

In Memoriam

Professor Jerzy Sadowski 1924–2014



Professor Jerzy Sadowski – outstanding Polish scientist, a specialist in acoustics – construction, industrial, architectural and environmental – passed away on 28th July 2014.

Professor Jerzy Sadowski was born on 18th December 1924 in Augustów, in northeastern Poland. In 1946 he commenced studies at the Gdansk University of Technology – initially at the Faculty of Architecture, to switch later to the Faculty of Electrical Engineering. The life of Jerzy Sadowski as a student was as complicated as the post-war history of Poland. Due to his involvement in an activity of illegal student organization, he was expelled from the university in 1949, with a ban on any further tertiary education. The ban had been lifted after a certain time which allowed him to recommence further studies, this time at the Warsaw University of Technology the Faculty of Communications, where in 1952 he obtained the diploma and title of Master of Science and Engineer. He received a

lot of help from Professor Ignacy Malecki, the nestor of Polish acoustics. This certainly contributed to kindling the young engineer's interest in acoustics, as a field of both knowledge and very important practical applications.

During the interruption in his studies, Jerzy Sadowski worked in the construction sector. He maintained ties with this sector also during his studies at the Warsaw University of Technology and following his graduation, working as a building inspector at the construction sites of special structures (e.g. petrol stations); and later as a designer at the Office of Studies and Designs of the Radio and Television. During that period, he designed numerous radio and television studio rooms applying solutions which were very innovative at that time.

Construction design and construction work didn't satisfy the interests and ambitions of the young engineer. His passion for discovering new horizons, for

facing new challenges and for scientific work were the basis for his initiative to establish a special department at the Building Research Institute (ITB) that would deal with the issues of noise protection in construction.

The Acoustics Department of the Institute was established in 1959 and, led by Mr. Jerzy Sadowski, it soon became an important center of research in the field of construction, architectural, urban planning and environmental acoustics.

Jerzy Sadowski quickly acquired subsequent degrees and scientific titles. In 1961 he received his Ph.D. at the Silesian University of Technology, on the basis of a doctoral thesis on the acoustic insulation properties of certain construction elements, based on the results of his research conducted at the Acoustics Department of the Building Research Institute. He was granted the title of *Doctor Habilitatus* at the Warsaw Technical University, and then in 1973 the title of professor, and in 1980 – full professor.

As the person who established the Acoustics Department at the ITB and who managed it for a very long time – almost 45 years – he exerted great influence on the subjects of research and the operating profile of the Department which covered both scientific and practical issues, meeting the needs and demands of the construction sector, urban planning and environment protection.

Professor Sadowski always kept in mind the rule that the results of research work depend on the people who perform it and their work technique. Consistently, firmly and courageously he built the research team of the ITB, attracting young and talented university graduates for whom he created appropriate conditions for development. He undertook the effort of building an acoustics laboratory at the Institute, which for many years was the only one in Poland specializing in research of acoustic properties of building materials and structures, as well as of the environment.

The scientific achievements of Professor Jerzy Sadowski cover such fields as interior acoustics (in particular acoustics of special-purpose premises); construction acoustics; installation acoustics; urban and environmental acoustics as well as acoustic metrology.

With his team, Professor worked on the evaluation of acoustic properties of buildings and insulation materials, on the issues of propagation of airborne and structural sounds, on the shaping of acoustic climate, particularly in residential buildings. He conducted extensive research on the subjective perception of acoustic conditions in buildings and their surroundings by their residents which became the groundwork for the rules for the subjective-objective method for acoustic assessment of buildings. In cooperation with the Medical Academy of Warsaw (currently the Medical University), he researched the influence of noise at the place of residence on human health.

Professor used the research results to formulate evaluation criteria and to develop rules for the acoustically correct forming of building products and structures as well as urban interiors. He believed that the results of research could be implemented, among others, by introducing noise protection provisions into the Polish legislation.

