

DEPARTMENT OF HYDRAULIC ENGINEERING
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I. STAFF

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II. EQUIPMENT

II.1 Teaching and Research Laboratories

Hydraulic laboratory

II.2 Special Measuring Instruments and Computers

Hydraulic laboratory:

Instruments and equipment:

- Closed water circuit with built-in fixed and inclinable flumes
- Direct discharge measurement equipment
- Sets of hydraulic wings for measuring velocity
- Echolot - equipment for measuring reservoir depths
- Flowmate - for measuring flow velocity in rivers
- Equipment for measuring
 - a) pressure
 - b) water levels
 - c) dissolved oxygen content

Computer laboratory:

- IBM PC Pentium Computers
- HP DXL Plotter
- Printers

III. TEACHING

III.1 Graduate Study

Subject	Semester	Hours Per Week		Lecturers
		Lectures	Seminars	
Hydraulics I.	4	2 - 3		J. Kamenský
Hydraulics II.	5	3 - 2		J. Kamenský
Water Management Structures	6	3 - 2		L. Možiešik
Weirs	7	3 - 2		M. Gramblička
Groundwater Hydraulics	5	2 - 2		A. Šoltész
Inland Waterways	8	2 - 2		P. Obložinský
Computer Exploitation in Engineering	9	0 - 4		L. Možiešik
Special Issues of Weirs	9	2 - 3		M. Gramblička
Special Issues of Waterways	9	2 - 2		P. Obložinský
Operation and Reconstruction of Hydraulic Structures	9	2 - 0		P. Gramblička
Small Water Power Plants	9	2 - 1		T. Hodák P. Dušička
Stability and Static Solutions of Hydraulic Structures	10	2 - 2		P. Gramblička
Water Power Utilization	8	3 - 2		T. Hodák P. Dušička
Field Measurements	8	2 weeks		L. Možiešik
Hydroenergetics	9	2 - 3		P. Dušička P. Šulek
Construction of Metallic Hydraulic	10	2 - 1		M. Gramblička

Structures			
Hydraulic Research	10	0 - 3	J. Kamenský
Ecological Problems of Hydraulic Structures	9	2 - 1	J. Kamenský
Engineering Networks and Water Structures	8	2 - 1	A. Šoltész
Automation of Engineering Problems	10	0 - 3	A. Šoltész L. Možiešik F. Hulík
Special Issues of Hydraulic Engineering	10	2 - 1	M. Gramblička P. Dušička L. Možiešik
Numerical Modelling of Hydraulic Processes	9	0-2	A. Šoltész R. Květon
Water and Road Constructions	4	2 - 1	A. Šoltész

IV. RESEARCH TARGETS

- Hydraulics of locks and weir structures,
- study of free-surface water flow in open channels,
- investigation of non-stationary flow in hydraulic systems,
- solution of construction problems of small hydro-power plants,
- hydro-power solutions of cascades of hydro-power plants and pump-fed power plants,
- hydrodynamics of subsurface water,
- interaction of surface and subsurface water in the environment,
- evaluation of the effects of hydraulic structures on the environment (EIA),
- numerical simulation of surface and subsurface flow and their interaction,
- mathematical simulation of hydraulic and hydrological processes in catchments,
- field measurements of water level and discharge regimes in rivers and open channels,
- hydraulic aspects of flood protection against external and internal waters
- hydro-environmental problems of floodplains in the vicinity of water structures

V. RESEARCH PROJECTS

1. *P. Dušička* - Research Grant No. 1/0328/03 Verification of marginal possibilities of the regulatory operation of hydro-power plants with respect to reservoir silting and navigation parameters.
2. *A. Šoltész* – Research Grant No. 1/8324/01: Hydrologic-hydraulic assessment of surface and groundwater interaction in the runoff of floods in lowland regions.

