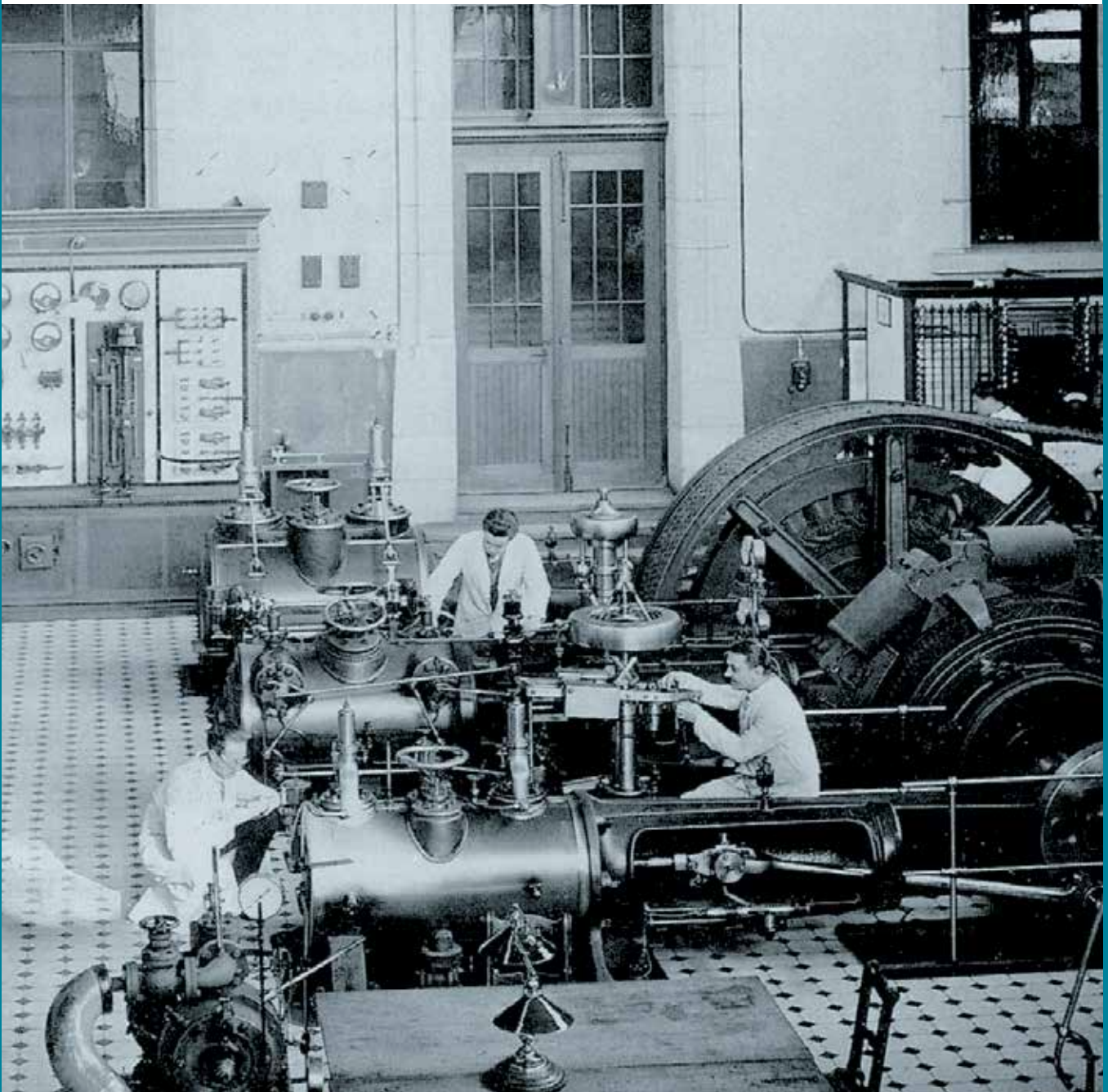


Aurel Stodola

and his influence on the ETH and on Mechanical Engineering





AUREL STODOLA

Aurel Stodola (1859 – 1942) was a professor of the department from 1892 to 1929 and a pioneer in the area of technical thermodynamics and its applications in gas and steam turbines. He has also been credited for developing world's first artificial limb, the so-called Stodola arm.