Thanks to his initiative, in 1963 the first standard setting noise protection requirements for buildings was established. It became the first of the series of PN-B-02151 standards. This series (following subsequent updates, adapting the requirements to the current level of knowledge and to international and European standards) became the basis for including acoustic requirements in the Construction Law Act and in the regulation setting forth technical requirements to be complied with by buildings and their location. Also, the first Polish regulations regarding protection from environmental noise were based largely on the results of research conducted under the guidance of Professor Sadowski.

The initiatives of Professor Sadowski, supporting the inclusion of Polish research centres into international cooperation, had significant importance for the development of architectural acoustics in Poland. During the initial period, those initiatives focused (for obvious reasons) on cooperation among member countries of the Council for Mutual Economic Assistance (Comecon). Professor Sadowski was one of the founders of the Comecon Coordination Center for Construction Acoustics, the first Chairman of the Scientific and Technical Board of this Center, and Poland's Plenipotentiary in the Board of Plenipotentiaries for the Center. Looking back, the results of the Center's operations were positive both in terms of their subject matter and from the perspective of facilitating bilateral cooperation.

It was also at Professor Sadowski's initiative that the cooperation between the Acoustics Department of the Building Research Institute and the Centre Scientifique et Technique du Batiment evolved. The close research relationship led, among others, to joint works using unique research stations located in Grenoble in France (stations for model research of urban acoustics).

The cooperation established by Professor Sadowski with American research institutions, financed from the Marie Curie-Sklodowska Fund, resulted in valuable research and organizational experience. During the first stage (years 1972–1976), the work covered the influence of construction materials and solutions on the acoustic conditions at the place of residence, and on human health. Subsequently, during the years 1976–1985 the research focused on acoustic quality of buildings constructed of prefabricated elements.

The activity of Professor Jerzy Sadowski in the different European and international organizations – scientific, standardization (ISO, CEN) and professional

– deserves special attention. Professor Sadowski participated in the work of the Acoustics Committee W-51 CIB (Centre International du Batiment) and in the United Nations Economic Commission for Europe, European Economic Committee of the United Nations Organization, as an expert for construction and environmental acoustics. Among other important achievements, he was the author of the report *Environmental Protection Against Noise in Poland*, prepared at the request of this Commission.

When discussing the accomplishments of Professor Sadowski, his role in the training of future scientific personnel cannot be omitted. He supervised thirteen doctoral dissertation Doctoral theses prepared under his guidance were related to various areas of acoustics, focusing in particular on construction and urban acoustics. Students who obtained their Ph.D.'s under the wings of Professor Sadowski joined the staff of the Acoustics Department of the Building Research Institute and many other research centres. Professor Sadowski was also the reviewer of many other doctoral theses as well as habilitation requests and professor degrees.

Professor Jerzy Sadowski is the author (in several cases also co-author) of an impressive number of scientific publications – over 240 in total, of which 40 books, numerous papers for domestic and international conferences. The books written by Professor Sadowski were and still are used in research and expertise works and of course during conducting classes at universities. The most important ones include (in chronological order):

- *Akustyka pomieszczeń (Room Acoustics)*, (co-author L. Wodziński), Wydawnictwa Komunikacyjne, Warsaw 1959.
- *Walka z hałasem w komunikacji i przemyśle (Fight Against Noise in Communication and Industry)* (co-author R. Rogiński), Wydawnictwa Komunikacji i Łączności, Warsaw 1965.
- *Akustyka w urbanistyce, architekturze i budownictwie (Acoustics in Urban Planning, Architecture and Construction)*, Arkady, Warsaw 1971.
- *Podstawy izolacyjności akustycznej ustrojów (Basics of Acoustic Insulation of Structures)*, Państwowe Wydawnictwo Naukowe, Warsaw 1973.
- *Akustyka architektoniczna (Architectural Acoustics)*, Państwowe Wydawnictwo Naukowe, Warsaw 1976.
- *Podstawy Akustyki Architektonicznej (Basics of Architectural Acoustics)*, Arkady, Warsaw 1982.

