

Uděl si

WHAT'S ON AT BUT

21. 09. 2009 / 1989 - 2009



VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
110 1899 - 2009
BRNO UNIVERSITY OF TECHNOLOGY

SPECIAL ISSUE SPECIAL ISSUE SPECIAL ISSUE SPECIAL ISSUE SPECIAL ISSUE SPECIAL ISSUE



03	TIME SCHEDULE OF BUT 110TH ANNIVERSARY EVENTS
04	HISTORICAL BACKGROUND OF THE FOUNDATION OF BUT
05	CHAPTERS FROM THE HISTORY
13	HONORARY DOCTORATES CONFERRED
16	BUT GOLD MEDALS
17	BUT HAS BEEN AWARDED THE PRESTIGIOUS ECTS LABEL BY THE EUROPEAN COMMISSION
18	RESEARCH AND DEVELOPMENT AT BUT
27	CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY CEITEC
30	FROM THE HISTORY OF CELEBRATIONS
33	AWARDS TO THE BEST STUDENTS
34	BUT'S 100,000TH GRADUATE

BUT News

BUT monthly, edited by Brno University of Technology, ID 00216305, VUTIUM Press. Special 2009 issue on 10th September 2009.
 Editor-in-Chief: PhDr. Jiřka Vanýsková, tel.: 541 145 503, e-mail: vanyskova@ro.vutbr.cz;
 Editor: Mgr. Igor Maukř, tel.: 541 145 345, e-mail: mauks@ro.vutbr.cz.
 Editorial Board: prof. Ing. Jaroslav Fiala, CSc. (vice-rector), prof. Ing. arch. Alois Nový, CSc. (vice-rector),
 doc. RNDr. Miloslav řvec, CSc. (vice-rector), doc. Ing. Eva Münsterová, CSc. (BUT FME),
 PhDr. Karel Blařek (Director, VUTIUM Press),
 Bc. Tomáš Krejbich (SKAS), PhDr. Jiřka Vanýsková (editor-in-chief).
 Graphic Design: Kristýna Greplová (BUT FFA). Typesetting: Studio Arx, s. r. o.
 Mailing Address: VUT v Brně, Antonínská 1, 601 90 Brno,
 fax 541 145 348, <http://www.vutbr.cz>. Printed by: Helbich, a. s., Brno.



TIME SCHEDULE OF BUT 110TH ANNIVERSARY EVENTS

A number of events have been planned to commemorate the BUT 110th anniversary.



A **BUT 2009 Calendar** was issued already in autumn last year. The **BUT Great Ball** taking place in the Besední dům in Brno on 15th January was this year's first event of the celebrations. European American Alliance As a Challenge in the Time of a Global Economic Crisis was the title of a lecture given by Professor Jan Švejnar at the Faculty of Business and Management on 24th April. On 13th May, **Chapters from the History of Brno University of Technology**, a book written by doc. PhDr. Jiří Pernes, Ph.D., was presented at the BUT Centre. Describing the historical development of this university, it was also exhibited by VUTIUM Press at the **Prague Book World 2009** fair. A **Sports Day** for BUT students and staff took place on the sports ground of the BUT Pod Palackého vrchem campus on 13th May. A new **VUT 001 Marabu pilotless aircraft** was for the first time introduced to the journalists and a wider public at the Institute of Aerospace Engineering of the Faculty of Mechanical Engineering on 21st May. **Men of business - successful BUT graduates** - presented themselves to the audience at the Faculty of Business and Management on 21st May while on 18th June, **women of business - successful BUT graduates** did the same. **24th Summer Conference on Topology and Its Applications** was held at the BUT Faculty of Electrical Engineering and Communication from 14th to 17th July 2009. The Faculty of Business and Management organized an **Improving Engineering Education? Europe and Canada, let's do it together!** event from 28th August to 5th September 2009. A **CSSim 2009 – EUROSIM/CSSS international conference** was held at the faculty of Information Technology from 7th to 10th September 2009.

EVENTS UNDER PREPARATION

BUT Day

Sunday afternoon, 20th September 2009

First, opening day of the celebrations

Invited guests will be welcomed and introduced by the BUT rector, a party follows with snacks and chamber music and a small organ concert in the evening

Monday 21st September 2009

Second, main day of the celebrations – Festive BUT Gathering

Taking place at the FIT campus at Božetěchova 2

- opening at 10 a.m.
- speech by the rector
- speeches by invited guests
- honorary doctorates conferred upon persons of world renown
- BUT Gold Medals and other awards given
- musical wishes
- reception

Special performance of a World of Angels musical for the participants in the celebrations will take place at the Brno Municipal Theatre.

History, Present, and Future of Innovation - An exhibition on cooperation between BUT and industries, at BUT Centre, Antonínská 1, from 20th to 25th September 2009

Robotour 2009 - a robotics day in the Lužánky park on 26th September 2009

2009 Conference on Testing and Quality in Civil Engineering - BUT Faculty of Civil Engineering at Veveří 95 on 7th October 2009

Central European Platform Brno 2009 conference - a meeting of the section representatives of Erasmus Student Network (ESN) held by the International Student Clubs at BUT, Mendel University in Brno and Masaryk University in Brno - from 5th to 18th October 2009

A Modern Manufacturing Technologies for 21st Century held on the occasion of the BUT 110th anniversary - BUT Faculty of Mechanical Engineering, Lecture Room Q - 15th October 2009

Special academic gathering - BUT Centre - 19th November 2009

At this gathering, awards will be given to distinguished BUT academics.





HISTORICAL BACKGROUND OF THE FOUNDATION OF BUT

Doc. PhDr. Jiří Pernes, Ph.D.

Brno is not only historically the capital of Moravia; it has always been one of those centres that, by their importance, transcend the territory referred to as the Czech lands. It was an important industrial centre and, at one time, it was even called „the Austrian Manchester“. It was a centre of education, in which a Moravian Museum was built in 1817 – one of the first museums of the Hapsburg monarchy. It was a centre of research where Johann Gregor Mendel lived and a centre of music where Leoš Janáček spent long years composing his works. For centuries, people speaking Czech and German, Christians and Jews, lived here next to each other. Their cultures were both mingling and conflicting with these encounters and conflicts enriching the entire town and its inhabitants. No wonder that the technical institute that was established in Brno in 1849 and later became a university offered classes in both languages to sons of both ethnics. On the other hand, one cannot overlook the fact that, this coexistence also included elements of self-destruction. As the nationalism surged up, it swept away national tolerance replacing it with hatred. This had its effects also on the life of the technical institute where German had come to prevail. Its professional standard, however, was maintained bringing leading experts to Brno from all parts of the world. Born in Mürzschlag, Austria, Victor Kaplan, may be taken for a famous example. He found a new home in Brno thus linking it with his most important technical discovery.

One of the manifestations of the emancipation of Czech society in Moravia was the founding of a Czech Technical Uni-

versity in Brno in the year 1899. Being the first Czech university in Moravia, it gave its teachers and students a feeling of responsibility. Although in the first year it only provided courses in civil engineering, the offer was soon extended by other areas of engineering, science, and arts and, from the very beginning, it did not conceal its ambition to replace the missing Czech university in Moravia. It became and has remained until today an important centre of education and science enriching the life of Czech society. The Czech Technical University in Brno has seen its spectacular rise, has educated thousands of graduates and given the world crowds of experts each making his or her contribution to a better quality of human life. Its position was not even weakened by further universities coming into existence in the free Czechoslovakian state after 1918 and later after 1945. The periods of loss of freedom and spiritual oppression repeatedly occurring in the modern history of this country have also left their mark on the history of the Czech technical university in Brno. Facing adversity in receiving several near fatal blows, every time it could overcome the crisis to come out strengthened.

The change of the political and social climate in 1989 created conditions extremely favourable to a further development of Brno University of Technology, which is a worthy successor of the Czech Technical University of 1899 and which also carries on the tradition of the technical institute established in 1849. Thanks to the exceptional men in its management, it is today a university not only for Moravia but also for Europe. It is a leader among

universities in Brno and in the entire Czech Republic and is also seen as an essential institution of European higher education with its teachers, but also graduates, and even students presenting their achievements successfully at prestigious universities in the U.S.A., Canada, and other advanced countries.

In this year, we are celebrating three anniversaries: in 1849 a Czech-German technical institute was established in Brno, in 1899 the Czech Technical University of Brno was founded, and in 1989 the regime symbolizing oppression and stagnation was overthrown. They can be seen as providing a framework for the existence and achievements of Brno University of Technology and representing milestones in its history and in the history of the city of Brno. They can, no doubt, be also taken for a starting point of further coexistence and mutual enrichment to lead Brno University of Technology to further achievements and to help our city resume a worthy position in a united Europe.



CHAPTERS FROM THE HISTORY

To mark the 110th anniversary of Brno University of Technology, VUTIUM Press has published *Chapters from the History of Brno University of Technology 1899 - 2009*, a book by the renowned historian doc. PhDr. Jiří Pernes, Ph.D. Courtesy of the author we have chosen his views of the history of the origin and historical milestones of Brno University of Technology.



Dr. Karel Zahradník was the first rector

MODEST ORIGINS

It was only after much deliberation that Franz Joseph I, Emperor of Austria and King of Hungary, signed an edict on 19th September 1899 in which he ordered a Czech institute of higher technical education to be established in the Moravian city of Brno. As one of the crown lands, Moravia needed such a university-type school. But this was not the primary motive that had led the monarch to sign the document – his decision was appar-

ently a political one since a technical university had already existed in Brno. Founded in 1849, it was originally a bilingual Czech German educational institute, but later had come to acquire a purely German character. The Czech society, already much stronger at that time, was no longer willing to tolerate such a situation. Calls for the establishment of a second university became louder: the first university, established in 1882, being in Prague, a second one was imagined in Moravia by the Czech patriots. It was to become an instrument of education for the national community, but also a weapon to be used against the German nationalism. Therefore, the ensuing political struggle for a second Czech university was very fierce, often resulting in street clashes. Although the legitimacy of the Czech claim was beyond any doubt, none of the Austrian governments of that time would accept it for fear of antagonizing the German nationalists. Finally, a government headed by count František Antonín Thun came up with a “Solomon’s solution”: do not give the Czechs a university in Moravia (to give no reason for protests to the German nationalists), but submit a proposal to the monarch to found a Czech institute of higher technical education to show Vienna’s good will

to the disgruntled Czechs. All this was carried through and, owing to Franz Joseph’s grasp of the political reality, Moravia had its first technical university. Today’s Brno University of Technology feels to be its descendant carrying on its traditions.

Those one hundred and ten years since the founding of a Czech institute of higher technical education have seen moments of glory but also critical situations in which the school’s very existence was at stake. While the Czech lands were still part of Austria, the school went steadily upwards although starting from scratch. When signing the edict, the monarch had also appointed the university’s first four teachers with dr. Karel Zahradník, then a professor at the University of Zagreb, as rector. The new teachers arrived in Brno on 2nd October 1899. The conditions for their work were by no means sufficient. The new educational institute had found a provisional shelter in several rooms of a house in Augustinská Street where Vesna, a Czech women’s educational and industrial institute, carried on its activities. Despite such inconveniences, the school became operational immediately. By the last day of October 1899, 47 students had enrolled, including 33 full-time and 14 part-time ones. In the course of the first academic year, the



Franz Joseph I, Emperor of Austria.

number of students had even risen to 55 – all of them studying civil engineering. No one was pleased by the limited curricula, cramped conditions, missing professors and a low number of students. Therefore, the school management was trying to put things right, being successful in the end. Approval had been obtained to introduce new study fields and have new professors appointed so that more students could be admitted.

