

Kazan National Research Technical University n.a. A.N.Tupolev-KAI (TU Kazan)



TU Kazan: Tatarstan, Russia



Main building, TU Kazan



*Dmitry Medvedev, Rustem
Minnikhanov, Albert Gilmutdinov,
KAI-LASER, 2014*



*Sergey Korolev used
to work at TU Kazan*



*Tupolev Award,
Evgeny Kablov, 2015*

Republic of Tatarstan

The best in Russia for:

- business and investments ("*Forbes*")
- investment attractiveness ("*Expert RA*") and among German companies working in Russia.

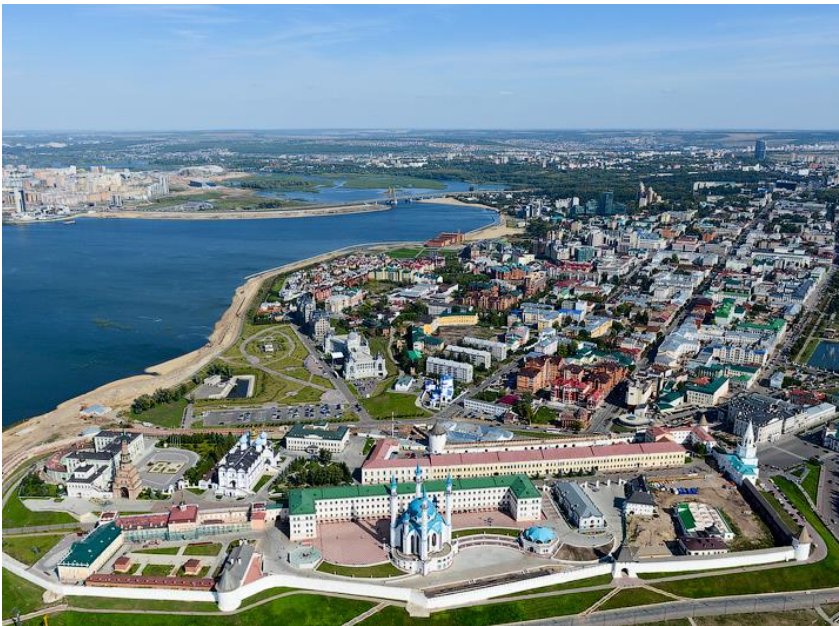


City of Kazan

1st in all-Russian investment attractiveness

(Ministry of Economic Development of the Russian Federation)

TOP-5 in Russia for business
("World Bank")





Kazan

- 6th largest city in the Russian Federation
- 1,206 thousand people
- “Sports capital of Russia” (2009)

Hosted:

- 2013 Summer Universiade
- 2014 World Fencing Championships
- 2015 FINA World Championships

Will host:

- 2018 FIFA World Cup
- 2019 Worldskills

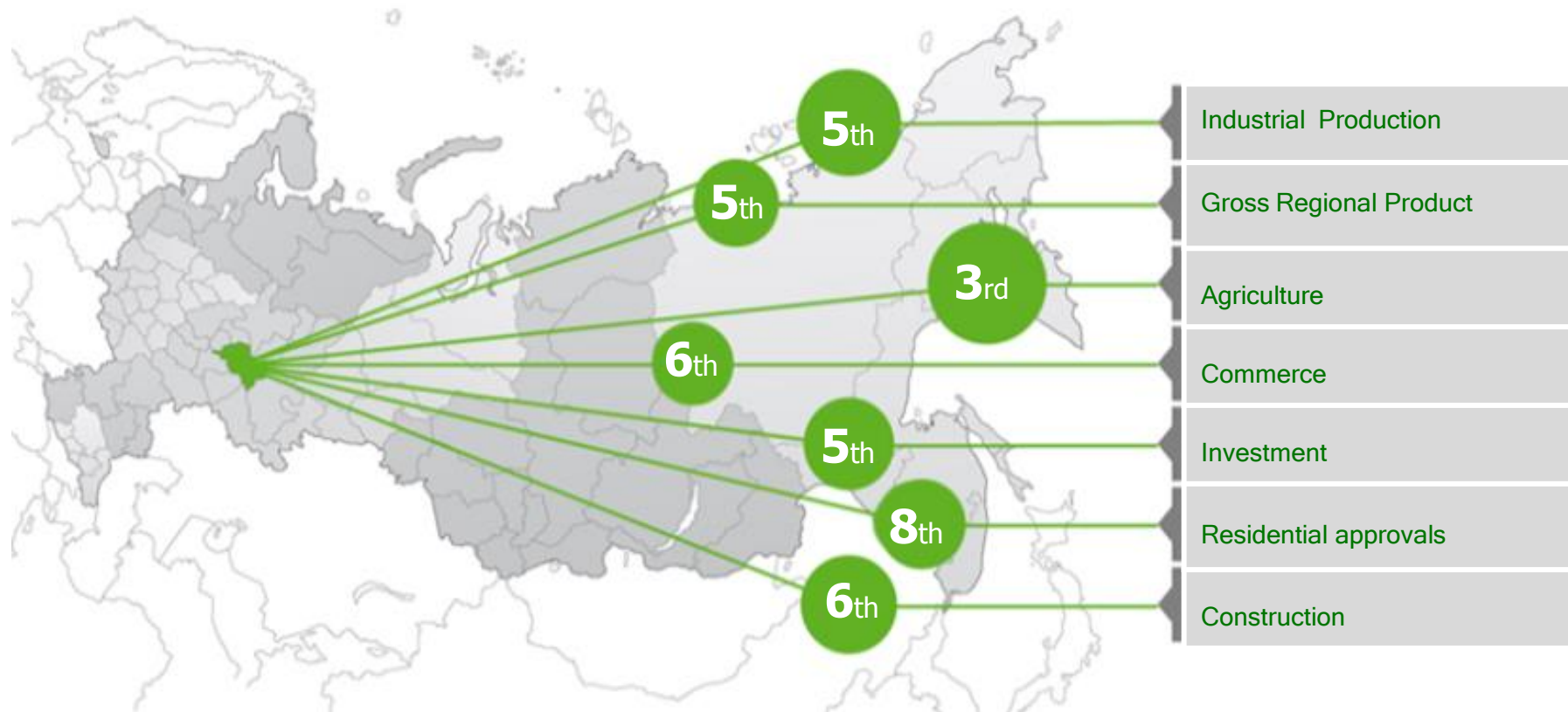


FIFA WORLD CUP
RUSSIA 2018





Contribution of Tatarstan to Russian Economy



Contribution of Tatarstan to Russian Economy: Automotive cluster

KAMAZ



Kamaz

Ford Sollers



Explorer

Products of Gorky Zelenodolsk Shipyard



High-Speed Passenger Ship A45-1 Project

Contribution of Tatarstan to Russian Economy: Gorbunov Kazan Aviation Factory



Tu - 214

Max. passenger seats: 210
Speed: 850 km/h
Flight range: 6,500 km
Flight altitude :up to 12,100 m
Crew: 3



Tu - 160

Ammunition: up to 45 tonnes
Speed: 2,230 km/h
Flight range: 14,600 km
Flight altitude: up to 12,000 m
Crew: 4



Tu - 22M3

Ammunition: up to 21 tonnes
Speed: 2,300 km/h
Flight range: 7,000 km
Flight altitude: up to 13,300 m
Crew: 4

Contribution of Tatarstan to Russian Economy: Kazan Helicopters



Ansats



MI-17



MI-38

Contribution of Tatarstan to Russian Economy: Higher Educational Institutions



Kazan Federal University



Tatarstan Academy of Sciences



Kazan National Research Technological University

- 100 R&D institutions and design bureaus
- 71 public and private universities and institutes
- Tatarstan Academy of Sciences
- 1 Federal and 2 National Research Universities
- 180,000 students
- 100 million rubles for “Algarysh” Scholarship Programme to support students, professors and professionals to study in Russia and abroad