■ ORIGINS AND EDUCATION

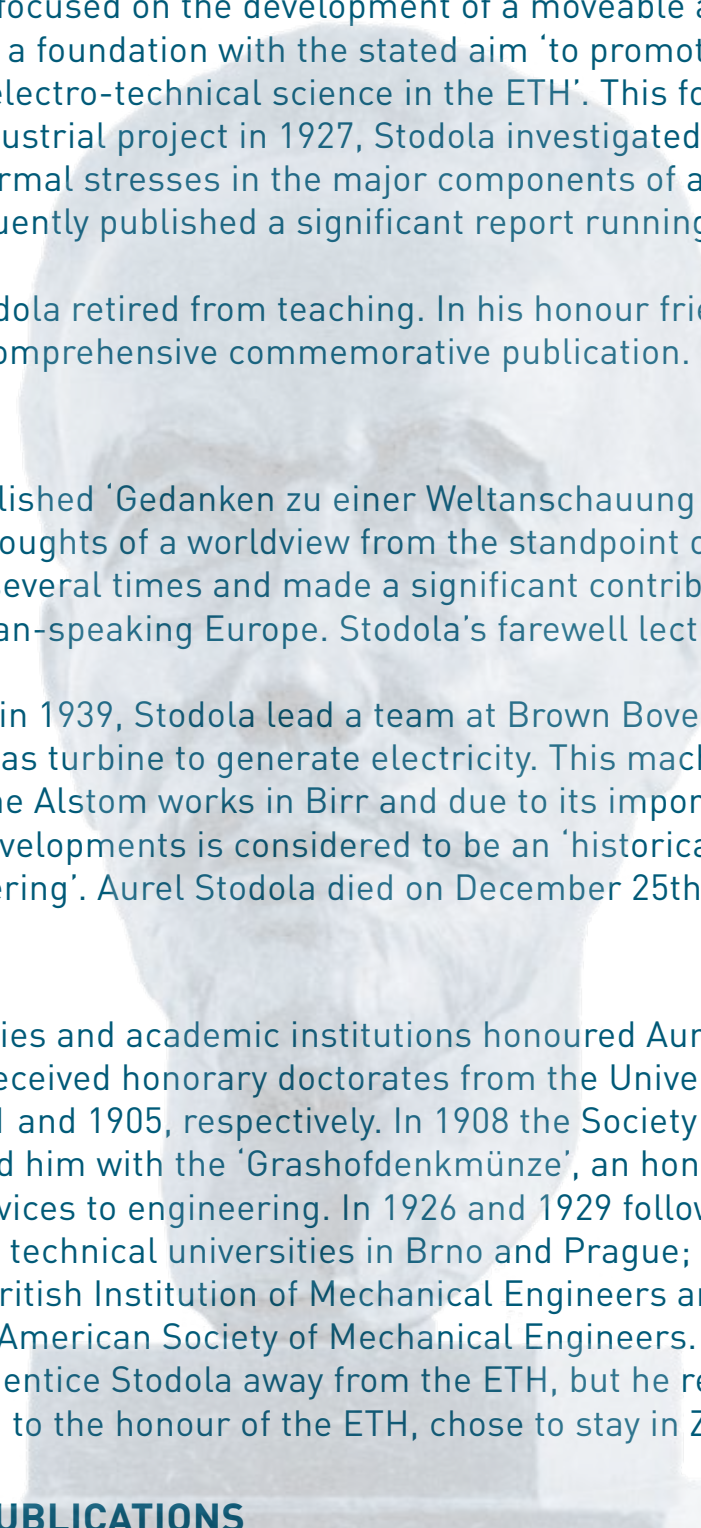
Aurel Stodola was born on May 10th, 1859 in St. Nikolaus in the Liptov Region of what was then Austria-Hungary. Today the town is known as Liptovsky Mikulas and is in Slovakia. Aurel Stodola was the gifted son of a leather tanner, who at the age of ten learnt German and subsequently attended the high schools in Leutschau (Levoca) and Kaschau (Kosice).