WITH THE KAISER'S NAME IN ITS TITLE

In the autumn of 1907, work on a new building began; a ceremony putting it into operation took place on 25th June 1911. The new school, built in a place called "At the Beautiful Outlook" already beyond the then city limits at the end of Veveří Street, was beautiful, practical, and comfortable and, even today, Brno University of Technology takes great pride in it. At a time when

the construction was nearing its end, the Brno teachers sent a petition to the monarch pleading for the school bearing his name. The emperor having given his gracious consent, from 1st March 1911 on, the educational institute with a short tradition but the greater ambitions could pride itself with the name "The Imperial and Royal Franz Joseph Technical University in Brno" and, as such, carried on its activities until the very end of the monarchy in 1918. However, not even the Emperor's favour bestowed upon the Czech technical school in such an obvious way helped to make it a full-fledged university offering full engineering education. In the year in which World War One began, its students were only offered courses in:

- I. civil engineering
- II. A. mechanical engineering, B. electrical engineering
- III. cultural engineering (water structures, reclamation)
- IV. chemical engineering

WORLD WAR ONE

The Sarajevo assassination of Archduke Franz Ferdinand d' Este, successor to the Hapsburg throne and his wife Sophie on 28th June 1914 and the war that followed a month later marked the beginning of big events. The world as known by generations of the subjects of Emperor Franz Joseph I had come to an end. After the four years of World War One, everything was different. At first though, hardly anybody realised the epoch-making significance of the events they were witnessing.

The war of course also took its toll on the Czech technical university in Brno. A number of teachers got drafted, out of the 177 members of auxiliary staff, 64 men had to put on a uniform. Not even students were exempt from the drafting, which had of course decimated their ranks. The miserable war situation also deteriorated the quality and intensity of teaching. On top of that, the university was further crushed by another decision of the Austrian government - the build-



During World War One, the building of the Czech technical university was converted into a military hospital.



During his trip to Brno in the autumn of 1921, president Tomáš G. Masaryk also visited the Czech technical university.

ing of the Czech technical university as well as other school buildings were to be transformed into a military hospital, at first for 700, later even for 1000 wounded soldiers.

IN AN INDEPENDENT STATE (1918–1938)

In the free Czechoslovakia, Brno as the capital of Moravia, became an important university centre and its Czech technical university contributed to the foundation and initial development of Masaryk University. During the twenty years of the first Czechoslovakian republic the Brno technical university was flourishing: immediately in 1919, an architecture department, unsuccessfully demanded over the preceding decades, was established as its part. The finishing of a separate pavilion of chemistry and technology initiated the development of chemistry at this university. When president Masaryk visited Brno in the autumn of 1921, "he was warmly greeted by the Czech population from Brno and its surroundings and from the entire Moravia".

During his trip on 17th September, he also stopped at the Czech Technical University of Brno. In the years 1918-1938, the university definitely came to be recognized as an esteemed institution of higher education and, as such, attracted increasing numbers of students: the most students - 1,657 - enrolled in the academic year 1931/1932. In 1937 the school was renamed to "Dr Edvard Beneš Czech Technical University".

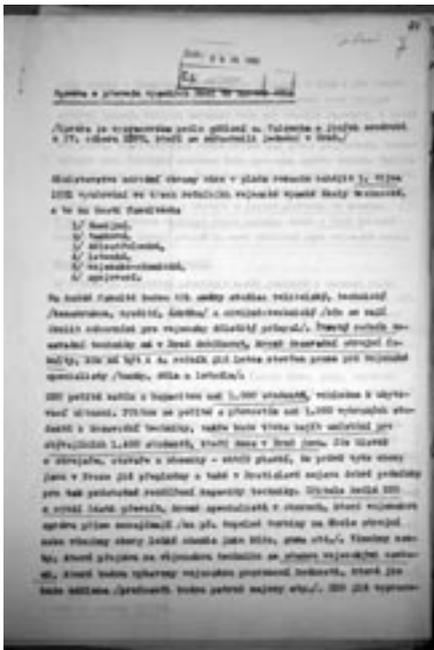
YEARS OF GERMAN OPPRESSION (1939–1945)

The existence of Czechoslovakia was ended by German occupation. After the occupation, the teachers of the Czech technical university first met on 22nd March 1939. At this meeting, they were informed by rector Kallanauer that a delegation of teachers from the Brno German technical university led by Werner Schoklitsch, a fervent Nazi, had come to his office asking him "to ensure regular operation of the university". Life at the university went on as usual, teachers gave lectures and examined, students

studied, drew, and conducted experiments. The Dr Edvard Beneš Czech Technical University in Brno was of course among the universities closed by the Nazis. Its students and teachers became victims of the Nazi persecution. All teaching stopped and most of the departments and institutes were immediately closed after 17th November 1939 although some units, deemed important for the Third Reich's economy by the occupation regime, remained in operation. Most of the buildings in Veveří Street had been commandeered by the German army to serve as barracks, some of the rooms on the ground floor housing the local secretariat of the Nazi party.

DISAPPOINTED HOPES (1945–1948)

As early as April 1945, students returned to their university repairing with their own hands its buildings damaged as war swept through the city: on 20th December 1945, the lectures of the academic year 1945/1946 could begin. The Dr Edvard Beneš Czech Technical University in Brno was re-established in its pre-war form with departments of civil engineering, surveying, mechanical and electrical engineering, chemical engineering, architecture, and building structures. It could move back into its building from 1911 in Veveří Street, but was also given buildings of the German technical university in Joštova Street along with a building in Barvičova Street used by the Germans as a military technical research institute. The German technical university, from way back a bastion of Brno Germanism and a platform of the Nazi ideology in the 1930's, was abolished by a government decree with its property brought under the management of the Czech technical university.



Minutes of a meeting at which it was decided to abolish the Technical University of Dr. Edvard Beneš changing it into a Military Academy of Antonín Zápotocký.

However, by late 1947 and early 1948, the political development catapulting the Communist Party to the head of the domestic political scene right in 1945, had already borne its fruit. Success of the communists in the elections of 1946 meant further strengthening of their positions in "national committees", bodies that administered public life in the Czechoslovak villages and towns.

ON THE BRINK OF ABOLISHMENT (1950–1951)

The communist regime installed in Czechoslovakia by a coup d'état in February 1948, brought the Brno technical university close to its abolishment. The orientation of the Soviet bloc to an all-out conflict with the West resulted in rapid militarization. In such a situation, it was clear that the importance of technically oriented military schools would rise immensely. Therefore, the communist

leaders decided to use the buildings and the teaching capacity of Dr Edvard Beneš Czech Technical University in Brno and, on 4th July 1951, adopted a resolution transforming it to a Military Technical Academy.

Thus the Czech technical university in Brno had arrived on the brink of disaster. It was very close to being abolished. Fortunately, there was still a problem of the fourth-year students who were to graduate soon. No one actually knew what was to become of them. Neither was it clear what to do with the study fields in which the Military Technical Academy was not interested. These were the reasons behind the decision of 2nd October 1951 to transform what had remained of Dr Edvard Beneš Czech Technical University into a University of Civil Engineering with faculties of engineering structures and building structures and architecture to which, somewhat illogically, a department of foundry was

attached even if it was of no interest to the military. The new institution of higher education became the successor of the oldest Czech university in Moravia and an heir of its traditions, which it has carried on until today.

NEW BEGIN (1956–1957), TURBULENT YEARS 1967–1969, NORMALISATION

The political thaw after Stalin's death also had positive effects on the existence and activities of the Brno technical university: on 16th April 1956, the Central Committee of the Czechoslovak communist party adopted a resolution "on the improvement and further development of universities" and, in this connection, decided to reinstall the former technical university under a new name - Brno University of Technology. The existing University of Civil Engineering with a new faculty of power engineering



On 21st August 1968, the soviet-led invasion and occupation shattered all the hopes of reconciling socialism and democracy.



Students were the driving force of the events of November 1989.

added to its existing faculties of engineering structures and building structures and architecture was of course used as a basis for this new institution. Teaching at the reorganised university began on 10th September 1956 with 1,783 students enrolled. In 1959, the faculty of power engineering was split to form two separate faculties of electrical engineering and mechanical engineering. A year later, the faculties of engineering structures and building structures and architecture were, in turn, amalgamated into a single faculty of civil engineering and it was not until 1976 that the faculty of architecture was reinstated as an independent teaching and research centre within Brno University of Technology. Finally, in 1966, a detached department of the Slovak Technical University in Zlín (then Gottwaldov) educating engineers for leather and rubber industries also became part of the Brno university. In 1969 it became an independent faculty of technology.

The new conditions had a positive effect on the results of the research conducted at the university, the courses offered, and the student numbers. The period of political crisis in the late 1960s and early 1970s brought changes both to students and teachers. Thanks to the freedom of speech granted at that time, they could voice ideas unheard of during those long previous twenty years of communist regime. When the reform movement striving for certain democratization of the existing regime was defeated, reprisals and purges followed. A number of teachers and students who had taken bold stands in the years 1968 and 1969 were forced to leave for political reasons. Putting people's ideological and political orientation above their professional qualities was a common practice in 1970s and 1980s casting a shadow on the entire society with Brno University of Technology being no exception. But despite this, it had achieved a remarkable standard and made a major contribution to the economic development of the country.

LOOKING FOR NEW WAYS (1989 – 2009)

The communist regime stifled free initiative of individuals and society as such. The destruction of the totalitarian regime in the years 1989 and 1990 opened the doors for Brno University of Technology to amazing transformation into a modern institution of higher education that could be compared to any advanced university of the same type anywhere in the world. This was made possible by the return of academic freedoms to the Czech universities as well as by the extensive self-governance vested in them by law. Scientific and administrative bodies - first of all academic senates and managerial boards - which are staffed based on the decision

of university teachers and students make decisions setting the basic trends of their further development. Thanks to good cooperation between the self-governing bodies, the rector, the managerial board, and the bursar, Brno University of Technology has experienced a dynamic upswing in the last two decades. As compared to 1990, the university's educational and scientific spectrum is much broader, which, among others, is proved by the number of new faculties.

DEVELOPMENT OF FACULTIES

Next to the faculties of civil, mechanical, and electrical engineering as well as those of architecture and technology with long tradition, new faculties were also established within Brno University of Technology. In the autumn of 1992, after a long lapse, the faculty of chemistry, one of the university's oldest parts was re-established. At the same time, a faculty of business and management came into being and, later on 1st January 1993, a faculty of fine arts was opened. Finally, in 1995, a faculty of management and economics was established in Zlín.

But also faculties as such were looking for new images and orientations. In 1993 the faculty of electrical engineering was reorganized to become a faculty of electrical engineering and computer science, which, in turn, was transformed into a faculty of electrical engineering and communication in 2001. The reason was that, on 1st January 2002, its former institute of computer science and computing formed an entirely new faculty of information technologies. On the other hand, the Zlín faculties of technology and management and economics ceased to be part of Brno University of Technology on 1st January 2001 to join the newly founded Tomas Bata Univer-



sity. As a result of these changes, Brno University of Technology has now eight faculties, which offer a broad spectrum of engineering programmes as well as studies in related areas of science, economics and even fine arts. This makes it a technical university with the broadest study profile, in the Czech Republic.

EDUCATION

By law, Brno University of Technology is a public higher-education institution offering Bachelor's degree (three to four years), Master's degree (1.5 to five years), and Doctor's degree (three to five years) programmes.