VI. COOPERATION

VI.1 Cooperation in Slovakia

1. Water Power Plants, Trenčín
2. Water Management Construction, Bratislava
3. Slovak Academy of Sciences - Institute of Hydrology, Bratislava
4. Slovak Hydrometeorological Institute, Bratislava
5. Water Resources Research Institute, Bratislava
6. The Research Institute of Irrigation, Bratislava
7. Hydroconsult, project organization, Bratislava
8. Hydrostav, Bratislava
9. Váhostav, Žilina
10. Ministry of Land Use, Bratislava
11. Ministry of the Environment, Bratislava
12. Ministry of Transport, Post and Telecommunications
13. Danube River Basin Authority, Bratislava
14. Váh River Basin Authority, Piestany
15. Hron River Basin Authority, Banska Bystrica
16. Bodrog and Hornad Rivers Basin Authority, Kosice
17. ETIRS Ltd., Bratislava
18. REBUS Ltd., Bratislava
19. Geoland, Bratislava
20. Hydroenergia, Bratislava
21. Vodotika, Bratislava
22. VOEST Alpine, Bratislava
23. FÄH, Bratislava
24. Slovak Navigation Board, Bratislava
25. INTECH, Ltd., Bratislava

VI.2 International cooperation

Name of cooperating firms and institutions abroad, country:

1. Czech Technical University, Prague, Faculty of Civil Engineering, Department of Hydraulics Engineering, Czech Republic
2. Technical University of Brno, Faculty of Civil Engineering, Institute of Water Structures, Czech Republic
3. Institut für Wasserbau und Technische Hydromechanik, Technische Universität, Dresden, Germany
4. Fachhochschule Köln, Fachbereich Bauingenieurwesen, Germany
5. Institute of Geotechnic and Hydraulic Engineering, Wroclaw, Poland
6. Water Resources Research Centre (VITUKI), Institute for Water Pollution Control, Budapest, Hungary
7. Delft Hydraulics, Rivers, Navigation and Structures Division, Delft, The Netherlands
8. ILRI Wageningen, The Netherlands
9. MAVEL, Ltd. Benešov, Czech Republic
10. University of St. Cyril and Method, Skopje, Macedonia
11. BOKU Vienna, Austria

12. TU Zagreb, Croatia
13. TU Gdańsk, Poland
14. ETH Zürich, Switzerland
15. University of Kaiserslautern, Germany
16. University of Hannover, Germany
17. Bauhaus-University of Weimar, Germany
18. University of Poitiers, France
19. University of Cyril and Method, Skopje, Macedonia

VI.2.1 Visitors to the Department

1. Prof. Pavel Gabriel - ČVUT Prague
2. Assoc. Prof. František Čihák – ČVUT Prague
3. Assoc. Prof. Vlastimil Stara - VUT Brno
4. Assoc. Prof. Jaromír Říha – VUT Brno
5. Assoc. Prof. Miloslav Šlezinger – VUT Brno
6. Dr. Hana Uhmanová – VUT Brno

VI.2.2 Visits of Staff Members and Postgraduate Students to Foreign Institutions

1. Dušička, P.: BU Weimar, Germany, 4 days
2. Dušička, P.: VUT Brno, Czech Republic, 2 days
3. Možiešik, L.: VUT Brno, Czech Republic, 2 days
4. Šoltész, A.: BU Weimar, Germany, 4 days
5. Šoltész, A.: VUT Brno, Czech Republic, 2 days
6. Hodák, T.: VUT Brno, Czech Republic, 2 days
7. Šoltész, A.: VUT Brno, Czech Republic, 2 days
8. Kamenský, J.: VUT Brno, Czech Republic, 2 days
9. Šoltész, A.: ICOLD Australia, 3 weeks

VII. THESES

VII.1 Graduate Theses (Diploma Work)