After successfully completing his high school diploma in 1876, he began his studies at the polytechnic university in Budapest. A scholarship gave him the opportunity to transfer to the Eidgenössische Polytechnicum, today known as the ETH, in Zurich. In 1881 he completed his degree in Mechanical Engineering with distinction in what is now the Department of Mechanical and Process Engineering. Two years later, in 1883, he designed a factory to produce leather goods, where for the first time the production machinery was powered by steam engines rather than by a waterwheel. After language courses in Paris and London Aurel Stodola began work in Prague.

■ PROFESSORSHIP AT THE ETH

In 1892 Stodola was appointed Professor of Machine Construction by the Polytechnikum in Zurich. He provided important stimuli in the further development of the curriculum and the construction of the first machine laboratory, which was opened in 1900. In 1903 his textbook 'Die Dampfturbine' (the Steam Turbine) was published. This was translated into several languages and formed a groundbreaking basis for the construction of thermal turbo-machinery.

In 1905, Stodola was awarded Swiss citizenship by the city of Zürich. He maintained friendly contact and exchanged letters with academics in Switzerland and abroad, including Albert Einstein among others. Parallel to his successful teaching career, Stodola acted as a consultant to several industrial concerns. He continually strove to reconcile theory and practice and to pass this knowledge on to his students.



In 1915, having seen the numerous people being injured and maimed in the First World War, Stodola focused on the development of a moveable artificial hand. In 1924 he endowed a foundation with the stated aim 'to promote the development of mechanical and electro-technical science in the ETH'. This foundation still exists today. During an industrial project in 1927, Stodola investigated temperature distribution and thermal stresses in the major components of a Holzwarth gas turbine and subsequently published a significant report running to several volumes.

At the age of 70 Stodola retired from teaching. In his honour friends and former students issued a comprehensive commemorative publication.

■ LATER YEARS

In 1931 Stodola published 'Gedanken zu einer Weltanschauung vom Standpunkte des Ingenieurs' ('Thoughts of a worldview from the standpoint of the engineer'). This was reprinted several times and made a significant contribution to technical philosophy in German-speaking Europe. Stodola's farewell lecture is also included in this publication.

At the age of eighty in 1939, Stodola lead a team at Brown Boveri in the first test worldwide using a gas turbine to generate electricity. This machine is still exhibited today at the Alstom works in Birr and due to its importance in leading to further technical developments is considered to be an 'historical milestone in mechanical engineering'. Aurel Stodola died on December 25th, 1942 in Zurich.

■ HONOURS

Numerous universities and academic institutions honoured Aurel Stodola for his achievements. He received honorary doctorates from the Universities of Zurich and Hanover in 1901 and 1905, respectively. In 1908 the Society of German Engineers presented him with the 'Grashofdenkmünze', an honour similar to a Nobel Prize, for services to engineering. In 1926 and 1929 followed honorary doctorates from the technical universities in Brno and Prague; in 1940 the James Watt medal of the British Institution of Mechanical Engineers and in 1941 honorary membership of the American Society of Mechanical Engineers. Many foreign universities tried to entice Stodola away from the ETH, but he rejected these lucrative offers and, to the honour of the ETH, chose to stay in Zurich.

■ IMPORTANT PUBLICATIONS

In addition to textbooks and the texts of his lectures, Stodola produced a great many scientific reports and essays. His technical essays were primarily published in the Swiss Journal of Construction (Schweizerischen Bauzeitung, SBZ) and in the Journal of the Society of German Engineers (Zeitschrift des Vereins Deutscher Ingenieure, ZVDI).

Author: Norbert Lang

The Aurel Stodola Lecture series commemorates the personality and seminal contributions of Prof. Aurel Stodola in the early 20th century whose work on applied thermodynamics has guided many engineers and engineering developments worldwide.

The Stodola Lecture is given by an internationally recognized expert in the broad discipline of mechanical and process engineering, who is elected by the department faculty and awarded the ETH Stodola Medal.

The Department of Mechanical and Process Engineering (D-MAVT) is recognized as a center of excellence throughout the world. Research undertaken by W.C. Röntgen (Nobel prize), H. Rohrer (Nobel prize), A. Stodola and J. Ackeret exemplifies the landmark innovations created in the Department Mechanical and Process Engineering.

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