At all BUT faculties an ECTS-compatible credit system has been used since 1999, which is one of the criteria to be met for the university to participate in the ERASMUS student mobility programme. To be able to make a full use of this programme, the university offers a catalogue of courses including detailed information on their content, form of teaching, and exam types. Being part of the BUT information system, it can be accessed on the Internet. The degree programmes offered are really diversified: in the year 2001 there were 38 programmes accredited at BUT while in 2002 this number rose to 42 and, in 2003, 48 programmes were offered structured into 136 specialisations. In 2008 there were 77 full-time and part-time degree programmes offered at BUT of which 66 were active with students enrolled. This option is being used by more and more students. While in 1998, there were 14,920 persons studying at BUT, this number rose to 15,981 in 1999 and in 2000 even to 16,579. The year 2001 saw the split of both Zlin faculties from BUT bringing this number down to 15,090, but the 2002 number was 15,740 and in 2003

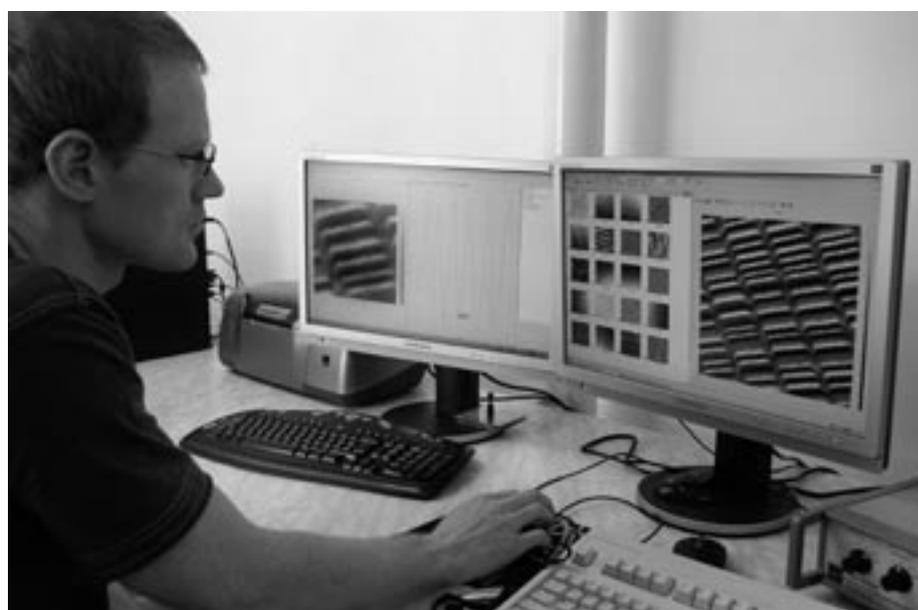
there were again 17,561 students. In the academic year 2008/2009 there were 22,774 students studying at BUT. Not all the students finish their studies, as is natural for any university; the number of first-year dropouts is usually used as an indicator of this fact. Traditionally, it is the highest in engineering fields due to the high demands of the study.

In addition to accredited programmes, BUT also offers lifelong learning courses. For this purpose, an Institute of Lifelong Learning (former centre of education and consulting) has been established offering several-day to two-semester courses both for experts and laymen and organizing training courses for BUT staff. Part of the Institute of Lifelong Learning is also the University of the Third Age (U3A) that offers a number of very interesting courses mostly to the senior citizens. Since 2002, BUT also hosts the Association of Universities of the Third Age in the Czech Republic.

Also at individual BUT faculties, a number of lifelong courses are available offering internationally recognised certificates.

RESEARCH

Brno University of Technology is gaining importance as a research centre participating in important projects. Research is funded mostly from the institutional resources of the Ministry of Education, Youth, and Sports. Targeted funds used to subsidize grant projects provided either by the Grant Agency of the Czech Republic, the Grant Agency of the Academy of Sciences of the Czech Republic, and grant agencies of some competent ministries provide another financial resource for research and scientific work at Brno University of Technology. The easy applicability of their research results is of considerable advantage for the university research teams - as opposed to those of other research institutions - since they can draw on resources from contracts with both domestic and foreign companies to finance the contracted applied research. As very positive may also be viewed the fact that more and more students get engaged in research projects.





In 2008, BUT mostly concentrated on the EU operational programmes particularly on the Education for Competitiveness and Research and Development for Innovation operative programmes. A great success in this year was the putting on a short list of a CEITEC project submitted by BUT together with Masaryk University and other Brno universities and institutes of the Academy of Sciences of the Czech Republic. This shortlist was then submitted to the Ministry of Education, Youth, and Sports during the negotiations of the Research and Development for Innovations operative programmes and subsequently approved by the R&D Council.

In international scientific and research cooperation, the number of 2008 projects rose with the total funding achieving 59 million CZK as compared to the 45 million CZK in 2007. In applied research funded from contracts with domestic and foreign companies, the 2008 funding rose to 75 million CZK from 69 million CZK in 2007.

One of BUT's major strategic objectives is the support for transfer of research and development knowledge to the industrial sphere. This activity is coordinated by the Technology Transfer Unit established in 2002 as one of the first at Czech universities. Thanks to its support, 13 invention patent and 13 utility model applications were submitted in 2008, which is twice as many as in the previous year.

Among the main deliverables of the research projects are publications in the form of monographs, papers in scientific journals and in conference proceedings, patents, utility models, prototypes, verified technologies, and authorised software. They constantly grow in number, which testifies to the efficiency of the research conducted at BUT.



A renewed Faculty of Chemistry moved into the reconstructed building of a former lens-producing factory in Purkyňova Street.

INTERNATIONALISATION

Internationalisation is another of BUT's strategic objectives. More than eighty cooperation agreements have been signed between BUT and universities and scientific institutions abroad. Since the academic year 1998/1999, international relations of BUT teachers and students have been maintained mostly through the LPP/ERASMUS project, which makes trips and stays abroad easier. Thanks to this and other projects, the university can help teachers and students remove language barriers. A mobility fund was established in 2002 for funding stays abroad of students.

In 2006 BUT received a Diploma Supplement Label. In 2009, BUT was given a confirmation of this label and, moreover, as one of two Czech universities, obtained the prestigious ECTS Label certificate. These certificates attest the correct implementation of a credit system in all Bachelor's and Master's degree

programmes to reach the objectives of the Bologna process.

UNIVERSITY DEVELOPMENT

The university development goes on systematically following its Mission Statement. It concerns the teaching, research, artistic, and other activities to be carried out at BUT. All the key decisions adopted by BUT are based on this document. Among such decisions is also a project of managing university premises. BUT was successful in overcoming the critical lack of operational space, a problem the university has been facing for decades. Now each of its faculty has its own buildings that are both sufficient and stately. That the university has been given back its beautiful historic building in Veverí Street, which after long and demanding reconstruction houses the Faculty of Civil Engineering, can be seen as extraordinary success. For the needs of the Faculty of Chemistry, the modern building of a former lens manufacturer



ON THE THRESHOLD OF THE THIRD MILLENNIUM

For the last 110 years, Brno University of Technology has followed a dramatic and twisting road. From what was said, it is clear that it reached the highlights of its performance and achievements and met with exceptional success in periods respecting the human rights and freedoms, in times of democracy, openness and equal opportunities for all. No matter whether this was under the reign of His Apostolic Magnificence Kaiser Franz Joseph I and his successor Karl, in the democratic Czechoslovak state between the two world wars or at present, after the downfall of the communist regime. Looking back over the last hundred years, it is clear that the development after 1989 was exceptionally favourable for BUT. Despite all the weaknesses and shortcomings of the reborn democracy, the climate in Czechoslovakia and, later, in the Czech Republic was suitable for a dynamic and multifaceted development of the university. The freedom of option has opened the doors for competent, enterprising, and generally respected

persons to stand at its head. It is through their efforts that BUT has changed into a modern school trying to continue its good traditions and is gradually becoming an internationally respected institution with advanced research which is closely connected with teaching and a wide spectrum of cooperation with industries and public institutions on common projects.

From its modest beginnings 110 years ago, thanks to the continuing and unflinching efforts of several generations of its teachers, students and staff, BUT has come to be an institution of higher education respected not only at home in the Czech Republic but also on a European and international scale. This has repeatedly been proved by the World University Rankings published by The Times Higher Education Supplement according to which BUT ranks among the three percent of the world's top universities out of a total of eighteen thousand.

Let us wish that the successful development of Brno University of Technology would continue for its graduates to be proud that they have been educated at this university.



In their leisure, BUT students and teachers can use a multipurpose sports hall built at the BUT campus in Královo Pole.

in Královo Pole was reconstructed while the Faculty of Electrical Engineering and Communication and the Faculty of Business and Management now reside in a new integrated building at the Pod Palackého vrchem campus. In 1999, after long and ingenious reconstruction, a BUT Centre was opened in Antonínská Street in a building formerly serving as a residential school for catholic priests. The new Faculty of Information Technology was given the building of a former Cartesian monastery in Královo Pole after costly reconstruction and with modern additions. Last year, the construction of new buildings for the Faculty of Electrical Engineering and Communication was started at the Pod Palackého vrchem campus.

A modern, multipurpose sports hall finished in 2007 as well as a reconstructed sports ground with Tartan tracks at the Pod Palackého vrchem campus are available to the university students and staff.



Faculty of Information Technology is situated on the historic premises of a former Cartesian monastery in Královo Pole.

HONORARY DOCTORATES CONFERRED

In the spirit of the university tradition, the BUT Scientific Board will confirm honorary doctorates on three scientists of world renown at its special meeting on the occasion of the BUT 110th anniversary. In the Great Hall of the BUT Faculty of Information Technology on 21st September 2009, Ing. Jaroslav Doležal, CSc., doc. RNDr. Petr Lukáš, CSc., and Professor Jan Švejnar will receive doctor honoris causa degrees from Professor Ing. Karel Rais, CSc., MBA., rector of BUT.



Jaroslav Doležal

Until 1995 Ing. Jaroslav Doležal conducted research at the Institute of the Theory of Information and Automation specialising in mathematical modelling, optimal control, and decision theory. He published his research results in international journals and conference proceedings. In 1980, as a young scientist, he was awarded a prize by the Czechoslovak Academy of Sciences and, in 1989, a research team that he had headed received an award from the academy for developing and testing aircraft drive units. Also his project on mathematical modelling of the immunological reaction in HIV infection met with a considerable response.

He stayed at several institutes and universities abroad such as in today's Russia (1973, Mathematical Institute of the Academy of Sciences), Poland (1973-1974, Stefan Banach Center), USA (1980-1981, Oregon State University), and United Kingdom (1985, Imperial College, University of Manchester). He also visited a number of other research centres focusing on the theory of optimisation and its practical

applications. In 1989, these stays led to creating a user system for solving optimisation problems of nonlinear mathematical programming.

Since 1985 he has cooperated with the International Federation for Information Processing (IFIP) being a national representative for the Czech Republic from 1993 to 2001 helping to organise regular scientific meetings of this non-governmental organisation. In 1995 he was given an IFIP Silver Core Medal for these activities. He also worked on the editorial boards of several international research journals on optimal control and its applications.

At his institute in 1993, he initiated the establishment of a Honeywell research laboratory joined by the cooperating Faculty of Electrical Engineering of Czech Technical University in Prague. Becoming director of the laboratory in 1995, he has held this office until today. He has completed a number of corporate training courses for senior staff members. In 2003 he was appointed by Honeywell a company national executive for the Czech Republic and, since 2004, he has been Honeywell's authorised representative. Jaroslav Doležal is engaged in the development and investment activities of the company in the Czech Republic including extensive cooperation with Brno University of Technology. His membership of various bodies is contributing a great deal to the development of the Czech science and research.



Petr Lukáš

The professional career of doc. RNDr. Lukáš, CSc. is closely related to the Institute of Physics of Materials of the Czech Academy of Sciences where he started in 1959 becoming the president in 2001. From 1990 to 1991, in the office of a vice-chairman, he contributed a great deal to the strengthening of cooperation with researchers from Brno University of Technology. He is an active supporter of the involvement of the Brno institutes of the Academy of Sciences of the Czech republic in a CEITEC project of Brno universities. Doc. Lukáš graduated in physics from Masaryk University in Brno. Then he became a member of the Institute of Properties of Metals of the then Czechoslovak Academy of Science while at the same time starting his part-time doctoral study at the Prague Institute of Physics. It is at this time that he became intensely interested in the sub-structure nature of fatigue of metallic materials. He received a doctorate after presenting his paper entitled "Some Aspects of Fatigue Process in Pure Iron" in 1965. He went on studying the nature of damage caused to metals by their fatigue



for the rest of his career. He received credit by gradually building fatigue and electron microscopy laboratories. When working at the Institute of Properties of Metals and later at the Institute of Physical Metallurgy of the Czechoslovak Academy of Sciences, he led a group and later a "scientific school" of researchers concerned with high-cycle fatigue. Through his research work, he contributed to a solution and description of the role played by plastic deformation at all stages of high-cycle fatigue in metallic materials.