Kazan National Research Technical University n.a. A.N.Tupolev-KAI (TU Kazan)



Key Dates

1932 founded as **Kazan Aviation Institute (KAI)**

1992 received the status of **State Technical University**

1973 **was named after Andrey N.Tupolev**, the prominent aircraft designer

2009 received the status of **National Research University**

2014 opened **German-Russian Institute of Advanced Technologies**



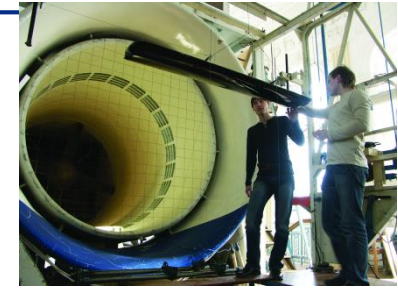
Administration Building downtown



A.N. Tupolev Monument

Key facts

- 15000 students, 80 000+ alumni
- 1000 Faculty and staff
- 6 Institutes, 1 faculty; 67 research centers and laboratories
- 41 BSc/Eng., 31 MSc, 45 PhD programs
- Main campus and 6 regional branches
- Engineering lyceum for gifted children
- 4 major Federal Research grants and numerous other research projects for 500 million rubles



Wind tunnel



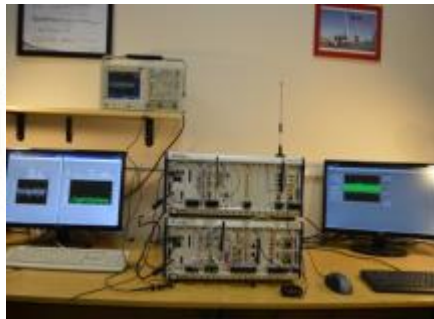
Leadership lectures



*Shipbuilding center,
opening ceremony*

Institutes

- Aviation, Land Vehicles and Energetics
- Automation and Electronic Instrument-making
- Physics and Mathematics Faculty
- Computer Technologies and Information Protection
- Radio-engineering and Telecommunications
- Economics, Management and Social Technologies
- German-Russian Institute of Advanced Technologies

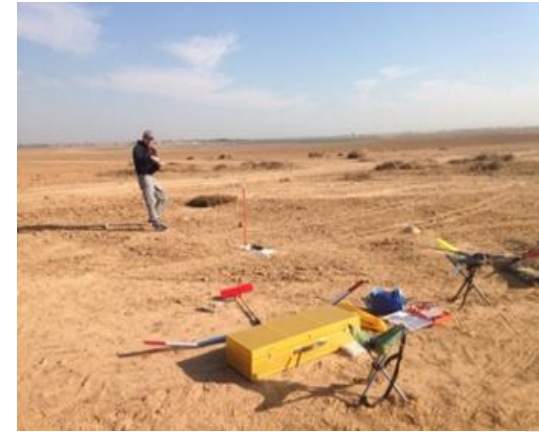


Aviation, Land Vehicles and Energetics

- 38 BSc and MSc programs
- 55 full professors and more than 120 associate professors

Famous Alumni:

- M.Simonov: chief designer of Sukhoy Development Design Office
- V.Lobachev: head of the Mission Control Center
- B.Gubanov: chief designer of the aerospace aircraft “Energy-Buran”



Testing of aircraft model



MFTP Laboratory



Laboratory #1

Automation and Electronic Instrument-making

- 13 BSc and MSc programs
- 24 Full professors and 50 Associate professors

Main research areas:

- 4- and 13-seat electrical aircrafts
- Methods and software of microprocessor relay protection
- Automation of power systems and industrial power supply



Relay protection and electric power system's automation laboratory



Electrical engineering and electronics laboratory



Electric drive laboratory

Physics and Mathematics Faculty

BSc and MSc programs:

- Technical Physics
- Applied Mathematics and Informatics
- Nanoengineering
- Laser technologies