No.	Student's Name	Title	Supervisor
1.	A. Badin	Design of Navigation Lock Walls from Gravitation Walls	Ľ. Možiešik
2.	V. Činčura	Design and Calibration of Equipment for Measuring Discharges	J.Kamenský
3.	R. Dvořák	Theme of Vah Waterway Construction	P. Obložinský
4.	B. Fekete	Effect of Impact of Waves on Safety of Unmoored Ships	Ľ. Možiešik
5.	M. Gálik	Temporary Hatching and Possibilities of Its Exploitation for Flood Protection of Towns	M.Gramblička
6.	L. Hašková	Sered' – Hlohovec Hydraulic Structure. Design of Barrages in the Vah Channel	J.Kamenský
7.	M. Monček	Ship Escalator, Possibilities of Its Exploitation, System Hydraulics	P.Obložinský
8.	P. Poproč	Design of Small Hydro-Power Plant on the Hron River in	T.Hodák

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| | the Locality of Hronská Dúbrava | |
| 9. | F. Rebenda | Design of Remata II Small Hydro-Power Plant T.Hodák |
| 10. | J. Rumann | Design of Kálna Small Hydro-Power Plant on the Hron River T.Hodák |
| 11. | J. Simon | Arbitration of Hydrology and Hydraulics of Internal Water A.Šoltész
Sluicing in Southeastern Part of Podunajská nížina |
| 12. | M. Supeková | Resolution of Downstream Apron and Capacity of M.Gramblička
Manipulation Structure of Sluice-Way Openings in Petrovce |
| 13. | M. Valko | Hydraulic Design of Outlet Tower on Hronček Hydraulic J.Kamenský
Structure |
| 14. | L. Zlatníková | Effect of Reservoir Silting on Regulatory Accomplishments P.Dušíčka
of Hydro-Power Plant |

VIII. OTHER ACTIVITIES

VIII.1 Commercial Activities for Firms and Institutions

Government Related Activities

1. DUŠIČKA, P., et al.: Effect of predicted navigation on the energy functions on the upper and middle parts of the Váh cascade, FCE SUT Bratislava 2002/2003
2. DUŠIČKA, P., et al.: Calculation of the velocity field in the Belá river in the rkm 2.0~3.0 part and reference arbitration of the groundwater level in the left bank of the area. FCE SUT Bratislava 2003
3. DUŠIČKA, P., et al.: Independent operating management of the Žilina hydraulic structure from the point of view of hydraulic coupling on other hydraulic structures on the Vah river. FCE SUT Bratislava 2003
4. DUŠIČKA, P., et al.: Operating regulations of the Nosice hydraulic structure – capacity curve reformatting of flaps and segments. FCE SUT Bratislava 2003
5. DUŠIČKA, P., et al.: Ipeľ pumped storage hydroelectric plant –study on the design of the dam sealing the upper and lower basins, part 2. FCE SUT Bratislava 2003
6. DUŠIČKA, P., et al.: Multimedia processing of operating regulations for the Dolné Kočkovce - Ladce - Ilava - Dubnica - Trenčín cascade of hydro-power plants. on CD, FCE SUT Bratislava 2003
7. DUŠIČKA, P., et al.: Ipeľ pumped storage hydroelectric plant – conceptual study – protective arrangements at the Málinec water reservoir. FCE SUT Bratislava 2003
8. DUŠIČKA, P., et al.: Possibilities of increasing the hydroenergy potential in the Slovak Republic. FCE SUT Bratislava 2003
9. KAMENSKÝ, J.- GRAMBLIČKA, M.: Garajky water-supply reservoir. Technical study of structures, FCE SUT Bratislava 2003

VIII.2 Membership on International Commissions

1. Šoltész, A.: National correspondent for groundwater resources – International Association of Hydrological Sciences
2. Šoltész, A.: Vice-President of the Slovak Executive Committee of the International Commission on Irrigation and Drainage
3. Kamenský, J.: Member of the International Association of Hydraulic Research
4. Obložinský, P.: Member of PIANC
5. Šoltész, A.: 6. EU (for research, technical development – independent expert) Ministry of Education SR

VIII.3 Membership in nationwide technical, professional and scientific organizations