The fact that Professor Sadowski was elected as a member of the Acoustic Committee of the Polish Academy of Sciences is a proof of recognition of his merits in the scientific, publishing and organiza-

tional field. Acting within that Committee, Professor Sadowski has ran for many years the Section of Construction and Architectural Acoustics, and represented these issues working within the Polish Acoustic Association. In recognition of his work and merits, in 2004 he received the title of Honorary Member of the Polish Acoustic Association.

Professor Sadowski was very active as the member of the National Council for Environment Protection and of the subsequent Scientific and Technical Councils of the Commission for Environmental Impact Influence at the Minister of Environment Protection, Natural Resources and Forestry (current name: Ministry of the Environment) where he represented the protection of environment against noise and vibrations. In the course of his work in these bodies, Professor Sadowski used the results of his research.

The first Polish methods and criteria for evaluation of environmental noise were developed under the Professor's guidance and at his initiative. Rules for the propagation of noises in open and built-up areas were also developed. This was the basis to develop, in the late 1960s and early 1970s, the first Polish noise maps for such cities as Warsaw, Lodz or Bydgoszcz, and such popular health resorts as Kolobrzeg, Polanica and Kudowa-Zdroj.

The generalized definition of acoustic climate (taking into account various noise sources) proposed by Professor Sadowski became the basis for the report *Threat of Noise and Vibration in Poland*, prepared by the team of the Acoustics Committee of the Polish Academy of Sciences. Professor actively participated in the work on this report, which had served as the groundwork to develop, under the National Program for Protection of the Environment and Natural Resources Until 2010, of the special section called, *Protection Against Noise and Vibration*. This section contained a map of noise threats in Poland (adapted to the then-current administrative division) which included communication and industrial noise.

Professor Sadowski devoted a lot of his time and attention to the Scientific Boards of research and university institutes. This includes the Scientific Board of the Building Research Institute, of the Institute of Environmental Protection, the Central Institute for Labour Protection – National Research Institute and Scientific Boards of the AGH – University of Science and Technology in Krakow (Institute of Mechanics and Vibro-Acoustics), the Adam Mickiewicz University in Poznan (Institute of Acoustics).

Professor Jerzy Sadowski was also the chairman of the Environmental Engineering Division of the State Committee for Scientific Research and an active member of the Polish Urban Planners Association and the Scientific Works Section of the ZAIKS Association of Authors. For many years he was a member of the League for Fight Against Noise – and held the function

of chairman of its Expert Committee. In recognition of his work for the League he was granted the title of its honorary member.

Professor Sadowski participated as member of the scientific and consultation boards in the design and construction of numerous significant investment projects all over Poland (for instance, he was a member of the Council at the General Management of Metro Construction in Warsaw). He has also been invited to participate in the Program Boards of technical and scientific publishing houses (including the Building Research Institute in Warsaw, the Central Mining Institute in Katowice, the Environmental Engineering Institute of the Polish Academy of Sciences in Kraków).

For his research work and publications, Professor Sadowski received 23 various awards and prizes granted by the Ministers of Construction and of Envi-

ronment Protection (some of these awards were individual, others were granted to research teams).

Professor Jerzy Sadowski was decorated with the Silver Cross of Merit (1972), the Officer's Cross of the Order of *Polonia Restituta* (1997), the Commander's Cross of the Order of *Polonia Restituta* (2004) and various other numerous awards granted by the individual ministries, scientific and technical organizations.

The achievements and accomplishments of Professor Jerzy Sadowski – outstanding scientist, organizer and promoter of scientific work and life, expert, teacher and writer – prove his exceptional laboriousness, reliability and courage to face to new challenges. Other traits of Professor also deserve mentioning – his exceptional manners, friendliness, ability to cooperate and to consolidate the research teams. All those who had the honour of cooperation with Professor Sadowski shall remember him this way.

Prof. Barbara Szudrowicz