Academic laboratories



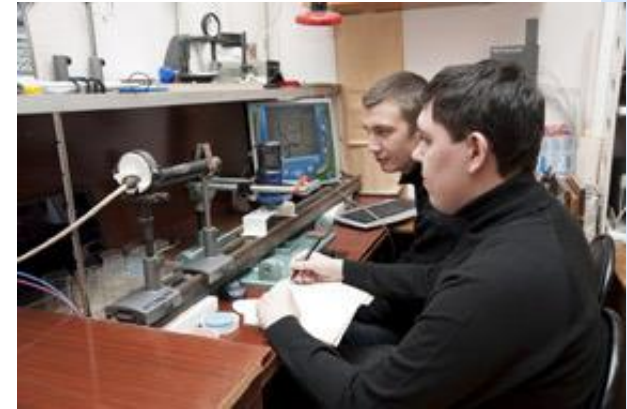
Research facilities

Computer Technologies and Information Protection

- 23 BSc and MSc programs
- 13 Full professors and 69+ Associate professors

Main research areas:

- Artificial intelligence methods in information protection systems
- Developing evaluation methodologies, risk analysis and management of information security of automated systems
- Computer polygraph systems
- Development of data mining systems



Laboratory of physical and chemical bases of micro- and nanotechnologies

*Computer Aided Design
Laboratory*



Radio-engineering and Telecommunications

- 9 BSc and MSc programs
- 28 Full professors , 80+ Associate professors

Main research areas:

- Potential interference immunity of non-Gaussian channels
- Optoelectronics and laser technology, fiber optics
- Theory of microwave devices and antenna systems
- Electronics and energy-saving technologies



Rhode&Schwarz laboratory of measurement systems



"Fiber-optic technology" center



Nanotechnology and nanomaterials center

Economics, Management and Social Technologies

- 23 BSc and MSc programs
- 200+ faculty, including full and associate professors
- Law clinic “Practice” whose goal is to allow citizens exercise their rights to receive free qualified legal aid



LEAN classroom

- 6 double degree MSc programs with German Universities
- Co-Directors from Germany and Russia, Russian and German professors
- Medium of instruction is English + basics of German
- Graduates are to receive 2 diplomas: **from TU Kazan and from the German partner university**
- German curriculum is taken as the basis



GRIAT: Unique features

- **3 academic semesters all Master's Programs are taught at TU Kazan, and 1 semester at the German partner university**
- **Each MSc thesis is co-supervised by German and Russian professors**
- **German flying faculty teach at least 2 courses a year at TU Kazan**



GRIAT: Current MSc programs

The GRIAT currently runs the following joint MSc programs with:

TU Ilmenau:

- Communications and Signal Processing
- Research in Computer and Systems Engineering
- Automotive Engineering



*Univ.-Prof. Dr. rer. nat. habil. Dr. h. c. Prof.
h. c. mult. **Peter Scharff**,
Kazan, September 2015*



*President, Prof. Dr.-Ing.
Jens Strackeljan
Kazan, September 2015*

Otto-von-Guericke University Magdeburg

- Electrical Engineering and Information Technology
- Chemical and Energy Engineering
- Systems Engineering and Engineering Cybernetics

MSc programs to be started in 2016

TU Braunschweig:

- Aerospace engineering
- Aircrafts

TU Darmstadt:

- Modern photonics

TU Kaiserslautern:

- Embedded computing Systems
- Quantum technologies
- Software engineering in embedded systems

U Saarland:

- Microelectronics
- Computer vision systems



*VP Wehn, Prof. Albert Gilmutdinov, TU-
Präsident Schmidt und VP Poetzsch-
Heffter (v.l.n.r.).
Kaiserslautern, October 2105*

Main Research Centres

- KAI-Laser
- KAI-Composite
- KAI-Nanotech
- KAI-Resource
- Fiber-Optic Technology
- Quick Prototyping and Technology of Direct Straight Manufacturing
- Radio-Electronics and Info-communications
- Quantum Center