1. Kamenský, J.: Member, TNK Hydrotechnics
2. Kamenský, J.: Staff member, Water Management Journal
3. Kamenský, J.: Member, Confederation of FCE SUT
4. Kamenský, J.: Member, Confederation of Water Research Institute in Bratislava
5. Kamenský, J.: Head, SOK Hydrotechnics
6. Možiešik, L.: Executive secretary, Commission of Slovak Navigation Congress
7. Obložinský, P.: SVHS chair member
8. Obložinský, P.: Member, SOK Hydrotechnics
9. Hodák, T.: Member, SOK Hydrotechnics
10. Hodák, T.: SVHS Member, Water Power Plants Section
11. Šoltész, A.: Member, TNK Hydrotechnics
12. Šoltész, A.: Member, Confederation of RILWR in Bratislava
13. Šoltész, A.: Member, SOK Hydrotechnics
14. Šoltész, A.: Member, SOK Irrigation and Drainage
15. Šoltész, A.: Staff member, Slovak Journal of Civil Engineering
16. Šoltész, A.: Member of the VEGA Scientific Commission on Civil Engineering, Architecture, Mining and Geotechnics
17. Šoltész, A.: Agricultural Academy of Sciences – Vice-President of Water Management Section
18. Šoltész, A.: SVTS Member, Hydrotechnics Section
19. Dušička, P.: SVHS Member, Water Power Plants Section

IX. PUBLICATIONS

IX.1 Journals

- [1] KAMENSKÝ, J.: Increase in Efficiency of Flood Storage Basins through Regulation of Functional Structured Discharges. Acta Hydrologica Slovaca, Bratislava, 2003, Vol. 4, part 2, pp. 276-281
- [2] KVĚTON, R.: Mathematical Model of Madunice Hydro-Power Plant. Acta Hydrologica Slovaca, Bratislava, 2003, Vol. 4, part 2, pp. 282-287
- [3] ŠOLTÉSZ, A. - BAROKOVÁ, D.: Regulation of Groundwater Level Regime in the Effective Area of the Žilina Hydraulic Structure. Acta Hydrologica Slovaca, Bratislava, 2003, Vol. 4, part 2, pp. 257-266

- [4] BALÁŽOVÁ, A.: Model Solution of Groundwater Flow and Open Channel Flow Interaction with the Help of FEM. *Acta Hydrologica Slovaca*, Bratislava, 2003, Vol. 4, part 2, pp. 351-356
- [5] MOŽIEŠIK, L. - VALENTA, P.: Research on Navigation Conditions in Lock Cuts through Use of Numerical Modeling. In: *Water Management*, Vol. 53, 2003, No. 9
- [6] DUŠIČKA, P.: Small Hydropower Plants in Slovakia. *Architecture-Building-Housing*, Vol. X., 2003, No. 6, pp. 82-84

IX.2 Conferences

- [1] BAROKOVÁ, D. - HULÍK, F. - DUŠIČKA, P.: Modeling the Effect of Technical Arrangements on the Belá River to Prevent Bridge Pier Erosion and Raising the Groundwater Level. In: *Proceedings of international colloquium, 3d Water Management Conference, Brno, 2003*, pp. 5-14
- [2] MOŽIEŠIK, L. - CABADAJ, R.: Arbitration of Prepared Navigation and Energy Regulatory Operations at the Drahovce – Madunice Hydraulic Structure. In: *Proceedings of international colloquium, 3d Water Management Conference, Brno, 2003*, pp. 22-28
- [3] DUŠIČKA, P. - ŠULEK, P.: Research on Regulatory Properties of the Madunice Hydropower Plant. In: *Proceedings on international colloquium at 3d water management conference, Brno, 2003*, pp. 29-36
- [4] KVĚTON, R.: Intake and Outlet Water Flow Modeling on the Madunice Hydropower Plant. In: *Proceedings of international colloquium, 3d Water Management Conference, Brno, 2003*, pp. 37-41
- [5] GRAMBLIČKA, M.: Oreské Flood Storage Basin and Construction of a Model of It on a Scale of 1:20. In: *Proceedings of international colloquium, 3d Water Management Conference, Brno, 2003*, pp. 42-47
- [6] CABADAJ, R.: Effect of Persistent Water on the Process and Timing of Navigation Lock Filling and Drawing. In: *Proceedings of 5th scientific conference on Water Management and Hydraulic Structures, Brno, 2003*, pp. 63-68
- [7] ČEPCOVÁ, Z.: Reconstruction Project for Small Water Power Plant near Zamkovského Chalet in the High Tatras. In: *Proceedings of International Water Service Science Conference, Brno - Úbislav, 2003*, pp. 91-95
- [8] FIALÍKOVÁ, B.: Solution to the Capacity of the Turiec River in the Village of Turček. In: *Proceedings of International Conference of Water Service Science, Brno - Úbislav, 2003*, pp. 102-108
- [9] BALÁŽOVÁ, A.: Interaction of Open Channel Flow and Groundwater Flow. In: *Proceedings of International Water Service Science Conference, Brno - Úbislav, 2003*, pp. 146-152
- [10] BAROKOVÁ, D. - FRANKOVSKÝ, P. - ŠOLTÉSZ, A.: Control of the Groundwater Level in the Area of the Effects of the Žilina Water Structure. In: *Proceedings of 8th International Symposium on Water Management and Hydraulic Engineering, Podbanské, 2003*, pp. 11-20
- [11] KAMENSKÝ, J. - FIALÍKOVÁ, B.: Floods on Small Streams - Their Causes and Possibilities of Protection against Them. In: *Proceedings of 8th International*

