

INNOVATIONS IN TECHNOLOGY TRANSFERS

W. GRABOWSKI, PROF.

DIVISION OF HIGHWAY ENGINEERING, POZNAN UNIVERSITY OF TECHNOLOGY
POLAND

wojciech.grabowski@put.poznan.pl

ABSTRACT

The paper consists its own experience concerning modern technologies transfer in the area of road construction and road transport. Highway Engineering Division of Poznan University of Technology realises international collaboration with European Union Universities (France, Belgium, Greece, Germany) and also Australia, in order to exchange road technologies between Universities and Road Companies, Consulting Companies and Road Laboratories. The main purpose of our activities is modernisation of education and training system of technical staff and Road and Road Transport Development. The greatest current results have been achieved through collaboration with French and German companies, which work in Poland in the field of Road and Transportation. French Central Road Administration which effectively supports our work needs to be distinguished. The paper includes appreciation of our 4-year activity in this area.

KEY WORDS

INTERNATIONAL COLLABORATION/ ROAD TECHNOLOGY/ SEMINARS/ EDUCATION/
PRACTICAL TRAINING.

1. INTRODUCTION

After political and economical changes in Poland in the year 1989 there was an attempt to modernise the old education system in Division of Highway Engineering of Poznan University of Technology. As an important fact of this process there was a modernization of Civil and Transportation Education System, changing the previous programs and adapting them to the needs of building market, modernization of didactic laboratories and preparation of the staff of academic teachers (Grabowski, 1997).

After 1997 Highway Engineering Market requires changes in traditional training methods of technical staff and also technology transfer in Highway Engineering. Our activity in this matter was executed in two levels: post-graduation study organised in Poznan University of Technology and open educational and developing activity (Grabowski, 1999).

Currently our activity is focused on international co-operation with universities, road companies and European Projects.

2. CO-OPERATION WITH FOREGIN UNIVERSITIES IN THE COUNTRY AND ABROAD

The aim of this activity is to improve qualification and technical knowledge of academic staff, students of higher years of education and also technology transfer in area of Highway Engineering and Transportation.

This co-operation consists of:

- Mutual seminars
- Visits of academic staff
- Participation in technical conferences organised in Poland and abroad

Currently we have international co-operation with:

- Aristotle's University of Technology (Greece),
- Ghent University (Belgium),
- Technical University of Hamburg – Harburg (Germany),
- Swinbourne University – Melbourne (Australia).

The range of academic co-operation consists of local and international seminars in following areas: pavement technology, earthwork, drainage, logistics of transport and traffic safety.

Technical articles presented on technical seminars and conferences are printed in conference books and are edited on CD, this provides a wide range of technical ideas and technology transfer. Students, academic staff and also employees of highway engineering companies benefit from this.

2.1. Activity in International Conferences

- 2nd national Conference on Asphaltic Mixtures and Pavements, Thessaloniki, Greece, 1996 – participation in conference, paper presentation,
- International Seminar „Bitumens 2000” Plock, Poland, 1996 - participation in conference, paper presentation,
- Fourth International RILEM Symposium Lyon, France, 1997 - participation in conference, Poster presentation,
- International Conference „Durable and Safe Road Pavements” Kielce, Poland, 1997, 1998, 1999, 2000, 2001, 2002, 2003 - participation in conference, paper presentation, Member of Programme Committee, Chairman of Session IV,
- 1st International Conference "Modern Technologies in Highway Engineering", Poznań, Poland, 1998 – Conference organiser, the number of participants was 200 (the academic staff, employees of project and consulting offices, highway engineers and students), Topics of the Conference: Road Pavements, Earthworks, Technical equipment of roads and streets, Scientific Committee accepted of 40 technical papers which have been written in the Conference Book.
- International Workshop „Modified Bitumens, Rome, Italy 1998 - participation in conference, paper presentation on the Plenary Session,
- 2nd Panhellenic Conference on Road Safety, Volos, Greece 1998 - Paper „Estimation of traffic safety level on National Roads in Poland before Motorway Programme”,
- 2nd Euroasphalt/Eurobitume Congress, Barcelona, Spain, 2000 - participation in conference, paper presentation, Paper in Conference Book,
- 7th International Conference "Modern building, materials, structures and techniques", Faculty of Civil Engineering, Vilnius, Lithuania, 2001 - participation in conference, paper presentation,
- 2nd International Conference „Modern Technologies in Highway Engineering” Poznań, Poland, 2001 - Organizer of Conference, the number of participants was 220 (the academic staff, employees of project and consulting offices, highway engineers and students), Topics of Conference: Road and Bridge Pavements, Earthworks, Road and street drainage, Quality inspection of road works, Material and technology problems in technical equipment of roads and streets, Organization and law problems in highway engineering, 56 technical papers was written in Conference Book there were 12 foreign papers from Australia, Austria, Belgium, France, Germany, Greece, Ukraine and United Kingdom,

- 3rd International Conference „Bituminous Mixtures and Pavements” Thessaloniki, Greece, 2002 - participation in conference, paper presentation, Member of Scientific Committee, Chairman of Session VI