Function (bench) tests of door hood modules

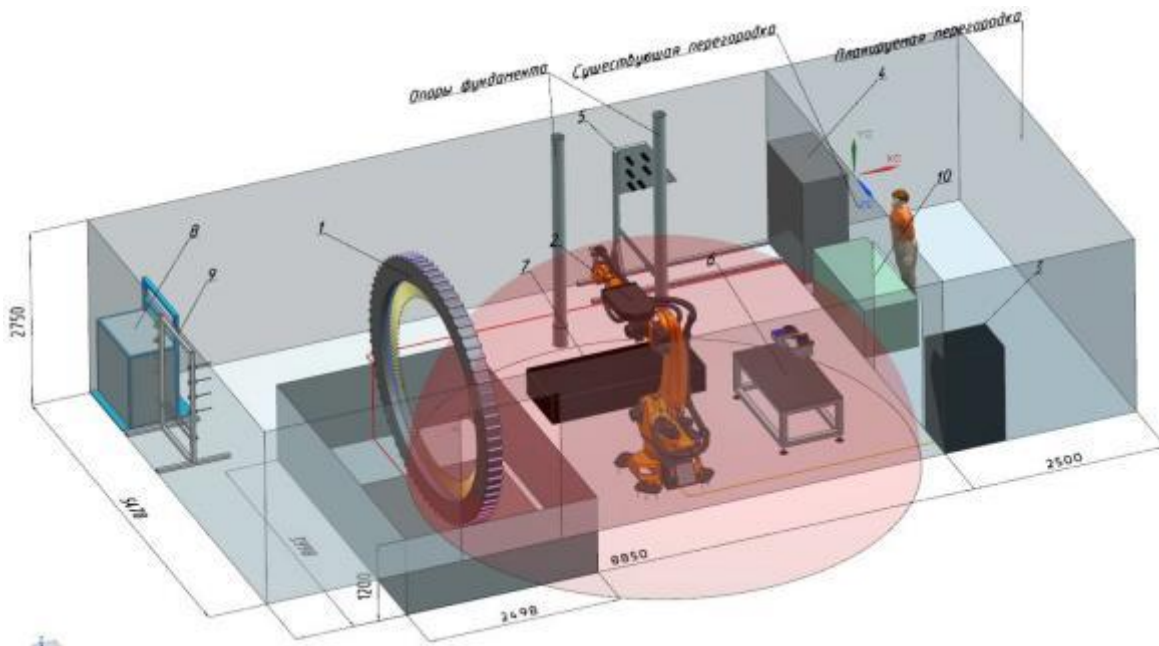
KAI-Laser Center

- Designing new technologies in mechanical engineering
- Engineering support of existing industrial facilities
- Incubator of new small and middle enterprises (SME)

