



PROFESSOR ZBIGNIEW OSIŃSKI, Ph.D., D.Sc.

DOCTOR HONORIS CAUSA OF THE TECHNICAL UNIVERSITY OF ŁÓDŹ

Professor Zbigniew Osiński was born on January 1, 1926 in Kutno. He studied at the Faculty of Mechanical Engineering, Technical University of Łódź in the years 1945-1949 and he graduated from this university obtaining a B.Sc. degree and then a M.Sc. degree in aviation.

On the basis of his doctoral thesis entitled "Vibrations of a one-degree-of-freedom system with nonlinear damping", the Council of the Faculty of Transport, Warsaw University of Technology conferred a Ph.D. title on him in 1959, and next, on the basis of his dissertation entitled "An attempt of the nonlinear presentation of internal friction and relaxation", he was given the title of D.Sc. in 1962.

He obtained the title of associate professor in 1969, and the title of full professor in 1976.

Within the years 1946-1956 Prof. Z. Osiński was working for the aircraft industry as a designer, the head of a designing team, the head of Technology Office first in Lotnicze Zakłady Doświadczalne (Łódź), and next in Wytwórnia Sprzętu Komunikacyjnego Warszawa-Okęcie. Between 1956 and 1961 he was employed at the Institute of Fundamental Technological Research, Polish Academy of Sciences, as an assistant professor in the Division of Vibration Investigations.

He started his career as a researcher and teacher already during his student years in 1947 at the Technical University of Łódź, where he was an assistant at the Chair of Machine Parts, Faculty of Mechanical Engineering, and then a senior assistant at the Chair of General Mechanics. Since 1950 he was working at the Chair of Theory of Machines and Machine Elements, Warsaw University of Technology, subsequently at the post of senior assistant, assistant professor, associate professor, and since 1976 as a full professor. Between 1965 and 1969 he headed the Chair. Owing to some organisational changes, in 1970 the Chair was included into the Institute of Machine Design Fundamentals and Prof. Z. Osiński held the post of director of the Institute up to September 1996, i.e. until he retired. In the meantime he was the Deputy Dean of the Faculty of Vehicles and Heavy Machinery Engineering in the years 1969-1971.

In 1973-1978 he was appointed Vice Rector for Scientific Research at the Warsaw University of Technology.

The scope of his publications is extensive and includes 202 items so far. This number comprises 3 monographs, 152 studies and papers, 8 scientific communiqués, 15 books, 17 textbooks and 7 publications on progress in science. Among these publications 96 are written individually by Prof. Z. Osiński, whereas the rest, i.e. 106 positions, have been written with co-authors.

The first publication was the scientific paper entitled "Aeroplane assembly production issues" (Technika Lotnicza No. 5, 1952), the latest one is entitled "The Constructing: Art, Science or Craft?" (Mechanics and Mechanical Eng. Vol. 2, No. 1, 1998). This is an extension of the lecture delivered by Prof. Z. Osiński during the solemn sitting of the Academic Senate of the Technical University of Łódź which took place on November 18, 1998 and on which the honorary degree of doctor honoris causa was conferred on him.

The scientific investigations conducted by Prof. Z. Osiński are connected with the discipline of Machine Design and Operation. Two trends of these activities can be distinguished here. The first trend is devoted to the investigations of mechanical vibrations, whereas the second one to the theory of design and optimal design of machines.

Within the scope of the first trend the following topics can be mentioned:

- theoretical investigations of nonlinear vibrating systems,
- development of methods for solving nonlinear equations of vibrating motion,
- investigations of internal friction,
- vibration investigations under dry and design friction,
- vibration investigations under stochastic excitation,
- application of the nonlinear vibration theory in machine dynamics.

In the above investigations Prof. Z. Osiński has obtained a series of original results widely applied in works conducted by other scientists from Poland and abroad, among them by those who belong to his own scientific school.

The development in the field of the above mentioned topics has been influenced significantly by the journal entitled "Machine Dynamics Problems" spread throughout Poland, which has been founded and edited by Prof. Z. Osiński.

The results of these investigations have been presented in numerous publications written by Prof. Z. Osiński himself or together with his colleagues. The book entitled "Teoria drgań" (PWN, 1978, 1980) and the original scientific monograph "Tłumienie drgań mechanicznych" (PWN 1979, 1986) are highly recognised and appreciated.

He has imparted his knowledge to students during lectures delivered for many, many years. This deep and extensive knowledge of mechanics, which has been manifested by publication of a series of well-known and widely used textbooks and crowned with the original book entitled "Mechanika ogólna" (PWN, 1994), has been appreciated very much.

