

## SPECIAL EMPHASIS OF THE 10<sup>TH</sup> IIR CONFERENCE ON COMPRESSORS ONLINE 13<sup>TH</sup> JANUARY 2021

88 registrations, max 219 attendees on one session (including not registered participants) and 800 views.

Peter Tomlein, Conference Secretary

Since 1995 already 10 conferences on compressors were held in Slovakia. Slovakia has started compressor's production in the year 1949 until now already 71 years. Production started in companies Maneta and Calex. Later came companies Samsung, Danfoss, and at present time companies Secop Compressors and Embraco Nidec. Slovakia is one of the biggest compressor's producers all over the world with nearly two compressors per capita per year.

Development of compressors and ejectors has been sped up. Constructions, materials, and technologies have been improved in the manufacture of compressors and ejectors. The catalyst of this explosion also in refrigeration technologies is the dynamic process in development of refrigerants. A large space is given for discussions among specialists from research, development, and manufacture in the areas of alternative refrigerants, their blends, with significant attention to natural refrigerants. Usage is discussed not only for domestic, commercial refrigeration, but also for heat pumps, chillers and so on. Further changes of thinking is necessary about the application of compressors with usage also of ejectors in technologies with CO<sub>2</sub>, on the principle of the TEWI factor. All these efforts are focused on safety, energy consumption and applications of low GWP and natural or alternative refrigerants.

The 10<sup>th</sup> IIR conference on Compressors and Refrigerants aims to be a meeting place for the specialists from the west and east with the goal of looking at the future through the choppy sea of information and new results in science, research, and production.

### CHOICE OF SIX PAPERS RECOMMENDED FOR PUBLISHING IN IJR

- Cesar Deschamps et al, Numerical Analysis of The Transient Compressible Fluid Flow in The Piston-Cylinder Clearance of An Oil-Free Linear Compressor
- Admund Ervik et al, Modelling the Dynamics of Ring Plate Valves In Reciprocating Compressors Using Coupled CFD-Fem Simulations
- Jan Bossányi et al, Liquid Slugging In Reciprocating Compressor
- Stephan Göbel et al, Evaluating of Refrigerants Using A Dynamic Reciprocating Compressor Model
- Jose Miguel Corberan et al, Characterization Methodology for Vapor Injection Scroll Compressors of Variable Speed
- Paolo Martins et al, Compressor Muffler Design Considering Fluid-Structure Interaction

### COMMEMORATIVE MEDALS TO PROFESOR AUREL STODOLA

Father of Steam and Gas Turbines

Designer of the w/w Thermal Pump in 1928 in Zurich

Granted to most active authors during Conference History for the conference support with highest number of papers and for following the legacy of Prof. Aurel Stodola in the education of young scientists:

- Didier Coulomb, Director of IIR: For the Support of Conference on Compressors and Refrigerants
- Dariusz Butrymowicz, Professor TU Bialystok, present conference president
- Armin Hafner, Professor NTNU Trondheim, next conference president

Thanks to sponsors

Finally, great thank to our platin sponsor company Secop, gold sponsor company Embraco Nidec, and silver sponsor company Daikin. Thanks to our sponsors for support of our conference.

Conference video, abstract and paper proceedings

You can still register or upgrade your registration in case you would like to have access to abstract, paper proceedings or video. All reviewed papers have a DOI and will be inserted into the Scopus database.

SZ CHKT awards  
medals granted on IIR conference 2017, 2021

following the legacy of prof. Aurel Stodola and Marián Blaha in the education  
of young scientists and designers



# AN INTELLECTUAL HERITAGE OF AUREL STODOLA NOT ONLY FOR MECHANICAL ENGINEERS



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Legacy of Aurel Stodola



**Ladies and gentlemen, dear colleagues,**

it is a big pleasure to me to be allowed to tell you a few words about Aurel Stodola, one of the pioneers of engineering, a great personality.

If I am asked to describe Aurel Stodola with one word, I will choose polymath. Aurel Stodola was interested in everything important happening in science in technology and he was able to acquire all the knowledge related the latest discoveries and breakthroughs of his time.

Even more, he wrote explanations of these discoveries and taught them in the courses for his mechanical engineers. He did this for special relativity theory in physics, for the population genetics in biology, and for the psychoanalysis of Sigmund Freud. He was also very interested in politics and education in general.

The intellectual heritage of Aurel Stodola is much more than his ground-breaking discoveries in mechanical engineering. I would like to formulate only two of his messages that are valid for ever and are very important for recent education.

## **1. "Science and Technology is one entity"**

Aurel Stodola disliked very much the two extreme views on the relationship between science and technology. The first one says that the intellectual depth is only in fundamental sciences and engineering are simple applications. The second one says that engineering is the only useful part and science is only a theoretical game. For Aurel Stodola both claims are nonsense. Science develops methodologies and instruments to investigate and so to understand the world. Without science there are no achievements in technology. And there is nothing more complex than the reality, in which our technological products must work properly. His concept of educating Mr. ENGINEER and Mrs. ENGINEER asked for deep scientific background that is a base for great discoveries in technology. All narrow practitioners he called technicians.

## **2. "There is no future for the nation that does carefully educate (supporting the growth of) its elite."**

About one hundred years ago Aurel Stodola told us, that the human resource is the main and irreplaceable resource of every nation. To benefit from this resource, society must support "Individually" all young people to progress in their development as far as they are able to. The elite of a nation is responsible for the advances and progress and for mastering crises, especially global ones. There is no future without elite working for society.

Dear colleagues, I wish you a very successful conference with many inspiring ideas, and especially big success in educating the future elite.



MARIÁN BLAHA, compressor designer

Founder founder now IIR conference on compressors

Starting with Maneta equally flow to counter flow Calex compressors 1948 – 1990. A uniflow hermetic compressor for R 12 refrigerant was developed and designed by Ing. Oldřich Cabalka with his team in Calex Zlaté Moravce under the development project of high-speed refrigerant compressors in 1965.

A unique high-efficiency concept, however, found no understanding and recognition before higher central authorities and this compressor was not recommended for batch production for suspected risks and defects. Dipl.-Ing Marian Blaha CSc. made a new effort to revive the system. His promising action aimed later to new types of compressors for domestic and commercial cooling.

He has found conference based on Calex compressors in 1995. Since 2004 it is an IIR conference.