In 1992, he presented and defended a Cyclic Plastic Deformation in the Neighbourhood of a Fatigue Crack project habilitating at Masaryk University in Brno. In 1993 and 1994, he was a visiting professor at the University of Karlsruhe. As an excellent teacher, he has educated a number of doctoral students who started their own successful scientific career.

Doc. Lukáš is the author and co-author of two monographs. Fatigue of Metallic Materials is among the basic references cited by experts in the field. Fatigue Crack Nucleation and Microstructure is another monograph edited in the ASM Handbook series as Volume 19 that summarizes the results achieved in the field. He has published more than 105 papers in impacted journals and 70 papers in domestic reviewed journals. He also presented his papers at 150 conferences at home and abroad. Most of the papers deal with the underlying theory

of fatigue processes in metallic materials – model ones at first, but later extending to a number of advanced metallic materials such as monocrystals of superalloys. Recently, he has focused on the specific behaviour of nano- and micro-crystalline materials as well as on the combined effect of fatigue and creep.

The esteem that doc. Lukáš has earned can also be seen in the grant projects won including projects such as Physical Properties of Progressive Materials in Relation to Their Microstructure and Processing and Predictive Methods for combined Cycle Fatigue in Gas Turbine Blades (PREMECCY) as part of the EU 6th Framework Programme.

Gradually, doc Lukáš devoted more and more time to organizational work at the Institute of Materials Physics, at the Academy of Sciences and on an international scale. He held the office of a vice-chairman of the Czechoslovak Academy of Sciences at a time when a major transformation was carried out of this institution. He was also a vice chairman of the Scientific Board of the Academy of Sciences. Since 1994 he has been managing the Institute of Physics of Materials beginning as a deputy director and becoming director in 2001.

As a distinguished scientist, he is a member of the scientific boards of a number of conferences including the International Fatigue Congress and the Fundamental Fatigue Mechanisms colloquium. One of his last co-chairing was that of the 17th European Conference on Fracture co-organized

by Brno University of Technology and the Institute of Physics of Materials of the Academy of Sciences of the Czech Republic. He is in charge of the preparation of a Fatigue 2010 world congress to be held in Prague in June next year.

Doc. Lukáš is a member of a number of national and international research societies such as Deutscher Verband für Materialforschung, American Society for Metals (ASM) International, The Minerals, Metals & Materials Society (TMS) International etc.

Doc. Lukáš has also received an Academy of Sciences award, an honorary membership of the Deutscher Verband für Materialforschung (DVM), and others.



Jan Švejnar

Professor Jan Švejnar is an economist of world renown specialising in the economics of developing countries, labour, and transformation strategies. He has written more than a hundred papers, books, and studies, trained several generations of economists worldwide, and is a member of numerous professional associations. For the last several years, Jan Švejnar



has been asked by the Royal Swedish Academy of Sciences, to nominate candidates for the Nobel prize in economic sciences. Jan Švejnar is a co-founder of the Centre for Economic Research and Graduate Education (CERGE-EI) in Prague having headed a William Davidson Institute at the University of Michigan for eight years. He is an advisor to international institutions, governments, and large corporations. Beginning in the early nineties, he was also a member of numerous directorial and supervisory boards such as at ČSOB, Society for Science and Art, GE Capital, Czech Republic, and SPT Telekom. Like many athletes, artists, and scientists, for the last several decades, he has occupied several positions. Since 1990, Professor Švejnar has spent most of his time both to the Czech Republic and the U.S.A.. At U.S.A., he is a professor of business administration and economics at Michigan University where he is also director of the Centre for International Politics. In the Czech Republic he is the chairman of the CERGE-EI supervisory committee where he also conducts his research..

However, it is the founding of a Center for Economic Research and Graduate Education, (CERGE) at Charles University in 1991 that was Professor Švejnar's most important activity in 1991 after the downfall of the communist regime. The creation of this new research institute was also assisted by Josef Zieleniec, former rector of Charles University Radim Palouš, the University of Pittsburgh, and Professor

Richard Quandt, advisor to the Mellon foundation. Later in 1992, CERGE merged with The Economics Institute of the Academy of Sciences of the Czech Republic established shortly before forming CERGE-EI, a new top-ranking institution to educate young domestic and international economists. Cooperating with members of the steering and supervising committee, Professor Švejnar had raised more than 500 million CZK for CERGE-EI from foundations, governmental institutions, and corporations.

From 1996 to 2004, Jan Švejnar was director of the William Davidson Institute at the University of Michigan, which at that time became one the major centres for business policy in economic development and transformation. In cooperation with Madeleine Albright, former United States Secretary of State and an honorary member of the institute, Jan Švejnar organised a number of conferences in the Congress for senators, congressmen and government officials. These conferences had contributed to a more informed US foreign policy towards the post-communist countries.

Professor Švejnar's research focuses on the economics of developing countries, labour, and transformation strategy. He is the author of more than a hundred papers, books, and studies in renown journals such as American Economic Review, Econometrica, *Economica*, *Economics of Transition*, *European Business Forum*, *European Economic Review*, *Journal of Comparative Economics*, and

many others. He is a member of numerous professional associations, for the last five years he has been asked, as economist with an international renown, to help nominate candidates for the Nobel prize in economic sciences. Professor Švejnar has published this information of his own accord, although the Nobel committee does not encourage the persons providing nominations to do so.

For a long time, Professor Švejnar has cooperated with BUT giving lectures at the Faculty of Business and Management addressed both to full-time students and Czech managers completing doctoral studies. He is an active member of a Forum of Industries and Universities and participates in the discussion on a tertiary education reform advocating close cooperation between universities and industrial enterprises.



The historic chain of the BUT rector.

BUT GOLD MEDALS

At a special gathering held on the occasion of the 110th anniversary of Brno University of Technology, its rector prof. ing. Karel Rais, CSc., MBA., will give gold BUT medals to seven members of the academic community and collaborators of BUT who, for their teaching and research work, deserve extraordinary credit for helping make BUT a leading and highly regarded university.

Ing. Jiří Rosenfeld, CSc., graduated from the BUT Faculty of Mechanical Engineering in 1974. At this faculty, he also finished his doctoral studies in 1991 by presenting and defending his thesis in manufacturing technology. At present he is the chairman of the board of directors and general manager of Slovácké strojírna, a.s., and chairman of the board of directors of MEP Postřelmov, a.s. He is a member of the scientific board of the BUT Faculty of Mechanical Engineering, the scientific board of Tomas Bata University in Zlín and has helped a great deal to establish a consulting centre in Uherský Brod for part-time Bachelor's degree students of manufacturing technology and informatics at the BUT Faculty of Mechanical Engineering.

Ing. Vlastimil Krček, chairman of the board of directors of OSC, s.r.o., Brno, graduated from the BUT Faculty of Mechanical Engineering in 1963 specialising in power plants. He worked at ORGREZ, an organisation rationalizing power plants. After 1989, he was actively involved in the privatization of ORGREZ and its transformation to OSC s.r.o. He is the father and leading expert of a project on building simulators of nuclear power plants, which is known to be big commercial and professional success. He has always cooperated with the institutes of automation at the BUT faculties of mechanical and electrical engineering. He is a member of the Steering Board of the Centre of Applied Computer Science.

Prof. Ing. Dr. Jaromír Horák, DrSc., studied chemical engineering at BUT (then called Dr Edvard Beneš Czech Technical University), graduated in 1950 and finished his doctoral study in 1952. Ever since 1953, he has been teaching and conducting research at VŠCHT Pardubice, now the Faculty of Chemical Technology of the University of Pardubice. He is among the professors who have founded the faculty and been setting the basic direction of its development.

Ing. Dr. Adolf Gustav Pokorný, CSc., studied chemical engineering at BUT (then called Dr Edvard Beneš Czech Technical University), graduated in 1949 and finished his doctoral study in 1952. In 1964 he presented his thesis at Slovak University of Technology in Bratislava. He worked at the Research Institute of Macromolecular Chemistry in Brno and at the Research Institute of Building Materials in Brno. In 1992 he was given a Gold Medal of the BUT Faculty of Chemistry for his active involvement in the renewal of the faculty. Since 1954 he has been an active member of the Brno branch of the Czechoslovak Chemical Society. He also became its secretary and, at present, is still a member of its committee and an honorary member.

Ing. arch. Růžena Žertová graduated from the BUT Faculty of Architecture and Building Structures in 1957. The set of excellent buildings that she designed



for commerce and services has become part of the history of the Czechoslovak architecture. Her respected but still not fully appreciated work has influenced a whole generation of her followers. For a long time, she has cooperated with the faculty of architecture of her alma mater being a member of its scientific and artistic board.

Ing. arch. Petr Uhlíř graduated from the BUT Faculty of Architecture in 1971 specialising in architecture and town building. With his unmistakable buildings he has significantly contributed to the present face of Brno. Extending over a whole spectrum of types, his designs regularly win appraisals on a national and international scale. For a long time, he was teaching at the faculty being the head of a department for several years.

Ing. Pavel Kopečný, a former regional manager of Siemens ČR graduated from the BUT Faculty of Electrical Engineering in 1964 specialising in electric machines. He stayed in this field for the rest of his professional life. First at the EFF Brno research institute where he worked until 1990. When Siemens ČR was established, he became a major representative of this renowned company for the South Moravian region coordinating the activities of several companies producing electric machines. He has always closely cooperated with experts from the BUT faculties of electrical and mechanical engineering.

BUT HAS BEEN AWARDED THE PRESTIGIOUS ECTS LABEL BY THE EUROPEAN COMMISSION

Brno University of Technology has received the ECTS Label and DS Label prestigious awards for 2009 – 2013 in appreciation of its quality as a higher-education institution.

The certificates were handed over by Ján Figel', European Commissioner for education, culture, and youth to doc. RNDr. Miloslav Švec, CSc., BUT vice rector for study, during a ceremony held in Brussels on 11th June 2009.

BUT is one of the only two Czech universities to be awarded the ECTS Label. The other one is University of Economics, Prague. The label is an appreciation of the correct application of the credit system to all Bachelor's and Master's programmes to reach the objectives of the Bologna process. Having already received the DS Label in 2007, BUT is now authorised to hold

it for another four years. This certificate is being given in appreciation of the correct free issuing to all the graduates of a diploma supplement. Both the labels certify that BUT meets the strict higher-education criteria imposed by the European Union. They significantly help extend student mobility opening the university to international students. The ECTS Label is the most prestigious European award in higher education certifying the achievement of the university's strategic goals in the European higher-education space. It means that Brno University of Technology is prepared to meet all the obligations following from the Bologna Declaration and subsequent international agreements. Using the European Credit Transfer and Accumulation System (ECTS) makes the recognition of study at a university abroad more

transparent, which directly supports student mobility both within and outside the European higher-education space.

The DS Label testifies that the English-Czech diploma supplement meets the requirements recommended by the European Commission both in terms of its form and content. The supplement has been designed to provide a diploma with additional data enhancing its informative value to make the international academic and professional recognition more just. The supplement includes a full list of the courses a graduate has completed indicating the number of credits on the ECTS scale. Included are also courses taken during study at a foreign university, data on the final project, its presentation, state examination and an overall study evaluation.

BUT IS AMONG THE THREE PERCENT OF THE WORLD'S BEST UNIVERSITIES

In the Times Higher Education Supplement (THES) ranking of universities published regularly by The Times, BUT has been included among the world's first five or six hundred best universities for the third consecutive year. Thus, according to this ranking, of the total number of 18 thousand participating higher-education institutions, BUT belongs to the three percent of the best universities. Of the Czech universities, only two in Prague have achieved a better ranking - Charles University and the Czech Technical University.

