

56th SCIENTIFIC CONFERENCE  
of  
Committee for Civil Engineering of the Polish Academy of Sciences  
and  
Scientific Committee of the Polish Association of Civil Engineers and Technicians  
KRYNICA, POLAND, 19-24 SEPTEMBER 2010

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1. GENERAL REPORT

Between 19 and 24 September 2010, Krynica played host to participants of “KRYNICA 2010” 56th Scientific Conference organised by the Committee for Civil Engineering of the Polish Academy of Sciences (KILiW PAN) and the Scientific Committee of the Polish Association of Civil Engineers and Technicians (KN PZITB). The Faculty of Civil and Environmental Engineering of the Kielce University of Technology was the co-organiser of the Conference for the second time.

The Conference had two parts: the problem part and the general part.

The thematic part of the Conference, traditionally concerning current issues, dealt in this year's edition with **DIAGNOSTICS, MONITORING AND MODERNISATION OF CONSTRUCTION ENTITIES IN OPERATION**, and was presented in 21 commissioned papers.

The choice of the subject of this Conference was motivated by the fact that a growing number of operating civil structures are now beginning to suffer accelerated deterioration, reaching or exceeding their design lives. In order to ensure that the structures are reliable, there is a need to regularly view and check their technical condition. Decisions about repairs, scope of modernisation work, or future operation of such structures depend largely on an effective inspection and monitoring techniques. Along with the development of verified software packages and research techniques, more and more methodologies are applied for the assessment of damage and behaviour of buildings and engineering structures. The problem is which decision is an optimum in given circumstances and how credible are the results obtained from inspections, which

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are dependent not only on the accuracy of equipment but also on the investigated area selection, changes that take place over time, loads on the structures during the inspection, and other external conditions. In this context, working out and implementation of objective monitoring and diagnostic systems, together with guidelines concerning the scope and type of planned modernisation work, becomes a key issue.

The general part of the Conference was devoted to research. Out of 126 papers sent in for review, 106 papers were accepted and qualified for presentation in the following areas: 9 in General Building; 6 in Structural Physics; 11 in Soil and Foundation Engineering; 22 in Road Engineering; 6 in Bridge Engineering; 5 in Project Engineering; 15 in Concrete Structures; 14 in Metal Structures; 5 in Building Materials; 13 in Mechanics of Structures and Materials. Moreover, 3 state-of-the-art reports were commissioned and published in conference proceedings.

The conference was attended by 330 participants. Three magazines were the media patrons: *Engineering and Construction*; *Construction Review*, and *Highway Magazine: Road and Bridge Engineering*.

The significance of the Conference for our community was emphasized in his opening address on 19/09/2010 by Prof. W. Radomski, President of KILiW PAN and Chairman of the Conference Scientific Committee:

*This year, the thematic part of our Conference is focused on "Diagnostics, Monitoring and Modernisation of Construction Entities in Operation." The importance of the topic, in terms of technological, economic and social aspects, can be hardly overstated. We are aware that a long-lasting malpractice in the maintenance of widely understood civil infrastructure in Poland has resulted from its disastrous condition. The condition, which, if only for safety and functionality reasons, has to be diagnosed and monitored, and the entities have to be modernised in order to correspond to modern standards. This is an enormous task that requires effective and state-of-the-art research, and unconventional measures. The papers which are going to be presented in this part reflect the key issue of the Conference. They were prepared by prominent Polish and foreign experts in the field. We are hoping for interesting discussions. Let us hope that our engineering and research activity will benefit from the results of our Conference. It may also be that the ministry of infrastructure will include them in their administrative decisions. My optimism seems to be incorrigible.*

*The general part of the Conference is – as usually – a review of current research conducted in various centres. The review will enable all the chairmen of the sessions to evaluate the scientific standard of particular research centres, the novelty of their projects, and the relationship to the world leading achievements. The evaluations will be presented during the final remarks session on the last day of the Conference. The papers were reviewed and qualified by the Scientific Committee. I wish to thank all its members for their hard work.*

