

## In Memoriam

### Professor Zbigniew Witold ENGEL 1933 – 2013



Professor Zbigniew Witold Engel in his element.

When we look at the history of AGH – University of Science and Technology, recognized as one of the best universities in the country, we find that for that success many people worked for several dozen years. However, the subjects, the methodology and directions of their work were shaped by units – outstanding personalities of science. Just to mention, among others Professors Stanisław Zuber, Władysław Takliński, Witold Budryk, Maksymilian Tytus Huber and Władysław Bogusz. These people have shaped our institution, marked its new path of development and permanent place in the history of Polish and world science. To belong to such a group is a great ennoblement, for which one works out for his entire life. Undoubtedly,

such personality was also Professor Zbigniew Witold Engel, to whom we said goodbye on November, 6th, 2013, in the St. Clement's church in Wieliczka.

Professor was born on April 1, 1933, in Zawady near Zhovkva in the province of Lviv. After graduating from Jan Matejko Middle and High School in Wieliczka in 1950 earned a matriculation certificate. Then he began his studies at the Department of Communications of Polytechnic Departments of Academy of Mining and Metallurgy and involved with our university for the next 63 years. October 1, 1952 the Department of Mechanics of the University of Mining and Metallurgy was created, and soon after began professor's adventure that was the work of science, education

and organization. The history and fate of our university are inextricably linked with the person of professor who practically since the very beginning of the Faculty supported it in all areas of its activities, and has always actively participated in academic life.

### Scientific career

When in 1955 he graduated with the degree of Master of Engineering he already was employed for two years as a deputy assistant at the Department of Applied Mechanics. He defended his dissertation “Analysis and synthesis of planar mechanisms, especially the crank-slider” in 1962, and then in 1966 he obtained his PhD with a thesis “Some aspects of vibration technology”. He earned the degree of associate professor in 1973, and in 1978 the title of professor. Area of scientific interests of Professor Zbigniew Engel covered a very broad spectrum of issues: from analysis and synthesis of mechanisms, dynamics of machinery, selected topics of linear and non-linear mechanical vibrations, elements of vibration technology, environmental acoustics, control of noise and vibration, methods of active noise and vibration reduction, methods of research on vibroacoustical processes, reciprocity and inversion methods.

The result of these extensive interests were more than 580 publications, 15 patents and countless works, studies, expert opinions made for the industry.

Another effect of this activity was the recognition received by professor in the scientific community, reflected in a number of memberships granted to him in many prestigious organizations such as the Academy of Engineering in Poland, New York Academy of Sciences, St. Petersburg Academy of Sciences, Academie Europeenne des Sciences, des Arts et des Lettres, Institute of Noise Control Engineering, USA, Polish Society of Theoretical and Applied Mechanics, Polish Society of Technical Diagnostics, Deutsche Gesellschaft für Akustik, Gesellschaft für Angewandte Mathematik und Mechanik, Polish Acoustical Society, Noise Control League, East-European Acoustical Society of St. Petersburg, and the Union of Scientists and Engineers in Moscow. He was a chairman of the Committee on Acoustics of the Polish Academy of Sciences, Vice-President of the Central Council and Higher Education. During many years he was a Chairman of the Commission of Applied Mechanics of Krakow Department of Polish Academy of Sciences.

He also received the dignity of Honorary Professor of Warsaw University of Technology and for his exceptional achievements in and outstanding contribution to education of young researchers Professor Zbigniew Engel was honored by the University Senates of: AGH University of Science and Technology, Krakow University of Technology and the University of Kielce with the title of Honorary Doctors Causa of the University.

Also worth mentioning is his great contribution in the work related to the technological project of laboratory rooms at the Kielce University of Technology.

But undoubtedly the greatest success of professor is related to vibroacoustics, that he himself defined as a new discipline of science, and his achievements in this area are impressive. It is the result of his work and initiative that caused the consolidation of the theory of mechanical vibrations with the mechanics of acoustic phenomena in one coupled mechanical-acoustical model. Professor Engel has defined the frame, the basic goals and tasks of vibroacoustics.

### Organizational and teaching abilities

As a demanding teacher he stimulated his colleagues – doctors, assistants, professors. The showed at the office promptly at 7, where every day he set an example to other employees with his diligence and thoroughness. In this way, without any discipline and rigor he set us a high standard. He supervised more than 200 theses in both engineering and masters. He has supervised 38 PhDs and reviewed more than 100 doctoral dissertations and over 50 habilitation dissertations. Has also written dozens of professors’ reviews. Through the years, we appreciate his uncommon ability to organize the environment around the current theme. He also cared for effective spreading of ideas. As a result, we can now say that he created his own Scientific School.

Taking into account the achievements of professor one can say that he pointed us the subject to work on and organized place for its implementation, since it is thanks to his efforts, that the building of the Institute of Mechanics and Vibroacoustics emerged, and now students affectionately call it a “Chocolate”.



Incorporation of the foundation stone for the building of the Institute of Mechanics and Vibroacoustics.