The first place in the ranking went traditionally to the US Harvard university, the second to Yale and the third to the British Cambridge. Like in the previous years, a

large number of 42 universities among the first hundred universities are those from the North American continent including 35 from the USA. Twenty-two among such universities are from Europe. Of these, the best are the British ones headed of course by Cambridge, Oxford, and Imperial College London. Even though setting the rules of a ranking is treacherous since some of the criteria may be tailored to suit some universities more than the others with the language of teaching and presenting the results playing certainly a major role, too, the British THES is recognised as one of the world's most respected university ranking. Experts setting it up judge the quality of teach-

ing and jobs offered to the graduates as well as the research conducted on an international scale. An important role is also played by the number of citations in prestigious publications and by scientific grants. The appraisers also address persons respected in their field of research and in teaching asking them to provide them with a list of thirty educational institutions they see as excellent. Corporations also have a word providing their rankings of the graduates from different universities. For BUT, the fact of being repeatedly ranked among the world's six hundred best universities is a major success as well as a confirmation of the path it pursues.

RESEARCH AND DEVELOPMENT AT BUT



From the very beginning BUT has been an important driver of technological advancement. Apart from having educated generations of engineers, it has always been a traditional centre of research and development. This is also true at present after the profound changes in society after 1989, which gave a major impetus to research development and artistic, and other creative activities in the Czech Republic.

BUT is involved in a number of major projects. It is really difficult to present the wide range of research conducted at BUT. To illustrate the present research going on at individual faculties, we would like to focus at least on some of the projects.

DEVELOPMENT OF MARABU PILOTLESS AIRCRAFT

Having carried out a number of successful design projects in recent years, a team of prof. Ing. Antonín Piššček, CSc. at the Institute of Aviation of the BUT Faculty of Mechanical Engineering is now developing the prototype of an experimental pilotless aircraft named VUT 001 Marabu. In May 2009 for the first time, a team of designers and representatives from companies engaged in the project presented the result of their work to the public.

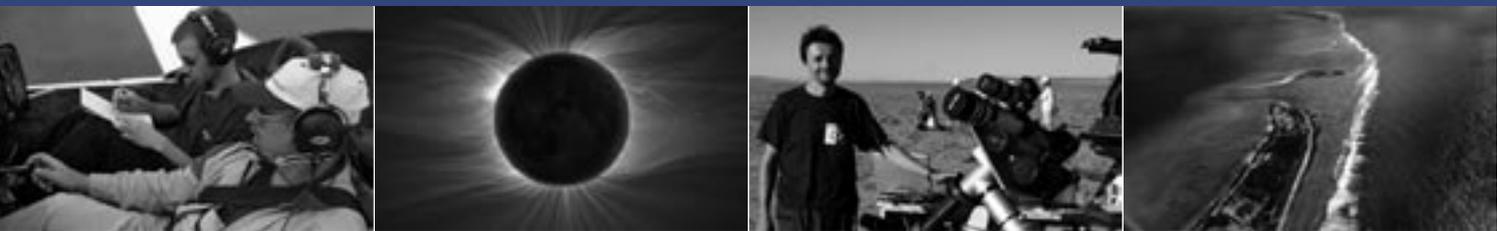
Designs of pilotless aircraft form one of the world's present trends in aviation. For the time being, pilotless planes are mostly used by the military, but in the future, they will certainly find numerous applications in civil aviation, too.

Since its establishment in 1993, the Institute of Aviation at the BUT Faculty of Mechanical Engineering headed by

prof. Ing. Antonín Piššček, CSc., has been involved in all major projects of the Czech aviation industry (Aero Ae-270, Evektor EV-55, etc.) even initiating some of them. In 1996, for example, a KP-2U Sova light aircraft was tested, which has been manufactured until today and sold to countries all over the world. The bulk of the design work and numerous land tests were carried out at the Institute of Aviation. Up to the present, over 180 planes have been manufactured. Another important project initiated at the institute was the VUT100 Cobra aircraft. The actual work started in 2000. Later on, the Kunovice based EVEKTOR Company joined the project as a new industrial partner building most of the prototype and making preparations for the first flight. This took place in November 2004. After a successful test, EVEKTOR took over the entire project carrying on further aircraft development and certification. In 2005, the VUT 100 Cobra project received the Czech Head prestigious award for the most outstanding innovation.

The excellence of the BUT Institute of Aviation is emphasized by the fact that the entire Marabu aircraft project including the prototype construction and test preparations will be implemented at this university. Unique is not only the aircraft design with a wing span of almost ten metres, but also the project continuing the activities of the industrial partners. The following companies have been cooperating on the project from the very beginning: První brněnská strojírna Velká Bíteš, which designed and manufactured a unique TJ100M turbojet engine, Jihlavan-Airplanes supplying the metal parts (wing, horizontal tail surface), and Plastservis-L,





which developed the fuselage using only composite materials. The idea has also found a positive response from the Ministry of Industry and Trade in the form of a grant project covering about one half of the total costs of 15 million CZK.

Close cooperation with industries and practical work on the development of planes (particularly VUT 001 Marabu) raises the quality standard of students and teachers at the Aviation Institute. This has been confirmed by this year's success of a team of its students in a Fly Your Ideas competition organized by Airbus, who were among the five teams of a world-wide finale in Paris.

RESEARCH OF THE SOLAR CORONA

Led by prof. Miloslav Druckmüller, for several years, a team from the Institute of Mathematics at the BUT Faculty of Mechanical Engineering has been investigating mathematical methods that can be employed to display the solar corona. The software developed by the Brno scientists is unsurpassed. The mathematicians from the institute are among the world's elite, which has been proved by the image of the solar corona appearing on the title page of one of this year's issues of *Nature*, a prestigious scientific journal. The picture showing layers of hot gases enveloping the Sun was created by processing hundreds of photographs taken during last year's solar eclipse in the Gobi desert, Mongolia.

The mathematical image processing methods used by the Brno scientists bring the study of pictures of the solar corona to a higher level of quality. The solar

corona as such still hides many a secret. No one knows, for example, why its temperature is substantially higher than that of the solar surface – six thousand degrees Kelvin on the surface while two to four million in the corona. Moreover, the corona temperature is not evenly distributed – in some regions it is extremely hot. It is just the numerically processed images that may give us a better understanding of such phenomena.

To collect sufficient image data for their work, the Brno mathematicians organize expeditions to places where a total solar eclipse can be observed. This year's expedition was routed along a swathe passing through India, Nepal, China, Japan, and the Pacific Ocean where a total eclipse occurred on 22nd July 2009.

From Brno, its members headed for three different destinations. In China, one group set up an observation post on the island of Yangshan, south-east of Shanghai, and

another near a town of Suzhou. These teams were not lucky – the sky was overcast and it was raining. The most notable success was achieved by the team led by prof. Druckmüller with a base on the atoll of Enewetak of Marshall Islands. The place chosen for taking pictures of the solar corona was formerly used by the US army for testing nuclear weapons.

The observation conditions on the atoll were not as good as the year before when a solar eclipse was observed in Mongolia, clouds were passing over the solar disc when pictures were to be taken. Still, most of the images obtained were good. It was thanks to the state-of-the-art technology provided by co-researchers from Germany and the University of Honolulu, Hawaii, that a number of unique pictures could be taken.

Following requests by astrophysicists, the Brno researchers focus on creating pictures of the corona making it possible to



It was thanks to state-of-the-art technology that a number of unique pictures of the solar corona could be made.



draw a sort of a temperature map of the Sun. This can be achieved by recording the movement of 13-times ionized iron, which will be shown in deep green after filtering off other parts of the light spectrum. It takes a temperature of about two million degrees Kelvin for such ions to be formed. Using different colour shades, a temperature map can then be drawn.

Together with scientists from the University of Honolulu, the Brno mathematicians made an important discovery. „There is a space encompassing the Sun and containing high temperature plasma which is governed by the known laws of thermodynamics. This space is in turn enveloped by a layer of what is called collision-free plasma or solar wind and here, due to an almost zero density, such laws are no more in force. Processing pictures of the corona taken during the eclipse, we have found that the border between these two layers runs approximately at a distance of one to two radii of the Sun. This is unexpectedly close,” explained Professor Druckmüller. This new discovery is described in a paper sent for publication in the Nature journal.

3D MODELS OF HUMAN TISSUES MAKE OPERATIONS ON PATIENTS EASIER

Modern medicine prefers individual approach to patient treatments. People are alike but not identical. Human organisms are different in size and in a number of details and this must be taken into account by the doctors. To do this, it takes more than the standard empirical procedures based on a physician's previous experience and subjective

guess. A doctor's treatment may be much quicker and more precise if receiving support from other areas of science. In this respect, computer graphics offer unheard-of improvements. In a number of medical clinical fields, it is particularly computer-aided 3D modelling of human tissues that can improve diagnostics and subsequent patient care.

For several years, this has been the subject of research conducted by a team of experts led by Ing. Přemysl Kršek, Ph.D., at the Institute of Computer Graphics and Multimedia of the BUT Faculty of Information Technology. Their Computer Graphics for Medicine group is concerned with research, development, and practical applications in clinical human medicine particularly plastic surgery, dentistry, traumatology, and orthopaedics. As the research is of a strongly interdisciplinary nature, the team closely cooperates with doctors in Brno, Olomouc, Ostrava, and Prague.



Team specialists can provide the surgeons with the necessary implant.

How does this computer modelling work? „First a virtual model of human tissue is created using segmented data from computer tomography or magnetic resonance examinations. This computer model alone can be a great help for doctors since it can be processed, shifted, cut, formed, reconstructed, planned, etc. in a computer. A surgeon may use it to get familiar with the neighbourhood of a tissue to be treated and to be prepared for possible complications of an operation. In this way, the computer serves as a guide to the doctor. But this is not all. This virtual model can be used further to create a real model of the tissue to be treated. Such a model can then serve as an „exercise ground“ for the doctor to practice for the required surgery. It is exactly this direct „handling“ of parts of the tissue – determining its dimensions and forms – that is of great importance for a surgeon operating on a hip joint to plant an endoprosthesis or completing and modelling a graft in a plastic operation and in a number of other cases,” explains Ing. Kršek.

Two technologies are used to create real models of bones and parts of tissue. The first one uses the classic CNC milling machine. The Rapid Prototyping technology creates models by pasting together layers of a plaster composite. Based on an input model geometry, the device automatically creates any form, even sophisticated hollows.

In addition to a 3D model, specialists from the team can even make the implant itself. For a patient suffering from skull deformation, for example, they can make a corrective part from silicon. „Unfortunately, the operation could not



A receiver designed at BUT was transported to the International Space Station by Space Shuttle Discovery in 2005.

yet be carried out since this is not a medically approved material. On the other hand, however, certified materials from abroad are too expensive for most of the patients. Even if, in cooperation with specialists from the BUT Faculty of Chemistry, we can develop suitable materials, their medical approval would require support from the Ministry of Health. This is clearly a problem of finance rather than technology," says Ing. Kršek.

WILL DEVICES FROM BUT FLY TO MARS?

For a university, participation in space research is an appreciation of its excellence and, of course, a matter of prestige. We are glad that, in this respect, BUT is among the leading international universities.

A team led by prof. Ing. Miroslav Kasal, CSc., at the Institute of Radioelectronics of the BUT Faculty of Electrical Engineering has already gained sufficient experience in space research.

They played an important role in an AMSAT international project to build a Phase 3D satellite by developing two L-band microwave receivers with one of them working as the main command receiver and the other one serving as a part of a matrix transponder. Both receiving systems were completely developed at BUT. Under a PCSAT2 project for the American Naval Academy in Maryland, prof. Kasal's team also built a receiver with extreme spectral efficiency to be used in multi-user communication. In 2005, Space Shuttle Discovery carried this receiver to the International Space Station (ISS) where it underwent a long-term test in space conditions. Also a unique telemetric and control station designed for experimental satellites was developed at BUT which, as the only one, is fully automatic with remote control over the Internet. It is used to control and communicate with experimental satellites.