Symposium

on Water Management and Hydraulic Engineering, Podbanské, 2003, pp. 169-177

- [12] KVĚTON, R. - DUŠIČKA, P.: Mathematical Model of the Drahovce – Madunice Water Work. In: Proceedings of 8th International Symposium on Water Management and Hydraulic Engineering, Podbanské, 2003, pp. 227-234
- [13] OBLOŽINSKÝ, P.: Navigability of the Váh River. In: Proceedings of 8th International Symposium on Water Management and Hydraulic Engineering, Podbanské, 2003, pp. 297-304
- [14] ŠOLTÉSZ, A. - BAROKOVÁ, D.: Discharge and Water Level Regime in the Bio-Corridor of the Žilina Water Structure. In: Proceedings of 8th International Symposium on Water Management and Hydraulic Engineering, Podbanské, 2003, pp. 411-416
- [15] DUŠIČKA, P. - ŠULEK, P.: Research on the Water Level Regime at the Madunice Hydropower Plant. In: Proceedings of conference (with international contribution) on the Effect of Hydraulic Structures on the Creation and Protection of the Environment, Podbanské, 2003, pp. 21-30
- [16] KAMENSKÝ, J.: Persistent Sustainable Evolution and Integrating Water Management. In: Proceedings of conference (with international contribution) on the Effect of Hydraulic Structures on the Creation and Protection of the Environment, Podbanské, 2003, pp. 97-102
- [17] OBLOŽINSKÝ, P.: Exploitation of Energy and Navigation of the Vah River. In: Proceedings of conference (with international contribution) on the Effect of Hydraulic Structures on the Creation and Protection of the Environment, Podbanské, 2003, pp. 145-150
- [18] ŠOLTÉSZ, A. - BAROKOVÁ, D. - MOŽIEŠIKOVÁ, K.: Resolution of the Negative State of Groundwater in the Village of Mojš. In: Proceedings of conference (with international contribution) on the Effect of Hydraulic Structures on the Creation and Protection of the Environment, Podbanské, 2003, pp. 183-194
- [19] HODÁK, T. - ŠULEK, P.- DUŠIČKA, P.: Design of a Penstock and Water Reservoir for the Museum of the Village of Liptov in Pribylina. In: Proceedings of conference (with international attendance) on Small Hydraulic Structures and Alternative Energy Resources, Košice, 2003, pp. 47-52
- [20] GRAMBLIČKA, M.: Bag – Suitable Kinds of Closures for Small Hydraulic Structures. In: Proceedings of conference (with international attendance) on Small Hydraulic Structures and Alternative Energy Resources, Košice, 2003, pp. 89-96