МИЭТ: ИНТЕГРАЦИЯ ОБРАЗОВАНИЯ, НАУКИ И ПРОИЗВОДСТВА
MIET: INTEGRATION OF EDUCATION, SCIENCE AND PRODUCTION

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Национальный исследовательский университет “Московский институт электронной техники” (МИЭТ) – один из ведущих российских вузов в области электроники и информационных технологий. В основанном в 1965 году в Зеленограде университете обучаются свыше 4 тыс. студентов и более 200 аспирантов. Сотрудники МИЭТ активно занимаются научной деятельностью, причем значительная часть исследований и разработок ориентированы на решение практических задач радиоэлектронной промышленности. Этому способствуют обширные связи и широкое сотрудничество МИЭТ с промышленными предприятиями. О сегодняшнем дне и планах развития университета рассказал ректор МИЭТ, профессор Владимир Александрович Беспалов.

The National Research University of Electronic Technology (MIET) is one of the leading Russian universities in the field of electronics and information technologies. More than 4 thousand students and more than 200 graduate students are studying at the university, which was founded in 1965 in Zelenograd. MIET's staff is actively engaged in scientific activities and much of the R&D's are focused on solving practical problems of the electronic industry. This is facilitated by extensive links and extensive cooperation between MIET and industrial enterprises. Rector of MIET, Professor Vladimir A. Besperalov told us about activities and plans for the development of the university.

Владимир Александрович, какое место занимает МИЭТ в российской системе высшего образования?

МИЭТ, образованный в 1965 году для кадрового обеспечения отечественной электронной промышленности, является ведущим вузом России в сфере подготовки специалистов для предприятий и научных организаций, связанных с разработкой и производством электронной компонентной базы и созданием многофункциональных радиоэлектронных систем. Обладая статусом национального исследовательского университета, МИЭТ входит в перечень ведущих университетов России, что позволяет использовать в своей деятельности широкий спектр преференций, обеспечивающих динамичное развитие образовательной, научной и инновационной среды вуза. МИЭТ инициировал создание и возглавил ассоциацию вузов, готовящих разработчиков интегральных схем и радиоэлектронной аппаратуры. Созданная в последние годы современная научно-производственная инфраструктура обеспечивает высокое качество образования и позволяет нам занимать достойные позиции в российских и международных рейтингах вузов. В частности, мы входим в тридцатку Национального рейтинга универс...
Mr. Bespalov, what place does MIET occupy in the Russian system of higher education?

MIET, established in 1965 for the staffing of the domestic electronic industry, is the leading Russian university in education of specialists for enterprises and scientific organizations related to the development and manufacture of electronic components and creation of multi-functional electronic systems. Having the status of a national research university, MIET is included in the list of leading universities in Russia, which makes it possible to use a wide range of preferences in its activities that ensure the dynamic development of the educational, scientific and innovative environment of the university. MIET has initiated the creation and headed the association of universities, which educate the developers of integrated circuits and electronic equipment. The modern scientific and production infrastructure created in recent years provides a high quality of education and allows us to occupy worthy positions in Russian and international university rankings. In particular, we are in the top thirty in the National rating of universities of the Interfax group, in the top thousand in the World University Rankings, and we are regularly recognized as one of the leaders in Russia in terms of the degree of demand and the level of salaries of graduates.

What achievements of the university do you consider to be the most significant?

In modern conditions, the success of the university consists of three components: the quality of education, scientific recognition and the relevance of the results of educational and scientific activities in industry and business. An important achievement of recent years is the cardinal renewal of the content and forms of the implementation of educational programs aimed at meeting the requirements of enterprises of the electronic industry in accordance with educational and professional standards. A modern electronic educational environment has been created that ensures the deep integration into the educational process of scientific, technological and development projects that are realized in industrial enterprises and in research departments of the university. Another result, which we are proud of, is a high volume of financial resources aimed at
research and development. In the past year, it amounted to more than 3 million rubles per one research and educational worker, and, according to this indicator, we are leaders in Russia. It is important that the bulk of these funds is received from projects initiated and ordered by industry. The key to business confidence was the developed scientific and production infrastructure of our university. Our strategic partners are the largest foreign companies, in particular Cadence Design Systems and Synopsys, together with which the MIET was established and has been successfully operating for more than 10 years.