*Krynica Conferences should be regarded as common good of our community. We have to make sure that they are the best forum for civil engineering thought. The*

*prestige of our Conferences depends on the importance we ourselves attach to them, not on the points from the administration. Please keep this in your minds and hearts.*

On the opening day of the Conference, the PZITB, as every year, presented awards and medals for 2010:

- **Prof. Stefan Bryła Award** was conferred upon dr hab. inż. Barbara Klemczak for her work on modeling of heat, moisture, and mechanical effects in structural concrete of massive structures.
- **Prof. Waław Żenczykowski Award** was granted to dr hab. inż. Tomasz Siwowski for innovative design and delivery of bridges.
- **Prof. Aleksander Dyżewski Award** was granted to dr hab. inż. Bożena Hoła for her achievements in scientific work.
- **Prof. Aleksander Dyżewski Award** was conferred upon mgr inż. Zbigniew Drewnowski for his achievements in practical activity.
- **Prof. Roman Ciesielski Medal No. 5** was conferred upon dr hab. inż. Krzysztof Stypuła (Institute of Structural Mechanics Department of Land Engineering at Krakow University of Technology)
- **Prof. Stefan Kaufman Medal** was conferred upon prof. dr hab. inż. Stanisław Majewski (Department of Structural Engineering, Faculty of Civil Engineering at the Silesian University of Technology)

The thematic part of the Conference started the next day with four sessions during which 21 papers were presented.

The introductory paper was presented by Prof. Cz. Cempel, who discussed the condition and development directions of technical diagnostics. Other papers dealt with problems of diagnostics of nearly all construction entities and engineering structures, monitoring systems, diagnostics for concrete, durability of reinforced concrete structures, and evaluation of post-flood building structures condition. Three papers were prepared by foreign authors:

Prof. J. Walraven – Delft University of Technology – the Netherlands; Prof. K. Ono – UCLA – USA; Prof. A. Nowak – University of Nebraska – USA.

Main theses of the problem part summary were reflected in the speech given by Prof. W. Radomski:

- Both the presenters and participants confirmed in discussion that the subject of the problem part was the most appropriate. The discussed problems are very important technologically, economically, socially, and culturally, as proved by presentations relating to diagnostics and revitalization of historical structures and sites.
- The papers were prepared by highly competent specialists. Each presentation was followed by a lively discussion, which testifies to their value. Therefore, the organizers of the Conference deserve congratulations and thanks for the choice of presenters and topics.
- The thematic part has helped to expand the range of subjects of the Krynica Conferences, which includes diagnostics and monitoring in hydroengineering structures, railways, road surfaces, and advanced methods for studies of the structure of concrete.

te, enabling researchers to deduce about its behaviour in the macroscale, dynamic diagnostics, issues of building and engineering structure durability (mostly bridges), and already mentioned revitalization of historical structures and sites.

- The thematic part of the Conference showed that diagnostics can be considered as a separate scientific discipline under continuous development. This is a discovery for our community. We became aware of this after the introductory speech made by Prof. Cz. Cempel.
- Diagnostic systems and their application require certain expenditures. So it is necessary to use economic thinking. Implementation of diagnostic systems produces significant savings such as early warnings about a threat to safety of buildings and engineering structures.
- In Poland full diagnostic systems are built (Kielce University of Technology, IPPT PAN), which may raise some optimism. The advanced scientific developments play a crucial role in those systems.
- There are grounds to suppose that the level of diagnostics and monitoring conducted in Poland corresponds to current world standards.
- A critical remark *pro domo sua* – the thematic part of the conference lacked the issue of geotechnical diagnostics, the important problem currently reflected in landslides occurring in southern Poland.
- Diagnostics, monitoring, and modernization of construction entities in our country are still waiting for wise and coherent legal provisions.