In appreciation of all these activities and unparalleled results, prof. Kasal's team

was invited to participate in an international project to launch a Phase 3E experimental satellite. For satellite communication, the Brno scientists designed and developed several devices. Professor Kasal was also appointed by AMSAT to supervise the integration of the satellite.

Apart from constituting an entire independent satellite module, the special communication devices designed and made by the Department of Radio Electronics are also used in several other modules of the satellite. „Working in the L band, our module is the main command receiver for the entire satellite as well as a part of the communication transponder. Based on the frequency standard of an ultrastable oscillator, all the onboard frequencies are set to enable coherent signal processing. In the event of a failure of the main control oscillator, a backup one will be used that we have designed to be used also in some other satellite modules. Thus, although subject to some restrictions, it will remain operable even in an emergency situation. One of the other communication modules contains a command detector that we have developed," explains prof. Kasal.

Fuel included, the Phase 3E satellite weighs 150 kg with an expected service life of 5 to 10 years. Being experimental, Phase 3E will be used to test space communication systems, and what is called coherent ranging methods used to determine a satellite's precise position and velocity vector at a given moment.

The ultimate goal of the testing of such space communication technologies on board experimental satellites by AMSAT is the preparation for a Mars mission. It is



this expedition to the red planet in which prof. Kasal's team from BUT would like to participate with its devices. „Testing technologies on board satellites should answer the question whether they are capable of such a mission at all. Consider that, while at present we move across several tens of thousands of kilometres, when flying to Mars, this would be a distance of several hundreds of millions of kilometres. And communication satellite technologies will have to be perfect accordingly,” says prof. Kasal.

DEVELOPMENT OF NON-METALLIC REINFORCEMENTS FOR CONCRETE STRUCTURES

An increasing number of hi-tech procedures to process top-quality materials known from other industries are being used in the building industry. Research and development of non-metallic reinforcement for concrete structures conducted by a team of experts from

the BUT Faculty of Civil Engineering within projects of the Ministry of Industry and Trade and the Grant Agency of the Czech Republic is also part of this new trend in building. The aim is to replace in special concrete structures the classic steel reinforcement or one with special finishing by reinforcement from non-metallic fibres (particularly glass, carbon, and basalt ones).

It should, however, be noted that reinforcement developed for concrete may also be used elsewhere such as in wooden structures (reinforcing an existing structure or building a new composite one), metal, and geotechnical structures.

In cooperation with Czech manufacturers, particularly with Prefa Kompozity, a.s., non-metallic reinforcement materials have been developed and successfully tested that, in reaction with concrete, have parameters equal to and, in some aspects even better than those imported. Moreover, since non-metallic reinforce-

ment elements are manufactured in the Czech Republic, the production costs are significantly lower even if using imported materials.

For the production of composite reinforcement, specialists from the Faculty of Civil Engineering (cooperating with researchers and engineers in the Czech Republic and abroad) design selected combinations of fibre glass and polyester resin or fibre carbon and epoxide resin called fibre-reinforced-polymer (FRP) reinforcement. When developing FRP reinforcement, special attention is paid to surface finishing, very important for its adherence to concrete. Therefore, cooperating teams from the BUT Faculty of Civil Engineering, Prefa Kompozity, and BESTEX test various types of surface patterns of reinforcement bars using methods such as sandblasting and wrapping. Also Metrostav Praha is engaged in testing reinforcement in concrete structures within a project sponsored by the Ministry of Industry and Trade.

Comparing the costs of the traditional and non-metallic reinforcement, dean of the Faculty of Civil Engineering prof. RNDr. Ing. Petr Štěpánek, CSc. says the following: „Although the new reinforcement types are more costly than the classical reinforcement for concrete, because of their physical and mechanical properties, FRP reinforcement is more resistant to aggressive effects such as carbonatization, sulfatization, and chloride corrosion. Also greater resistance to circulating currents, durability, and longer service life are a credit to them. Such reinforcement brings other advantages and economy, too – the upper concrete layer protecting



Rigorous testing is a necessary development stage of non-metallic concrete reinforcement.



the reinforcement against corrosion, for example, may be thinner. Non-metallic-reinforcement concrete structures do not form a Faraday cage letting through the radio waves. All these positives added up, using non-metallic reinforcement is cheaper in the end.”

According to prof. Štěpánek, metallic reinforcement cannot totally replace the classic one. „However, in all constructions that have to comply with extremely specific requirements such as sewers, special nuclear power plant buildings, some engineering structures, high-rise buildings and all structures exposed to aggressive environment causing corrosion of the classic reinforcement, which requires costly maintenance, concrete will be reinforced in this way,” he says.

PROJECT ON VISUALIZING SOLAR SYSTEMS

The first stage of a project to visualize real solar systems was completed by the Solar Technology and Research Centre at the Department of Chemistry and Environment Protection Technology of the BUT Faculty of Chemistry in cooperation with Hanazeder Ltd., an Austria-based company.

The Czech Republic has pledged to raise the proportion of sustainable resources in the production of electricity to 8.5 percent of the installed performance. Some theoreticians even expect the final proportion of sustainable resources to be doubled. It is, however, not at all sure whether such objectives are feasible given the present potential available.

„According to an analysis of the renewable energy resources (RER), their feasible

target proportion is an estimated 3.5 to 4 percent of the primary resources. The above figures clearly show how delicate the situation is if overenthusiasm is confronted with bare reality. People being poorly informed and overestimating the power of renewable resources, clashing interests of various lobbies, misdesigned and misimplemented projects of different approaches to this type of energy (solar, wind, thermal pumps, biomass) cannot but lead again to discrediting such systems in the eyes of potential investors,” says Josef Kotlík, CSc., from the Institute of Chemistry and Environment Protection Technology at the Faculty of Chemistry, owner of this project.

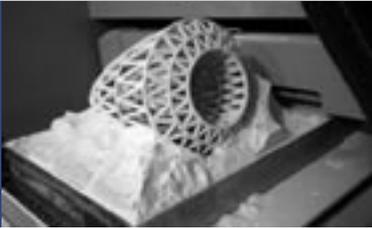
He believes that designing a RER technology is a highly sophisticated process, in the first place, depending on the quality of the design and craftsmanship of the supplier. Incorrect economic calculation or betting on a future price increase are common shortcomings of most of the installations. Thus, the final amount of energy produced as well as the economic profit are very often much different from the expected figures. For this reason, renewable energy resources are not yet thought of as „reliable” even if they could actually cover several percentage points of the total consumption. They are underestimated while at the same time connected with fervent hopes that lack both technical and economic grounds. There is no way of verifying the functions of a particular system by obtaining accurate and reliable data.

Therefore, as ing. Kotlík believes, field measurements in solar systems are of immense importance. As opposed to laboratory tests undertaken in „ideal”

conditions, they provide information on the system behaviour observed in real-life conditions over a longer period. Field conditions differ significantly from the expected parameters of each component of a solar system and the overall efficiency.

„The project will deliver actual data on the workings of a solar system designed to warm up water and support heating. Using direct connection, it will make it possible to monitor the changes in each parameter and the overall energy output and balance of the system. It will enable simple and immediate access to the basic technical parameters of the system and, using this data, calculate the return on investment and annual use coefficient. The instruments employed for measuring are part of the technology and can be used to continually read and record quantities. Long-term monitoring will make it possible to judge the stability and reliability of the entire solar system. Monitoring weather conditions using a professional observatory is of course among the functionalities offered by the project,” says ing. Kotlík explaining the purpose of the system.

The visualisation project should help the students make corrections of the theory they learn in lecture rooms. They can also watch a real-life system working in real time forming their own ideas of the way alternative energy resources work in practice. Another of the project’s advantages is that it is open to any other participants connected. These may monitor all the enabled parameters at any time to draw their own conclusions from what they observe.



Bulbs, a space object (author: Tomáš Medek).

3D STUDIO AT THE FACULTY OF FINE ARTS

In 2007 a 3D studio was established at the BUT Faculty of Fine Arts, which is the first 3D studio ever at an artistic school in the Czech Republic and second in Europe to use fused deposition modelling (FDM) and 3D optical digitizing. These methods may be employed in artistic fields to simplify technological procedures and accelerate the implementation of complicated projects. At present, an ATOS I 3D scanner is available at the studio to transform physical models into digital data, which can then be processed in the virtual environment of a computer. Such virtualized models are further modified by a specialised computer program and turned to real physical models again using a 3D printer.

The printer uses FDM with materials melted and applied in very thin layers. The physical model grows upwards in thin layers starting at its base. In this way, even subtle inner structures can be built. The 3D printer takes several hours

to print a physical model depending on the intricacy and size of the input. The model is built using a non-toxic ABS plastic. The 3D printer can manage even models that could not be implemented otherwise. There are actually two printers at the studio: Dimension SST 768 and ZPrinter 450.

Commercial services are also offered by the 3D studio. Head of the 3D studio at the Faculty of Fine Arts is sculptor MgA Tomáš Medek.

ON CREATIVE ACTIVITIES CARRIED ON BY ARCHITECTS FROM THE FACULTY OF ARCHITECTURE

A new modern multi-purpose sports hall was opened at the BUT Pod Palackého vrchem campus in 2007. Designed by prof. ing. arch. Ivan Ruller, long-time teacher at the BUT Faculty of Architecture and its first dean after 1989,

the building was built in the immediate vicinity of an athletic stadium. Ing. arch. Martin Borák was a co-author of the architectural solution.

The hall designed by a renowned architect was built with the use of state-of-the-art technologies. By its playground area, it is the largest hall for indoor sports in the Czech Republic. In addition to being economical, the floor-heating system creates a very comfortable environment for the athletes. This is the first time in the Czech Republic for this technology to be used on such a large area. The special floor finish (Mondo) is particularly suitable for floorball, futsal, tennis, and handball. A playground the size 50 by 42 metres can be varied to accommodate two floorball fields, two handball fields and a futsal one, three tennis courts, or three volleyball fields.

The main bearing structure of the hall consists of prefabricated pillars from



By its playground area, the BUT multipurpose sports hall is the largest in the Czech Republic.



An administration building in Vídeňská Street, a Brno radial road.

reinforced concrete that bear wooden arched roof trusses and a sound-absorbing membrane roofing. The outer and front walls are clad with ceramic plates on an aluminium grid with thermal insulation. For the ceramic cladding and roofing, a green colouring scheme was chosen to tastefully incorporate the building into the environment.

An administrative building in Vídeňská Street, one of Brno's most important radial roads, was built following an architectural design made by a team of architects consisting of Petr Pelčák, Mirka Blechová, Viktor Kvita, Lenka Musilová, Luděk Rohovský, Petr Uhrín, and co-author Petr Hrůša.

By respecting the street line of the neighbouring corner administrative building from the 1960s and keeping distance from the road, the building creates a sufficiently comfortable urban space. Neither does the height of this building with four full and one retreating storeys

exceed the level of the retreating storey of the neighbouring administrative building. A simple cubic volume, succinct and pronounced form of the building and the material used for its facades (face bricks, wooden window frames, sandstone cladding, and large-size aluminium show windows of the parterre, all this accentuates the character of urban development.

The front itself is formed by a „neutral grid“, that is, a grid of wooden Chicago windows of a distinctly rectangular form in a brick facade. Its „tectonic“ pattern is formed by strips of vertically laid bricks, in each storey running round the entire building at the height of the window heads. A sandwich facade was used to emphasize the plasticity of the grid pattern by the windows retreating 25 cm behind its face. In this way, the bricks also hide the hinges of outer fabric shades. The building of a late 19th century municipal customs house standing across the street was used as a

reference for employing a brick facade. Another one was the glass facade of the next-door administrative building built in late 1960s whose green colour is complementary to the red bricks, which, by their small size, surface pattern, and motive of full heavy mass, serve as a complement to its glass neighbour.

