methods of catastrophic failure prevention during the SEL-sensitivity estimation of IC	Artem N. Tsirkov
nd11tuv1	Development of a Hardware and Software Complex Based on the Study of the Diagnostic Properties of Methods for Testing Nonvolatile Memory with a Serial Interface	Alexander L. Tuv, Maxim S. Akatov, Diana I. Nalegach, Nikita A. Bezborodov
nd12yan1	Qualitative Risk Assessment in the Application of Circuit-based Protection Against SEL in Space Electronics	Andrey Yanenko

Robotics — Track 2
10.00-13.30, Room 2

rb07lob2	Testing system development for full-scale simulators of nuclear power plant unit	Alexey Lobarev, Denis Plotnikov, George Chukov, Vladimir Potapov, Alexander Nikulin, Anatoly Kurilov
rb03sem2	Nonlinear Adaptive Filter And Control of Quadcopter	Alexander Semion
rb10she2	Face identification and verification under computational and security constraints	Nikita Shevtsov
rb01dmi2	Study of Methods of Mutual High-Precision Navigation Based on the Use of Goniometric GNSS Receivers	D.D. Dmitriev, A.B. Gladyshev, V.N. Ratushnyak, V.N. Tyapkin, Yu.L. Fateev, E.N. Garin
rb02dmi2	The Use of Antenna Arrays to Improve the Accuracy of GNSS Receivers	D.D. Dmitriev, V.N. Tyapkin, A.B. Gladyshev, V.N. Ratushnyak, Yu.L. Fateev
rb08spi2	The problem of eigenvalues in the problem of calculating the pattern of current spreading over the spacecraft surface	D.A.Spirin, E.N.Prokofeva, A.V.Vostrikov
rb05dob2	Sensors modelling for Servosila Engineer crawler robot in Webots simulator	Alexandra Dobrokvashina, Roman Lavrenov, Yang Bai, Mikhail Svinin, Evgeni Magid
rb06mus2	Modelling mobile robot navigation in 3D environments: camera-based stairs recognition in Gazebo	Maksim Mustafin, Tatyana Tsoy, Edgar A. Martinez-Garcia, Roman Meshcheryakov, Evgeni Magid
rb09kol2	Multiple Coordinate Translations to Forecast Local Seasonal Changes with Daily Details	Yu. Kolokolov, A. Monovskaya
rb04uli2	Design Of Two-Linked Robot Manipulator Adaptive Control System By Gain Scheduling Method	Azatuhi Ulikyan, Amalya Mkhitaryan, Zaven Khanamiryan, Serob Muradyan

Networks — Track 1
14.00-15.30, Room 1

se07ula1	Experimental LoRa Network Power Consumption Model Using Multi-Hops	Ulanov Alexander, Ivan Bolshakov, Leonid Voskov, Alexey Rolich

se01ame1	Automation of NoC throughput search in high-level modeling	A.A. Amerikanov, A.S. Ponomarev, T.V. Tarzhanov
se04osi1	Decoding Techniques for a Multi-tone Multi-band DHA FH OFDMA with MaxMin detector	Dmitry Osipov
se05shc1	Implementation of Two-Dimensional Nonlinear Filters Using Linear Convolutions	Mikhail. A. Shcherbakov
se02art1	Mathematical Methods for Describing the non-Gaussian Random Variables and Processes	Vladimir Mikhaylovich Artyushenko, Vladimir Ivanovich Volovach, Kseniya Vladimirovna Lyapina, Alyona Igorevna Kutukova
se03art1	Analysis of Discrete Data Transmission and Noise Immunity in a Short-Range UHF Radio Channel	Vladimir Mikhaylovich Artyushenko, Vladimir Ivanovich Volovach
se10akk1	Multi-Source Markovian Model for Video Streaming in Flying Ad hoc Networks	M. Aiman Al Akkad, Albert V. Abilov, M. Amin Lamri
se06sor1	Formation of a scheme for managing the network infrastructure of a telecom operator	A.A. Sorokin, N.S. Maltseva

	Internet of Things	Track 2
	14.00-15.30, Room 2	

io01eli2	Smart Energy Harvesting System for IoT & Cyber Physical Devices	A.A.Yelizarov, I.V. Nazarov, E.A.Zakirova, A.A.Skuridin, D.Rano
io05rol2	The study of Machine Learning Scenarios for the Internet of Arctic Things	Alexey Rolich, Leonid Voskov, Ilyin Alexander
io08tyr2	Accelerating join of distributed datasets by a given criterion	Yevgeniya Tyryshkina
io03kar2	The design of a crossover that allows you to simulate the operation of two intersecting lines in the same plane	Abdulmusavvir A. Karimov, Dilshod Ch. Ravshanov, LolaiHusenzoda, Chorshanbe B. Ravshanov
io04kha2	Building a Digital Twin for Industrial Internet of Things with Interoperability	Rabia Khan, Nyasha Tsiga, Kinan Ghanem
io06rol2	Comparative Analysis of Millimeter-Wave Transceivers for 5G Applications	Nikolay Usachev, Denis Sotskov, Nikita Zhidkov, Vadim Elesin
io07zha2	Design and implementation of Home assistant and TouchGFX interaction based on STM32	Zharikov A.M., Kozin D.A., Nekrasov P.V.
io02kar2	Design Of A Miniature Butler Matrix Scheme On Planar Segments	Abdulmusavvir A. Karimov, Dilshod Ch. Ravshanov, Evgeniy B. Bablyuk
io09ebr2	IoT Standardization: An Overview of Organizations and Standards	Ali Ebraheem, Ilya Ivanov

