



Saint-Petersburg State Polytechnical University

**STRUCTURAL MECHANICS AND THEORY OF ELASTICITY
DEPARTMENT**

History / S.P.Timoshenko



TIMOSHENKO

Stephen Prokofyevich

Outstanding mechanical scientist of the XXth century Stephen Prokofyevich Timoshenko's work in St.Petersburg Polytechnical Institute was often interrupted by different missions and trips abroad. He combined his work in St.Petersburg Polytechnical Institute with work in other institutes and didn't have here any administrative posts. Nevertheless, his first scientific article "On the resonanse phenomenon in shafts" (1905) was published in "St.Petersburg Polytechnical Institute transactions", and later the scientist wrote, that he had never seen such high level of students training in any other engineering schools of Russia, Europe and America, he had visirted or worked in, as in St.Petersburg Polytechnical Institute, during the first years of its work.

Stephen Prokofyevich Timoshenko was born in 1878 in settl. Shpotovka of Chernigov region (Ukraine) in the famaly of land surveyer. In 1896 he graduated from school in Romny and in 1901 from St.Petersburg Railway Engineering Institute. After graduation he was on military service in a field-engineer company for one year. Since 1903 S.P.Timoshenko worked in St.Petersburg Polytechnical Institute as senior laboratory assistant in applied mechanics and taught students statics of structures. In 1904 S.P.Timoshenko travelled to Europe to get familiar with German technical school achievements and educational methods in European universities and engineering schools.

Lord Raylay's books, particulary "The Theory of Sound", influenced greatly on S.P.Timoshenko's activities. He became interested in complex structures eigen frequences computation and developed simple approximate methods for this problem solution. After Quebec Bridge crash in Canada S.P.Timoshenko started working in the field of complex beams and frames stability analysis and also developed simple methods of solving such kinds of problems.

Since 1907 S.P.Timoshenko on [V.L.Kirpichov's](#) recommendation was invited to Kiev Polytechnical Institute, where he

defended a thesis, and since 1908 became a professor in materials strength, since 1909 -a dean of civil-engineering faculty. In 1907-1908 S.P.Timoshenko developed and read the course of materials strength, which later was published and became a classical book on this discipline, as well as his other book on the theory of elasticity.

In 1911 after students' disturbances S.P.Timoshenko was dismissed from Kiev Polytechnical Institute. He returned to St.Petersburg and simultaneously hold two professor chairs - in Electrotechnical and Railway Institutes, working also in Polytechnical Institute as an applied and theoretical mechanics, theory of elasticity and structural mechanics teacher. In 1912 S.P.Timoshenko was on mission in Great Britain. In 1915 S.P.Timoshenko was elected a professor in St.Petersburg Polytechnical Institute.

In 1917 S.P.Timoshenko was sent on mission to Kiev, where he participated in Ukrainian Academy of Sciences organizing and in 1918 became one of its first academicians. In 1920 S.P.Timoshenko left the Soviet Ukraine for Yugoaslavia, where he took up a chair of materials strength in Zagreb Polytechnical Institute. In 1922 S.P.Timoshenko moves to the USA, where he worked as an engineer in "Westinghaus" company, but later became a professor in the University of Michigan.

Stephen Prokofyevich Timoshenko's lectures on applied mechanics in the University of Michigan attracted a great number of students and young scientists and teachers. Such stars of science from Europe as Prandtl and Westergard went to the USA to meet with S.P.Timoshenko. At that time S.P.Timoshenko has published number of books on materials strength, theory of elasticity and theory of stability.

Since 1936 S.P.Timoshenko worked in Stanford University, where his books on technical mechanics, theory of plates and shells, dynamics were published. A great popularity was gained by his book on the history of materials strength, which he traced from Gallili and Leonardo-da-Vinchi to the latest developments.

Since 1964 S.P.Timoshenko lived in Germany, where he died in 1972.



Stephen Prokofyevich Timoshenko was known as a teacher, author of numerous publications and books, researcher and scientific consultant. S.P.Timoshenko is considered to be the founder of the technical mechanics scientific school in the USA.

S.P.Timoshenko has developed the theory of beams and plates bending with taking in account shear strains (in modern structural mechanics terms "Timoshenko plate", "Timoshenko element" are widely used), published numerous works on torsion, thrust and pivot vibration, solved the problem about stresses concentration near holes (Timoshenko problem).

S.P.Timoshenko was elected a member of the USA National Academy of Sciences, Royal Scientific Society of Great Britain, member of the USSR Academy of Sciences (since 1918 -corresponding member, since 1968 – foreign member), received honor doctoral degrees in many universities. His name is given to the laboratory in Stanford University and American Society of Mechanical Engineers medal.



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