The building has been designed for offices and commercial zones on the ground floor. The subterranean floor is used for garages and technical facilities. A vertical circulation core with a staircase and a lift is placed in the centre and lighted with a roof-light. The building is air-conditioned using a cooled-concrete-core technology, rare in the Czech Republic, which of all air-conditioning methods known today is the most man- and environment-friendly.

BETWEEN BRNO AND NEW YORK

At the BUT Faculty of Business and Management, too, research and development is an integral part of the professional activities of its academic staff and doctoral students. This fully serves the purpose of such activities, which is to acquire new knowledge or use it to develop the relevant fields of science at the faculty.

Research at the Faculty of Business and Management focuses on economics, development of managerial skills, information technology as well as on interdisciplinary fields. The research results are regularly published in journals and books and presented at conferences. The faculty publishes the journal *Recent Trends In Economics And Management*.



In this year, together with the New York Business School, it co-hosted the eleventh prestigious Global Business and Technology ASSOCIATION (GBATA) international conference on the world trade and new technologies. The credo of the conference held in Prague from 7th to 11th July 2009 was identical with that of the Faculty of Business and Management - Prosperity and Humanity. It was attended by 290 experts from 45 countries of the world.

The papers presented at the conference were concerned with the current economic situation, but also with long-term aspects and modelling of economic behaviour. „We are glad that our credo became part of the main theme of such an important conference. A number of participants devoted their presentations to the effects of the current recession both economic and social,” said dean of the Faculty of Business and Management doc. RNDr.

Anna Putnová, Ph.D., MBA, one of the conference organizers.

Each year, the Global Business and Technology Association conference is hosted by a different country. Here is what dean of the faculty Anna Putnová says about how it came about that the Czech Republic had been chosen as the next host: „For a long time, dean of the School of Business in New York Professor Nejdert Delener and I have been cooperating at conferences. Since we were on very good terms, I invited him to Prague extending my invitation also to the Faculty of Law of Charles University in Prague. A GBATA conference is always held in the capital of the hosting country and we are very grateful to Charles University that it decided to co-organize the conference.” Such world-wide meetings are important because they provide a platform for academics to exchange new ideas and experience. Charles University provided useful help in organizing and dealing

with professional topics. For the BUT Faculty of Business and Management, this was an important opportunity to establish new contacts with universities of economic and managerial type not only in Europe and U.S.A. but also in South America and Asia.

In May this year, the faculty organized the seventh MANAGEMENT, ECONOMICS AND BUSINESS DEVELOPMENT IN THE NEW EUROPEAN CONDITIONS international conference. Also a very successful international conference of doctoral students took place.

The faculty engages on projects financed from the EU Structural Funds and the University Development Fund of the Ministry of Education, Youth, and Sports of the Czech Republic.

The faculty management is also pleased that 49 new students have enrolled for the doctoral degree programme offered by the faculty in the academic year 2009/2010.



BUT Faculty of Business and Management and Charles University in Prague co-organized an international conference of the Global Business and Technology Association.



CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY

CEITEC

BUT's most important and most demanding research project, which may receive support from the EU funds, is a project of the Central European Institute of Technology (CEITEC).

Extending across regions, this is a unique project which would make Brno a centre of excellent research in the coming years. Engaged in the project are Masaryk University, Brno University of Technology, Mendel University of Agriculture and Forestry, University of Veterinary and Pharmaceutical Sciences together with the Brno institutes of the Academy of Sciences of the Czech Republic including the Institute of Scientific Instruments, the Institute of Physics of Materials, and the Veterinary Research Institute of the Ministry of Agriculture of the Czech government. CEITEC also enjoys the full support of the leading representatives of the South Moravian Regional and local Brno authorities.

The project aims to create a Central European Centre of excellent research contributing to the improvement of the quality of life and health service. When implemented, the project will create a research space in Brno for top researchers from numerous areas of science to work on a number of interdisciplinary projects. It is particularly the linking of research focusing on animated nature and with one that deals with materials that is seen as a unique dimension of the CEITEC project. Close cooperation with companies, hospitals, and other

entities will have a positive effect on the development and competitiveness of the entire region.

The CEITEC project envisages the building of a top research infrastructure to be shared by Brno research teams as well as experts from other European countries. Constructing shared central laboratories equipped with state-of-the-art instruments and research background will create optimum conditions for basic and applied research in animated nature, materials, and technologies particularly in new interdisciplinary areas. Thanks to shared coordinated management, researchers from all fields will be able to use technologies otherwise not available. This will open a space so needed for a qualitative shift in science and research.

The primary purpose of the CEITEC project was to help the South Moravia based basic and applied research achieve excellence. It is designed not only to engage the activity carried out in this region in the European research space, but also to open it to the world by creating conditions favourable for cooperation with the private sector.

It is the CEITEC Centre's ambition to become a major European centre of science and learning. The project also

wants to help concentrate the research in the Czech Republic while at the same time strengthening the relationships between the Czech science and research institutes and companies abroad. Within the research cooperation and common technology development projects, close relations will be established and maintained with leading scientific and research institutions abroad.

The CEITEC research centre will be concentrated in two new premises built at the BUT Pod Palackého vrchem campus in Královo pole (for materials sciences and technologies) and at the Masaryk University campus in Brno-Bohunice (for natural sciences and medicine). The centres will communicate using a powerful information infrastructure to enable joint work on interdisciplinary research projects.

At the beginning, research at CEITEC will be conducted by tens of leading scientists from the founding institutions. As the CEITEC research infrastructure is gradually improved, the best doctoral students, and Master's graduates will strengthen the teams. Their research will be funded from domestic and international grants with significant contributions from applications of the research results such as patents, new



treatment methods, new technologies and materials. The future funding of the CEITEC centre will be conditioned by the research applications being marketable and interesting for industries. For this reason, the centre will communicate with big international corporations and other companies interested in such applications ranging from new medicaments and advanced treatments to new industrial materials and technologies. A number of teams planning to use the CEITEC research are already active at present. When the centre is finished, the conditions and background for their work will improve immensely.

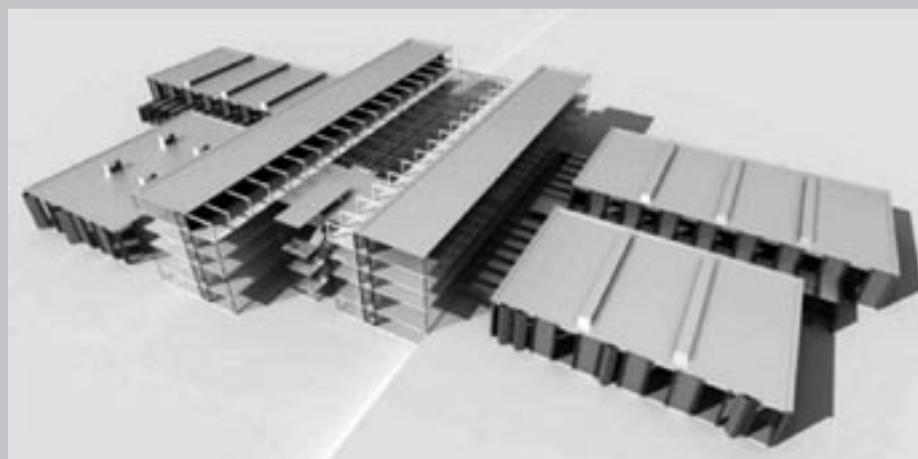
As already mentioned, CEITEC's major contribution is a unique combination of research of animated nature and materials science. Eleven research projects form the project's core. These are advanced nano- and micro-technologies, advanced materials, advanced communication and control technologies, structural biology, molecular biophysics, genomics and proteomics of plant systems, biomolecular and cell engineering, molecular medicine, neuro-sciences, molecular medicine of the veterinary, and biomedical technologies. They bring together research groups from different institu-

tions specialising in selected advanced research areas. The synergy created by the cooperating research groups and programmes inspires the scientists to non-traditional applications of the procedures normally employed, for example, in engineering areas to problems in medicine. This may be the case of using the techniques of recording and analysing speech to diagnose neurological diseases.

In September last year, the Ministry of Education, Youth, and Sports published a short list of the Czech research projects, candidates for funding from the EU Research and Development for Innovations operative programme. By

2013, the Czech research and development teams should receive 2.4 billion EUR from the EU Regional Development Fund through this operative programme. When selecting research projects which, for their quality, stand a good chance of receiving billions of CZK in funding under the European Centres of Excellence priority axis, the ministry put main emphasis on recommendations by a judging panel of leading international experts.

The thing valued most by his judging panel in the CEITEC project, which has been short-listed along with other five Czech projects, is the plan to combine research of materials with one of biology



Visualization of CEITEC buildings to be built at the BUT Pod Palackého vrchem campus in Královo Pole.



It is the CEITEC Centre's ambition to become a major European centre of science and learning. The project also wants to help concentrate the research in the Czech Republic while at the same time strengthening the relationships between the Czech science and research institutes and companies abroad.

and biomedicine. This is what makes it unique. This combination may even initiate entirely new research areas. The international panel also sees the existing broad cooperation between the Brno universities and research institutes as very positive. Highly appreciated is also the scientific excellence of the teams working on the project as well as the huge cooperation potential with the private sector on practical applications of the research results.

In autumn this year, a final list of the Research and Development for Innovation operative programme should be set up of the Czech projects to be submitted to the European Com-



mission after approval by the Czech government. Late in this year, each project will then be analysed by the European Commission to see how it meets the EU requirements. If a project with costs exceeding 6.6 billion CZK is approved by the Commission, the construction of its buildings should start by 2011. The CEITEC project should then be completed in 2015.

At BUT the project is being prepared by a team of leading researchers from four faculties: mechanical engineering, electrical engineering and communication, chemistry, and civil engineering. As the Ministry of Education, Youth, and Sports requires that the CEITEC project should be structured for a consortium, a new university technology institute will be established called BUT Central European Institute of Technology (BUT CEITEC). If the projects are successful, it will become the second largest member of the CEITEC consortium. Thus, from the very beginning, BUT CEITEC will focus on the main task of working on the objectives included in the project and several partial ones, of which the most important will be the support for and extension of the doctoral programmes in the research areas planned for the CEITEC project at BUT.

FROM THE HISTORY OF CELEBRATIONS

Major anniversaries of Brno University of Technology, the oldest Czech university in Moravia, were regularly celebrated in the past, with some exceptions under exceptionally unfavourable conditions threatening the university' bare existence.

Magdalena Čoupková



Celebrations of a BUT anniversary in the Brno Mahen Theatre.

During the first decade of its existence, the Brno university saw all-out efforts to build a school that would provide quality education of Czech engineers. The immediate objective was to erect a new building for the university to be able to abandon the makeshift rooms hired in various town buildings. The construction started in 1907 when land was bought in what is now Veverří street, then fields just outside the city limits. It can certainly be guessed that it was a fervent wish of all the teachers to be able to celebrate the university's tenth anniversary in a modern building. Unfortunately, the wish never came true. The big celebration had to wait until 24th June 1911 when the new building was finished. It was also at this time that the university received a new name - „The Imperial and Royal Franz Joseph Technical University in Brno“ - in honour of its founder.

The first big festivities were organized to celebrate the university's 25th anni-

versary. The actual events extended over two days; on Saturday 23rd May 1925, the programme began in the afternoon by a meeting of the Russian academic organizations, which then continued as a general meeting of the Technical University Student Association followed by the establishment of an Association of the Graduates of the Technical University of Brno and, in the evening, a meeting was held of the Association of the Czech Engineers. Then the celebrations moved from the building in Veverří Street on to the Besední dům where an opening soirée of a Czech Readers' Club in Brno began at 8 p.m. The next day the celebrations went on by opening the Kounicovy halls of residence and by a special meeting in the great hall of the Czech Technical University. Later in the afternoon, everybody was invited to join a tour of the university or a trip to the nearby Macocha abyss. Like in 1911, an Almanac of the Czech Technical University was issued for the celebrations.