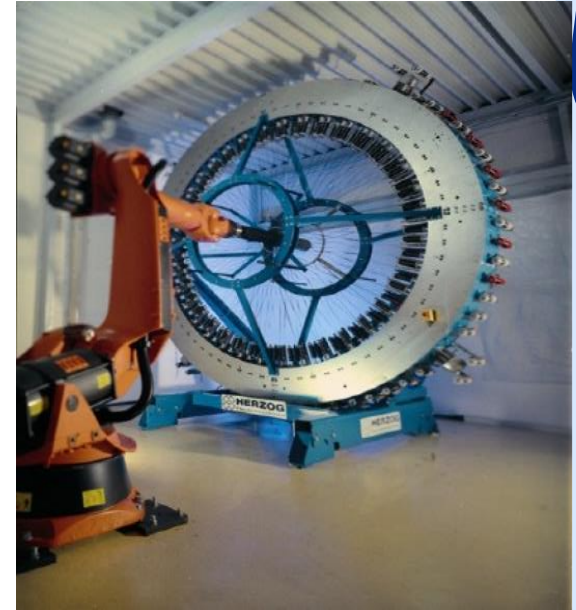


Dmitry Medvedev, Dmitry Livanov, Rustem Minnikhanov, Albert Gilmutdinov, 2014

Braider-Stitching Complex

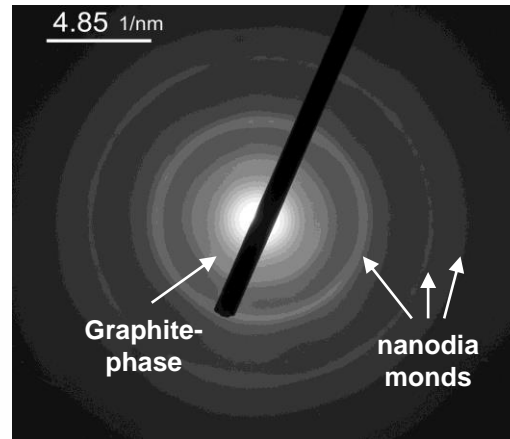
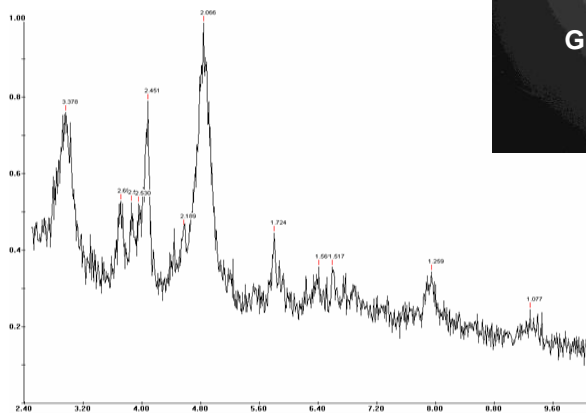


Cost: 50 Million rubles
Squared meters: 100



Centre for Diagnostic and Certification of Nanomaterials

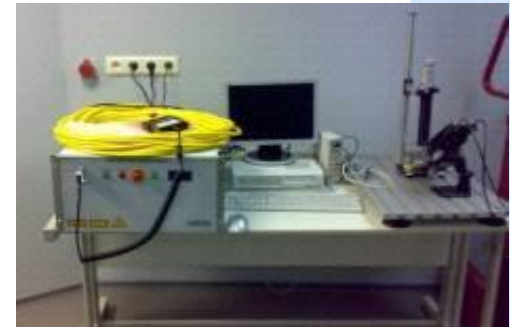
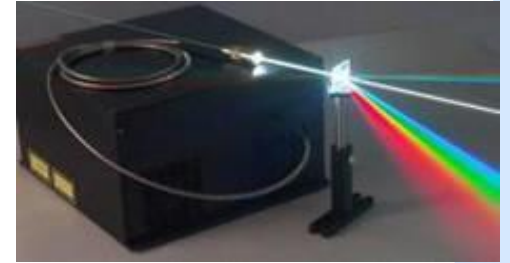
- Studying the phase composition of explosive nanodiamond samples



Fiber-Optic Technology Center

Design, development and implementation of:

- Fiber-optic telecommunications systems and components
- Fiber optic sensor systems, pressure sensors, temperature sensors;
- Vibration sensors to monitor temperature, pressure, movement, vibration
- Fiber lasers and boosters
- Electronic devices used in the creation of systems and devices in the field of fiber optics



Center of Quick Prototyping and Technology of Direct Straight Manufacturing

- Thickness of construction layer: 16 micron
- Accuracy: up to 0,1 mm
- Min thickness of prototype's wall: up to 0,6 mm
- Resolution of printing : up to 1600 dpi
- High speed for prototype constructing
- Compact, Safe, Easy to Maintain



3D Printer OBJET EDEN250

- Max Volume of Construction: 250 mm x 250 mm x 215 mm
- Rotation Velocity: up to 220 mm/sec
- Thickness of layer:: 20 100 μm
- Type of Laser : Yb-fiber laser, 200 Wt
- Scanning Velocity: 7.0 m/sec
- Variable Focus Diameter: 100-500 μm
- Power: up to 5.5 kWt

Radio-Electronics and Info-communications Center



Electronic systems of navigation and identification

Research and development of:

- Electronic, information and communication technologies, systems and complexes
- Theory directional and microwave radiating systems
- Satellite navigation and GIS technology
- Biomedical electronics
- Energy-efficient, energy-saving electronic systems

Center for Modern Technologies of Mechanical Processing

Studies and research in the field of applying integrated CAD/ CAM/ CAE/ PLM/ ERP Systems for Mechanical Processing



Design and Manufacturing of Small Aircrafts (R&D Center for Students)

Full design of a product, technological process and manufacturing of products

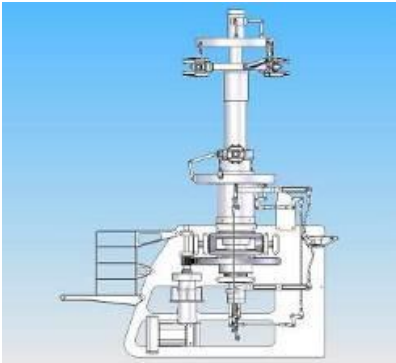
Polymer
composites



Bundled
software +
equipment



Manufacturing
of a product



Construction and Design of Small Aircrafts



*KAI-81 Superlight aircraft with
Pivoting wing
Patent (RU) N2277496*



KAI-002A Gyroplane



Small unmanned aerial vehicles

Main Research Laboratories

- Aerodynamics
- Robustness Testing
- Armour-Clad Thermoplastics
- Material Science, Welding and Structure-forming Technologies

*Robustness testing
laboratory*



Aerodynamics Laboratory



Wind Tunnel T-1K

Wind Tunnels Measure:

- integral and distributed aerodynamic characteristics
- local flow rate based on PIV-system
- surface pressure that is being implemented

Completed projects for:

- ASTC “Tupolev”
- Part of TU-204, Tu-334 design
- “KAMAZ”, “VAZ” automotive companies
- Construction of wind turbines



Wind Tunnel T-3K

Robustness Testing Laboratory

Tested products:

- Aircrafts
- Aircraft components
- Structural elements and materials

Certification:

- Helicopter equipment of JSC Kazan Helicopters
- 80% of tests for ANSAT helicopters: construction, units, and devices



Equipment for testing the characteristics of materials

Accredited by aviation register of interstate aviation committee

FOUNDRY TECHNOLOGIES

Determining thermo-physical properties of materials at high temperatures to:

- Design foundry equipment
- Development of foundry technologies and modeling of foundry processes.



Manufacturing high-porous cellular ceramic materials free from low-melting phase:

- Filtration refining of metallic melts
- Elimination of inclusions, degassing and uniform distribution of elements in the form of additives over the volume of melt



TU Kazan's Engineering Lyceum for gifted children

- Opened in October 2015
- Grades 7-11



*Remodeled building with new classrooms,
laboratories, sports complex and dormitories*



*Rustem Minnikhanov, Andrey Pominov,
Albert Gilmutdinov, 2015*

All-Russian Engineering Festival

Series of events to popularize engineering:

- Technological Festival
- Engineering lecture series
- Weeks of engineering in schools
- “Technological and creative troops”
- Interactive weeks of Open Universities
- Meetings with students’ parents and company directors
- Regional conference for creative engineering “Intelligence-2015”



*17 000 participants
42 companies*



Closing ceremony:
The Magdeburg
hemispheres experiment

Sports Facilities



Multifunctional Sports Complex "KAI-Olympus"



50-meter Swimming Pool



Indoor Playfield



Outdoor Playfield

New building of TU Kazan



E-Learning

Unified Educational Space of the University

Blackboard

Изменение размера шрифта | Настройка высокой контрастности

Доступные языки:
[English \(United States\)](#) | [Pro-Ed English \(United States\)](#) | [Русский \(Россия\)](#)

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Введите учетные данные и нажмите кнопку Войти ниже.

Имя пользователя:

Пароль:

Войти

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Blackboard learn+

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Сведения о доступности | Сведения об установке



Web-based Teaching and Learning Technologies



Analytics and Reporting



Synchronous Learning: Classroom and Cooperation



Mobile Access and Communication