Could you please tell in more detail about the production infrastructure of MIET?
Wide opportunities for conducting promising fundamental and applied research have been implemented at the MIET’s center for collective use "Electronic component base and microsystem technology". It includes a design center for the development of IC with design rule down to 90 nm, there is a wide range of research and technological equipment for the production of microelectronics. This year the university created the Engineering Center, which provides scientific and technical services to external customers in the field of creating intelligent information and communication systems based on microwave technology. In its research and development, MIET uses the production capacity of the Proton plant, established by the university, which manufactures microelectronic equipment, computer hardware and control systems. Together with Zelenograd Innovation and Technology Center (ZITC) and the Fund for Infrastructure and Educational
All the basic stages of manufacturing microelectronics products from the design of integrated circuits to the manufacture and testing of electronic units and systems are realized. Thus, based on MIET, researchers and developers can quickly and effectively test their ideas and make prototypes, from the integrated circuit to the electronic modules and equipment. The innovative "ecosystem" of MIET is open to all users as an initiative and with support of development institutions: the Fund for Promotion of Innovation, the Fund for Infrastructure and Educational Programs, the RSF, the RFBR, and others.

What are the prospects for MIET cooperation with the Japanese minimal Fab consortium? This project is implemented within the framework of the development of an open technological platform that will facilitate the implementation of new promising technologies in Russia. minimal Fab is a very interesting solution, characterized, first of all, by relatively small investments, and secondly by demonstrativeness, which makes it effective for the educational process and unique.
for scientific research and development. At the end of 2016, we signed a cooperation agreement with the Zelenograd Development Corporation and Japanese companies Yokogawa and Tokyo Boeki, a members of the minimal Fab development consortium. In 2017, MIET was visited by Dr. Shiro Hara, the head of the minimal Fab development team. We understand that this project is currently at the stage of development, but the Japanese partners are very serious about its commercialization, and there is every reason to believe that in the near future minimal Fab will be ready for real implementation in production. We offer our opportunities for using this equipment for educational purposes, in training of specialists. We hope that we will create a technology center that will promote the advancement of minimal Fab technology in Russia and Europe.

You mentioned the association of universities that educate electronic device developers, what are its tasks and achievements? The creation of the association helped improve the information exchange between higher education institutions of the same profile. Leading world experts in the field of development of integrated circuits and technology of micro- and nanoelectronics are regularly invited to our meetings. We also develop joint network educational programs. Thus, the association helped form a group of universities that are interested in the joint development and implementation of advanced technologies. For its part, MIET is ready to provide the association members with technological infrastructure.

Do you take steps to increase the competitiveness of MIET in the international education market? In recent years, we have made considerable efforts in this area. At present, we cooperate with more than 50 international partners in the field of science and education. Joint educational programs have been developed, Russian students have the opportunity to study abroad, several hundred foreign students study at MIET, qualified foreign teachers work in our university. International educational and scientific centers, created on the basis of MIET in partnership with the largest companies, allow students to have access to the advanced world-class technologies. The development of international
cooperation in the field of education is one of the priority areas for the development of the university.

What scientific projects of MIET deserve special attention? I would like to note socially significant projects related to the development of the biomedical sector. We have developed a number of invasive devices for medicine, in particular, a device that helps a person to wait for a heart transplant. This is the only solution of this kind in Russia, and more than two dozen successful operations have been carried out with its use. Defibrillators, an artificial kidney and other medical devices are also being created at the university. Significant progress has been made in the field of sensors and elements of robotics for operation in extreme conditions.

What are the plans for the development of the university? At the present time, a structural reorganization of MIET is being carried out. The traditional basic training of bachelors in the faculties has ceased to meet the requirements of employers. Instead, we create institutes that unite the graduation departments and scientific units. The basis of the integration is the principles of focused training of specialists for each of the stages of manufacturing electronics. Network educational programs will be implemented within the framework of these institutes, with the participation of leading domestic and foreign universities, and, most importantly, industrial partners. The main goal of the reorganization is to ensure the effective integration of educational and scientific activities within the framework of the implementation of joint educational, scientific and technical projects on direct orders of technology partners from industry.

We will also expand the opportunities and build up the competencies of the MIET’s open technology platform with the involvement of financial instruments of the federal programs and leading Russian development institutions. The most important in this area is the development of a joint project with the ZNTC to create an infrastructure for the production of 3D integrated multi-functional microelectronic systems that will ensure the localization in Russia of the most demanded technology of the modern microelectronics.

Interview: Dmitry Gudilin, Olesya Lavrentyeva