No traces have been found of celebrations of the 30th anniversary, but as this was relatively soon after the quarter-of-a-century event, it may well be assumed that they were not of any major scale. The fortieth anniversary

was to be in 1939, but this is the year when all the Czech universities were closed down by the Nazis. After the war, with huge efforts and despite the great losses incurred, the universities were reopened to start teaching immediately. The German schools, on the other hand, including the German technical university, were dissolved based on what is called Beneš Decrees.

Half of the century of the university's existence was to be celebrated in 1949. From historical records, it can be established that a committee had been set up as soon as late in 1948 to prepare the celebrations with sub-committees in charge of an almanac, proceedings, and an exhibition. A government-sponsored exhibition was to take place in the university great hall. Both domestic and foreign guests of honour were to be invited. For the celebrations not to collide with a congress of the Association of Engineers and Architects or with the newly introduced celebrations of the Russian Revolution, they were to take place from 8th to 11th December. Professor Makovský was commissioned to design a commemorative medal. A memorial plaque was to be unveiled for the Nazi victims among the teachers, graduates, and examination board



The exhibition marking the BUT 1969 anniversary was held in the Brno Technical Museum

members. However, no official celebrations took place. Nobody knows why. Although invitations were printed as late as September 1949, they had never been sent. Reading the minutes of a meeting of teachers held on 4th November 1949, one only learns that „celebrations of the 50th anniversary of the Czech Technical University of Brno had to be postponed for technical reasons.“ No further specification of those technical reasons. Not a mention anywhere. A next piece of information can only be found in the minutes of a university teacher meeting stating that „the date of a special meeting of the university staff to mark the 50th anniversary has been set on 20th January 1950. Professor Hauser has been asked to inform the Ministry of Industries that, although this is an official university celebration, a wider public should be excluded“. No minutes of this meeting have, however, been found. Thus, we cannot even be sure whether such celebrations took place at all.

It was already during the 1949 non-materialized celebrations that also the 140th anniversary was to be mentioned of a Brno Technical Vocational Institute later to become the German Technical University dissolved in 1945. Thus it

was only in 1959 that the anniversary – 150th at that time - of the beginnings of Brno engineering education became part of the celebrations of the 60th anniversary of Brno University of Technology. On Tuesday 24th November, a special meeting was held of the BUT scientific board extended by participants in the celebrations in the great hall of a stadium in Lenin Street (now Kounicova Street). In the afternoon, then, an exhibition was opened at the Technical Museum in Orli Street. Present at this opening was also dr. František Kahuda, the then minister of education. A bust of Professor Viktor Kaplan, who taught at the Brno German Technical University a number of years, was unveiled in a building in Úvoz Street.

Even more stately celebrations had been prepared for the 70th anniversary in 1969. Also by this time, the celebrations had become the subject of historical surveys more than ever before. Already in 1949, as part of the preparations for the 50th anniversary, a committee was set up to build an archive collecting documents on the history of the technical university. The 1911 and 1924 almanacs, too, made an effort to portray the current situation at the university as well as the circumstances

of its establishment and its development in the early years of its existence thus providing an invaluable resource for the research of the university's oldest history. In 1959, several articles were published by some of the local teachers on the history of their fields of research and the university as a whole. With the university's 70th anniversary approaching, it was decided that a monograph on the history of the Brno technical university should be edited. In 1969 the first part of The History of the Czech Technical University in Brno was published, a book by dr. Franěk on the history of not only the Czech technical university, but also on the engineering education in Brno as such until the Nazi close-down of the Czech universities in 1939.

The 1969 celebrations took place in the course of several days again. In the morning of Monday 17th November, a ceremony was held at the Kounicovy halls of residence in remembrance of the World War Two victims. The next day in the morning, an exhibition was opened in the Brno Technical Museum on the BUT anniversary and, in the afternoon, the rector of BUT gave a lecture in the meeting hall of the Brno New Town Hall. On 19th November, a public meeting was held of the BUT



Scientific Board and, later in the afternoon, the foundation stone was laid of a new BUT Pod Palackého vrchem campus.

The year 1959, as it were, started a tradition of celebrations recurring every ten years (perhaps with an exception in 1989) in remembrance of the foundation of a Czech technical university as well as of the beginnings of a technical vocational institute as a first technical higher-education institution in Brno. Thus in 1979, too, celebrations were held reflecting the significance of the university. Endorsed by the Minister of Education, this time they were held from 2nd to 6th October. On 3rd October a special meeting of the BUT Scientific Board was held in the Mahen Theatre accompanied by a performance in the Janáček Opera House later in the evening. From 4th to 6th October, scientific conferences were held at BUT faculties. Like in

1969, the celebrations were also attended by representatives from foreign universities. They also included such events as sports days.

But this brings us well to a time that may be remembered by some of the readers. In the critical year 1989, no major celebrations were held apparently not only on account of the November events. No records exist in the archives of any celebration being even prepared. Clearly, turbulent times bring other issues to deal with.

Thus we have ended up in recent times – the hundredth anniversary of BUT was celebrated ten years ago. Most of the BUT News readers will remember the opening of a new, reconstructed BUT Centre in Antonínská Street at present housing the rector’s office and the BUT central library. A successful exhibition in the Moravian Museum called School for Moravia was also part of the celebrations. It offered

a small exploratorium, a hands-on exhibition encouraging students and their teachers to conduct technical experiments. During the celebrations, six distinguished domestic and international personalities received honorary doctorates from the BUT Scientific Board. Also a number of Gold Medals, Memorial Medals and Rector Awards were given at a special academic meeting.

The 105th BUT anniversary was celebrated in the historic building in Veveří Street on 8th November 2004. Honorary doctorates were conferred upon five scientists and artists of international renown at a special public meeting of the BUT Scientific Board in the great hall of the Faculty of Civil Engineering. A festive gathering of the BUT academics followed at which BUT Gold Medals and Rector Awards were given to distinguished BUT academics and co-operators. The festivities also included a gala soirée in the atrium of the BUT Centre in Antonínská Street. An exhibition was opened in the society hall of the Faculty of Civil Engineering showing the rich history of Brno University of Technology, but also its present life and the future paths of its faculties, institutes, and units.



The special academic gathering to commemorate the BUT 105th anniversary in 2004 took place at the Faculty of Civil Engineering in Veveří Street.



Conferral of honorary doctorates was also part of the 2004 celebrations.



AWARDS TO THE BEST STUDENTS

The best BUT students receive numerous awards and scholarships for their study achievements. Given annually at special meetings of BUT academics, the BUT Rector Award is the most important of them. The Josef Hlávka Prize and the Siemens Prize are among other prestigious awards given to BUT student in recent years.

At BUT graduation ceremonies, the Preciosa Foundation rewards the best student degree projects. Five Preciosa Foundation Prizes were awarded this year. They went to ing. Zdeněk Kincl from the Faculty of Electrical Engineering and Communication, ing. Michaela Wirthová from the Faculty of Chemistry, ing. Zbyněk Dostál and ing. Václav Pouchlý from the Faculty of Mechanical Engineering, and ing. Juraj Blaho from the Faculty of Information Technology.

Since its establishment in 1993 by Preciosa, a major joint-stock company of the Liberec region, the Preciosa Foundation has helped non-profit sectors and individuals in the region. All over this country the company is well-known for the support it provides for science and support and care for specialised education. It established its own foundation as one of the first industrial companies of the Czech Republic. In 1995,

the board of directors of this company decided to establish an organisational structure that has existed ever since. The Preciosa Foundation has provided its support for more than a thousand civic activities of most varied character. Its main activity centres around seven basic areas of specialisation run by the managers of individual funds.

The Science and Research fund is used to improve the equipment and services of institutes of the Academy of Sciences of the Czech Republic and other research institutes at selected Czech universities and museums. It encourages the research activities of university teachers and students. The yearly Preciosa Foundation prizes for excellent student projects are awarded from this fund.

For a long time, the board of trustees of the Preciosa Foundation was headed by economist and politician prof. ing. Věněk Šilhán, who was also among its founders. This leading personality of the 1968 Prague Spring died in May this year, all his life having stressed the role of education, learning, tolerance, freedom, democracy and morality. It is also by his efforts that the Preciosa Foundation has gained respect not only in its neighbourhood but also nationwide.



A Preciosa Foundation Prize also went to Ing. Michaela Wirthová from the Faculty of Chemistry.



Every year, the best BUT students receive BUT Rector Awards. Last year, David Čech, a student of the Faculty of Civil Engineering, was among them.

BUT'S 100,000TH GRADUATE



Ing. Leoš Zelníček received a degree certificate numbered 100,000.

A remarkable event happened at the Faculty of Information Technology during this year's graduation ceremonies. On Friday the 10th of July, the oldest technical university of Moravia issued a degree certificate no. 100,000. Having completed the Computer Graphics and Multimedia degree programme, its recipient, Ing. Leoš Zelníček, 25, from Třebíč, is thus BUT's 100,000th graduate.

Leoš, a part-time student now as he had already found a job during his studies as the head of a team of programmers in a local Brno software company, only learnt about this immediately before the graduation ceremony. "Well, it rather surprised me. But still, it's a great feeling," he said. The new graduate received congratulations from dean of the faculty doc. Jaroslav Zendulka and from rector of BUT prof. Karel Rais, who had given him a book by Jiří Pernes, Chapters from the History of Brno University of Technology, published to mark BUT's 110th anniversary, as a souvenir to remind him of this remarkable event.

Official records of the degree certificates issued start only in 1954, says rector Karel Rais. Up to that time from the university foundation in 1899, another more than eight thousand students had graduated as the data found in the archives reveal.

Each year, the number of BUT students increases. A total of 21,752 candidates submitted application for study at BUT in 2009, which is by about 800 more than in the previous year. Also the number of first-year enrolments being 10300 was by 700 higher than the year before.

"Despite the forecasts, which predict the negative effect of a demographic slump, we believe that interest in study at BUT will continue to grow resulting in an even larger number of enrolments" said vice rector for study Miloslav Švec. It should be stressed that, for BUT, keeping the quality of teaching and students admitted is a priority.

Still the student numbers grow. In 2008, a total of 22,774 both full- and part-time students studied in all the accredited degree programmes offered by BUT. It is good that it is particularly owing to the restructured study plans that the university is successful in increasing the number of graduates significantly. While there were 4,288 graduates in 2007, next year this number rose to 5286. In 2009 we expect more than 5350 graduates including the autumn graduation dates.

BUT offers 77 Bachelor's, Master's, and doctoral degree programmes to its study candidates. It also extends its offer by study fields resulting from inter-faculty and inter-university cooperation. While a number of fields is offered by the parent faculty, there are numerous courses taught by teachers from other faculties or even universities. Gradually, also joint degree programmes offered together with foreign universities are introduced. Examples of such inter-university programmes include the Biomedicine Technology and Bioinformatics programme jointly offered by the BUT Faculty of Electrical Engineering and Communi-

cation and the Faculty of Medicine of Masaryk University in Brno, the Management in Physical Education and Management and Information Technology programmes offered by the Faculty of Business and Management jointly with the university Centre of Sports Activities and the Faculty of Information Technology, respectively. The faculty of Business and Management also cooperates with the Faculty of Mechanical Engineering. "Such inter-field studies are now the trendsetter. The reason is that they make it possible to respond to the current demand given by the interests of students, which need not be focussed on a single specialised field. A purely theoretical study of physics, for example, may be complemented by studying applied sciences at one of our faculties and vice versa," said rector of BUT Professor Karel Rais.

Enquiries confirm that BUT graduates can choose from a large number of jobs while, in many areas, the demand for them is even greater than their supply and, sometimes, they would be preferred with a different profile: "Therefore, for some degree programmes, the companies help set up the graduate profiles. The number of companies interested in such cooperation has been growing recently," added the rector.



And this is what BUT's 100,000th degree certificate looks like.