In that way, Professor Engel entered forever not only in the history but also in the landscape of our university. The history of the design and construction of the “Chocolate” is a record of great determination



Near Danish pavilion at the fair in Poznan in June 1975.

and strive of professor. Given the times, social relations and a number of objective difficulties involved (access to materials, formal difficulties, location etc.) that the actions of the professor managed to overcome it can be said that the building that, at that time, housed the global unique laboratories in the form of anechoic chamber and reverberation chamber is “his baby”. Thanks to the efforts of Professors Engel and Bogusz it was possible visit the plants of Sulzer in Winterthur, Switzerland, where it was possible to become acquainted with the technical documentation and work of similar laboratories.

Moreover, cooperation with foreign countries is another rich chapter in the biography of Professor Engel, who has always very actively collaborated with institutions and research organizations from around the world, including: Purdue University (USA), MIT (USA), University of Philadelphia (USA), Technical Universities in Vienna, Bratislava, Copenhagen, Tokyo, Kiev, Institute of Materials and Machine Mechanics of the Slovak Academy of Sciences, Polytechnic Institute of St. Petersburg, the Institute of Mechanical Engineering of Russian Academy of Sciences, Technical University of Lviv. Professor Zbigniew Engel was a member of many scientific committees of conferences and congresses, among others: Miami, Edinburgh, Munich, Beijing, Avignon, Newport Beach, Toronto, The Hague, Budapest, Seoul, Prague, Rio de Janeiro. He chaired the Scientific Committee of the Conference “Noise and Vibration in Transportation” in St. Petersburg. For his work in the international arena he has been awarded with, among others: Gold Medal of the Krizik’s Czechoslovak Academy of Science, Hun-

garian Medal “Pro Silentia”. The professor was also the main initiator and organizer of the International Conference on Noise Control “NOISE CONTROL”.

Another beautiful page in the professional curriculum vitae of professor is his almost fifty years of collaboration with the Central Institute for Labour Protection – National Research Institute. For over 40 years he was a member of the Scientific Council of the Institute, and for the last 15 years its president. Virtually he created from scratch the Department of Vibroacoustic Hazards, engaging and mobilizing to work fine professionals from across the Poland. Thanks to him an independent and considerate scientific and research center was established.

### Wide range of interests

Professor Engel was without a doubt an outstanding mechanic, but he was also a great humanist of wide range of non-technical interests. He was passionate about history of art, and the combination of these passions has resulted in the book “Acoustics of sacred objects”.

He was also fascinated by the history of science and the history of our university. Richly documented memories and reflections of the Faculty of Mechanical Engineering and Robotics he described in the book “Sixty years have passed...” and the book, published in 2008, “Department of Mechanics and Vibroacoustics AGH University tradition – history – activity” is a record of the history of the Department, which he has co-founded. He was the author of numerous scientific publications presenting profiles of outstanding Polish scientists (among others: co-author of the book “Maksymilian Tytus Huber: biography and reprints of scientific works”).

### Citizen and charity work

Despite his commitment to the scientific and academic professor was able to save more time for social activities. Such activities may include active participation in local community life. He was a member of the Club of Friends of Wieliczka, and willingly participated in various initiatives of the organization. In recent years (since 2011) he engaged himself in the work of the University of the Third Age that was created in Wieliczka, where he served as Chairman of the Program Council.

He was never indifferent to local issues and with a sense of satisfaction he involved in the social life of his nearest area, and thus tried to contribute to its development.

Professor Zbigniew Engel was the initiator and one of the founders of Engel Family Foundation, which, among others, grants the awards named after Professor Zbigniew Engel for best scientific work that includes

doctoral dissertations, habilitation dissertation, monograph or a series of articles. The awards are granted to young scientific-didactic workers of AGH University of Science and Technology, Krakow University of Technology and Kielce University of Technology.

For his activities professor was granted numerous awards and designations: Golden Cross of Merit, Knight's Cross of the Order of Polonia Restituta and Officer's Cross of the Order of Polonia Restituta, Commander's Cross of the Order of Polonia Restituta, Medal of the National Education Commission. He was also the winner of many awards, including: Award of the Minister of Higher Education, Ministry of National Education, the Ministry of Construction and Awards of Royal Capital City of Krakow in the field of science and technology.

### Family and friends

Professor Engel was a great man of family. His wife and children have always been the center of his world, in them he had his support and refuge. With



Professor with his wife Maria.

his wife Maria, whom their friends called the Masia, were an inseparable pair. They were married for 57 years and all these years Masia together with professor participated in countless conferences and business trips.

In recent years, during the fight with the Professor's disease, she was a source of support and strength for him. Like the sons Jacek and Zbigniew Junior, who were always his joy and pride. They both have achieved great professional success and started their families, bringing another inexhaustible source of joy for professor – four grandchildren.



Professor with his family.

His love and care for home and family were exceptional. It is significant also that the activity, which he was very fond of and which relaxed him most was the gardening.

Professor was a wonderful, kind friend, he was very sociable. His house was always open, and friendships lasted for long years. He and his wife were the organizers and hosts of regular meetings with colleagues from professor's Middle School.

The professor was a multi-dimensional man, man-institution. All of us who knew him, were impressed by his steadfastness, diligence, strength and almost legendary perseverance. Especially in recent years, when with the incredible fortitude he fought with severe disease. He still worked, wrote, participated in conferences. He never gave up.

It is said that there are no irreplaceable people. Professor Zbigniew Engel is proof that's not true. He was a person of such outstanding achievements in so many fields, with such a rich scientific legacy and social impact so huge that no one can take his place.

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