2.2. Activity in Local Conferences

- Scientific Conferences of Civil and Water Engineering Committee of Polish Academy of Science, Krynica, Poland, 1997, 1998, 2001 - participation in conference, Papers in Conference Book,
- Technical seminar “Road Diagnostic”, Szczecin, Poland, 1997 - participation in conference, paper presentation, Member of Programme Committee,
- Local scientific conference “Road maintenance and modernization” Polanica – Zdroj, Poland, 1999 - participation in conference, paper presentation, Member of Programme Committee,
- Local scientific conference “Environment Protection and Road aesthetic”, Zamosc, Poland, 2000 - participation in conference, paper presentation, Member of Programme Committee,
- Conference “Problems of maintenance and rehabilitation of roads and bridges” Kudowa, Poland, 1997 - participation in conference, paper presentation, Member of Programme Committee,
- Seminary of Polish Association of Engineers & Technicians of Transportation, Poznań, 1999, „Road pavements and the Environment „ - participation in conference, paper presentation,
- Seminary of Polish Association of Engineers & Technicians of Transportation, Poznań, 2001, „Geosynthetics in Highway Engineering” - participation in conference, paper presentation,

2.3. Seminars in Poznań University of Technology for students and practising engineers with participation of foreign lecturers

- International seminar with participation of Ecole Normale Superieure – Tunis, „Construction routiere”,
- Seminar „High Speed Train and Eurochannel” ,
- Seminar „Reparation of concrete structure”.
- Seminar „Machines for road works”,
- Seminar „Transport in the United Kingdom”, prof. Eamonn Judge from Leeds Metropolitan University,
- Seminar „Flexible pavements design including life cycle and cost analysis”, prof Georgios Tsohos from Aristotles University of Thassaloniki,
- Seminar „Transport systems”, prof. Carsten Gertz from Technical University Hamburg - Harburg,
- Seminar „Geosynthetics in Civil Engineering, lecturers from France.

3. PARTICIPATION IN INTERNATIONAL STUDENTS AND ACADEMIC STAFF EXCHANGE WITHIN THE CONFINES OF EUROPEAN PROJECTS.

Division of Highway Engineering of Poznań University of Technology participates in students and academic staff exchange within the confines of SOCRATES/ERASMUS Project together with the following universities:

- Ghent University (Belgium),
- Hannover University (Germany).

The aim of this exchange is to extend the knowledge and to educate students, academic staff and technology transfer in the area of Road Construction and Concrete Technology.

FASTI – Leonardo da Vinci Project refers to students and academic staff exchange to gain practical training in Highway Transportation Companies.

We have signed up an agreement with Technical University of Hamburg-Harburg (European Centre for Transportation and Logistics) and in academic year 2003/2004 three of our students are having practical training in German companies.

4. CO-OPERATION WITH FOREIGN HIGHWAY ENGINEERING COMPANIES.

At present Highway Engineering companies from France, Germany and Sweden are working on projects of Motorway A2 construction (Poznan By-Pass). We actively co-operate with them in the following areas:

- Within the confines of Quality Assurance Plan we test and make quality evaluation of concrete engineering structure, executed earthwork, pavement layer of motorway,
- Scientific evaluation of changes in pavement structure of motorway by applying French technology of High Modulus Hot Mix and Increased Fatigue Resistance,
- Technical visits of students and academic staff during individual stages of motorway construction,
- Seminars on modern Highway Engineering Technology with participation of practising engineers from France, Germany and Sweden - participants: students, academic staff and road engineers.

5. THE EVALUATION OF SO FAR ACTIVITY.

Division of Highway Engineering of Poznań University of Technology in recent years has acted in area of modernization of students education system, academic staff and Highway Engineering Technology transfer, which work in two areas: the academic and the professional.

In the area of academic co-operation we have the best results in mutual conferences and seminars with the following universities: Ghent (Belgium), Thassaloniki (Greece), Wroclaw, Lublin, Szczecin (Poland).

In area of professional co-operation FASTI Program and co-operation with big companies which run a business on the territory of Poland should be emphasized - this activity gives measurable effects in modernization of students education system and in development of academic staff and road engineers knowledge. The most distinguished fact is the co-operation with French Road Administration. On the 3 km long test-section the French technology of asphalt pavement layer - High Modulus Hot Mix and Increased Fatigue Resistance, for the first time had been applied in Poland. Visits of students, academic staff and practising engineers in construction site allowed to find out about this technology, which had been introduced at conference in Kielce (Brosseaud, 2003).

In my opinion the best effects in technology transfer were achieved by co-operation with highway engineering companies and international seminars with participation of practising engineers.

REFERENCES

Brosseaud, Y., Bogdanski, B., Carre, D., Nosler, I. (2003), Achieve better roads in Poland while saving resources with French function dissociation concept, IX International Conference, Kielce, Poland, paper, pp. 235-242.

Grabowski, W. (1997), Modernization of Civil & Transportation Engineering Education System, Paper presented at XIII th IRF World Meeting, Toronto, Ontario, Canada.

Grabowski, W.(1999), Experience in training of technical staff and exchanges of modern technologies in Highway Engineering, Paper 03-06, XXI st World Road Congress, Kuala-Lumpur, Malaysia.