	Technologies	Track 2
	16.30-18.00, Room 2	

tx10pet2	Analysis of SEU effects in MOSFET and FinFET based 6T SRAM Cells	Konstantin O. Petrosyants, Denis S. Silkin, Dmitriy A. Popov, Mamed R. Ismail-Zade

|		
tx01moz2	Near-infrared electroluminescence of silicon thyristor structure and its possible applications	Roman Mozhaev, Alexander Pechenkin, Maxim Gorbunov
tx02ned2	Designing a QoS-enabled 2 GHz On-Chip Network Router in 16nm CMOS	Yuri A. Nedbailo, Dmitri S. Tokarev, Danil I. Shpagilev
tx08rak2	The Control Types in Memristor-based Reactance-less Oscillators	Vladimir V. Rakitin, Sergey G. Rusakov, Sergey L. Ulyanov
tx04sal2	A Golden Device Selection Algorithm for Microwave Monolithic Integrated Circuit Elements Modeling	Andrei Salnikov, Dmitry Bilevich, Artem Popov, Igor Dobush, Alexey Kalentyev, Aleksandr Goryainov
tx05tur2	Compact modeling of body effect for "extrinsic" MOSFETs	Valentin Turin, Maxim Shcherbina, Roman Shkarlat, Oleg Kshensky, Gennady Zebrev, Benjaмнn Iniguez, Michael Shur

Conference venue

JSC "ENPO SPELS"
### Address: prospekt. Andropova 18k5, floor 10

Travel from the region
After Kolomenskaya metro station, you need to drive a bridge across the Moscow-River, then after it take the extreme right turn and move to the Projectiryemiy proezd № 4062, turn right, drive 1,300 meters straight and turn right onto the Projectiryemiy proezd № 7024, after 1,100 meters turn right onto Likhachev prospekt, after 190 meters turn right onto Mustaya Karima Street and then turn right on the Projectiryemiy proezd № 7025 to the checkpoint.
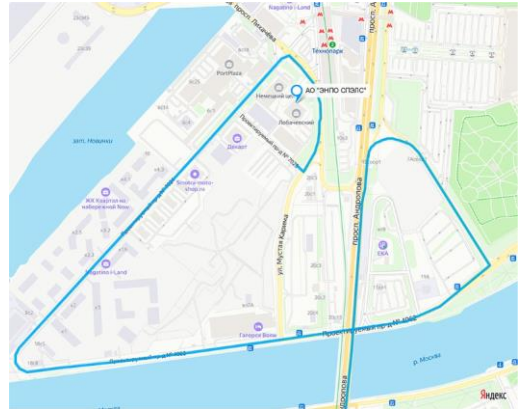
Travel from the center
Bypassing the TTK, moving straight ahead, on the right side you can see the Megapolis shopping center, Lexus dealership and Toyota dealership. After passing by them, it is necessary to turn before reaching the metro bridge across the Moscow-River (the path from TTK to this point is about 2 km). After passing under the underground overpass, turn right in the direction of the center. Next, at the traffic light, turn left on the arrow and turn right on the Projectiryemiy proezd № 7025 to the checkpoint.
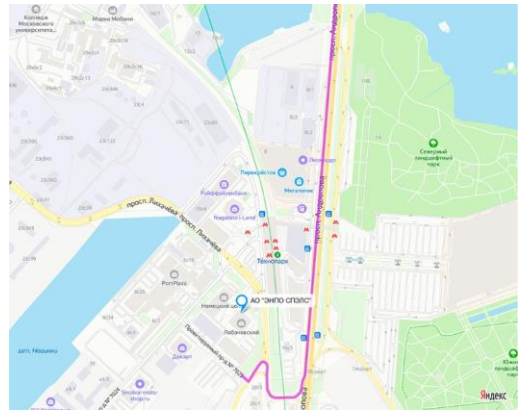
On foot from Technopark metro station:
Exit from the metro № 1 or № 2, turn left from the metro lobby, go straight to the traffic light, then cross the road towards the business Park «Nagatino i-Land ». Housing № 5 is the leftmost 20-storey building next to the German Center.

JSC "ENPO SPELS" is located on the 10th floor of the «Lobachevsky» business center.