The second trend of the scientific activities conducted by Prof. Z. Osiński is connected with the theory of machine design. The good recognition of this discipline took its origin in the long designing practice and academic

teaching, including lectures and project classes. This knowledge has given rise to many textbooks and books, including "Podstawy konstrukcji maszyn" (PWN, four editions).

Prof. Z. Osiński has developed his own original theory of machine design. Its main advantage lies in its mathematical foundations and in the fact that the design principles introduced make it possible to use both the expert designer knowledge and to describe the structure by means of a mathematical model. The mathematical model enables optimisation of the design by means of mathematical methods, especially computational ones.

Such a theory couples smoothly with a development of computer-aided design (CAD) of machines. At the Institute of Machine Design Fundamentals, Warsaw University of Technology, a leading school, being a pioneer scientific and academic centre as well, has been created in this field. Its activities have exerted a strong influence on the development of this discipline and on application of modern design methods at technical universities and industrial factories.

Numerous publications, among them the books "Teoria konstrukcji maszyn" (PWN, 1982), "Teoria konstrukcji" (PWN, 1995) and the monograph "Wybrane metody komputerowo wspomaganego projektowania maszyn" (PWN, 1988) are the fruits of these activities.

Prof. Z. Osiński is the initiator and editor-in-chief of the series of books devoted to Machine Design Fundamentals. So far 30 titles have been issued. Within this series he has written the book entitled "Sprzęgła i hamulce" (PWN, 1985).

In connection with his own scientific investigations, Prof. Z. Osiński carries out many projects for the Polish industry. They are team projects headed by him and characterised by a great impact of modern scientific trends adapted to technical implementations. One should emphasise first of all long-term, complex projects concerning:

- investigations of vibration and dynamics of tower cranes,
- investigations of dynamics of railway control and automation systems,
- investigations of friction clutches,
- investigations of torsional vibration dampers applied in diesel engines,
- investigations of heavy tractor dynamics,
- computerisation of design methods,
- vibration and noise investigations of excavators,
- vibroacoustic investigations of machines and devices used in the Bełchatów strip pit.

As far as educational activities are concerned, the achievements of Prof. Z. Osiński are also tremendous. Under his guidance 25 doctoral theses, among

them 3 written by foreign students, have been completed. The majority of his previous pupils have got D.Sc. degrees, and some of them have obtained the title of professor. Prof. Z. Osiński has offered his assistance not only to his closest co-workers. His great impact on the scientific level of Polish academic staff is demonstrated by 253 reviews of Ph.D. and D.Sc. dissertations and opinions on granting the title and post of professor, including 28 reviews and opinions concerning researchers working at the Technical University of Łódź, mainly at the Faculty of Mechanical Engineering and the Faculty of Textile Engineering.

The indisputable scientific position and personal attributes of Prof. Z. Osiński have caused that he has been elected member of the Central Commission for Scientific Titles and Degrees and of the State Committee for Scientific Research many times. Moreover, he is a member of numerous scientific societies and committees, e.g. the Committee of Machine Design and the Committee of Mechanics, Polish Academy of Sciences.

His wide experience in science, teaching and organisation has been widely recognised both by the Ministry for National Education by the fact that Prof. Z. Osiński has been appointed member of many expert groups and commissions for awards, and by the Main Council of Higher Education, where he was a member and Vice Chairman for many years.

His connections with the Technical University of Łódź, initiated when he was an assistant at the beginning of his professional career, are well-established. The co-operation which was intensified in the seventies comprises both the trends of his activities, i.e. concerns both the theory of design and application of the theory of vibration and dynamics in machine design.

As a member of numerous Polish collective bodies, Prof. Z. Osiński has always been an advocate of the Technical University of Łódź. His kind attitude towards scientific, didactic and personnel issues contributes to the development and position of the Faculty of Mechanical Engineering, Technical University of Łódź.

On the occasion of the 50th anniversary of the Technical University of Łódź Prof. Z. Osiński was awarded a medal of "Merited for the Technical University of Łódź".

Prof. Z. Osiński has been awarded many times by the Minister for National Education for his scientific, teaching and training activities and he has got a series of distinctions, among which the most important are: Commander's Cross Polonia Restituta Order, National Education Commission Medal, Merited Teacher of Poland Medal. The Academy of Mining and Metallurgy in Cracow has conferred on him an honorary title of doctor honoris causa.