103 out of 106 qualified papers were presented in the general part of the Conference: **Construction Research Problems** (21-23/09/2010). This part was divided into 20 thematic sessions held simultaneously in two conference halls. Additionally, 2 commissioned state-of-the-art reports by: Prof. L.Czarnecki: Nanotechnologies in Construction and Prof. T. Godycki-Ćwirko and his Team: Football Stadium in Gdańsk Lednica for Euro 2012 which can be characterised with the phrase: from *nano* to *macro* in construction.

Main theses of the general part were included in the speech made by Prof. W. Radomski:

- The idea of commissioned papers, which drew a lot of attention, turned out to be right and should be continued.
- The general standard of the papers was satisfactory without any “fireworks”. Some papers – and this is a tip for the Scientific Committee to consider in the future – lacked a clear justification of the reasons behind the conducted research.
- According to the sessions chairmen, large portion of the papers, after necessary extension and corrections, can be published in leading domestic and foreign journals. It’s good news. I am appealing to the authors and their scientific supervisors to see to it.
- The form of the papers presentation in the general part of the Conference was good and matched those presented at high rank international conferences (with a

few exceptions). Nearly all the presentations were followed by discussions, although there was little time for discussions.

- The problem of publication in the *Archives of Civil Engineering* – despite incomprehensibly low grading scale (6 points) in the ministerial ranking, the Central Committee is interested whether the candidate was published in PAN journals. The rank of the journal and conference does not depend on marks granted by officials, it does depend on the importance we attach to these forms of activity.
- Do the papers, at least those presented in the general part, represent a forest or they are just numerous but separate trees? My impression is that it is not a forest yet but a grove, as some germs of scientific schools could be seen in some areas (conf. sessions chairmen's reports). But do they promise a true, proper and modern extension of the state of the art; do they create real progress in construction business or its theoretical and experimental foundations? Finding answers to these questions is now one of the basic tasks for KILiW PAN and KN PZITB.
- Still, there are outstanding engineers and researchers of young generation. They are the laureates of the Stanisław Bryła and Waław Żenczykowski Awards. My congratulations and best wishes.

**The Conference Organisers** (Kielce University of Technology) wish to thank the following organisations for their kind support: the Committee on Civil Engineering and Hydroengineering of the Polish Academy of Sciences (KILiW PAN), the Polish Association of Civil Engineers and Technicians (PZITB), the Conference Scientific Committee and the Scientific Committee of the Polish Association of Civil Engineers and Technicians.

Special thanks should be offered personally to Prof. W. Radomski (President of the Committee on Civil Engineering and Hydroengineering of the Polish Academy of Sciences – for his kind supervision, advice, and assistance, and to Prof. A. Łapko (President of the Scientific Committee of the Polish Association of Civil Engineers and Technicians) and (mgr) W. Piwowski MA (President of the Polish Association of Civil Engineers and Technicians).

**Table 1**

Participants by units.

	<b>Unit</b>	<b>Number of participants</b>
<b>1.</b>	<b>Universities</b>	<b>207</b>
	Universities of Technology: of Kielce, Warsaw, Gdańsk, Kraków, Rzeszów, Łódź, Opole, Silesia, Poznań, Wrocław, Lublin, Białystok, Częstochowa; University of Technology and Natural Sciences in Bydgoszcz, University of Natural Sciences in Wrocław, University of Zielona Góra, West Pomeranian University of Technology, Pedagogical University in Kraków; Warsaw University of Life Sciences, Land Force Military Academy in Wrocław; Military Academy of Technology; AGH University of Science and Technology; Delft University of Technology; State Higher Vocational School in Krosno; UCLA USA; University of Nebraska	
<b>2.</b>	<b>Organizations:</b> PZITB, chambers of construction	<b>39</b>
<b>3.</b>	<b>Research Institutes:</b> ITB, IBDiM, IPPT PAN, Land Forces Institute of Technology in Warsaw	<b>20</b>
<b>4.</b>	<b>Companies</b>	<b>49</b>
<b>5.</b>	<b>Others</b>	<b>15</b>
	<b>Total</b>	<b>330</b>