Programme

LECTURE SERIES
2010-2011

VKI LS

- ☐ INTRODUCTION TO MEASUREMENT TECHNIQUES
  October 11-15, 2010
- ☐ ADVANCES IN AERO-ACOUSTICS AND THERMO-ACOUSTICS
  November 15-19, 2010
- ☐ INTRODUCTION TO CFD
  January 10-14, 2011
- ☐ MODELS AND COMPUTATIONAL METHODS FOR RAREFIED FLOWS (RTO-AVT-VKI)
  January 24-28, 2011
- ☐ PLASMA FLOW CONTROL: FUNDAMENTALS, MODELING AND APPLICATIONS
  February 21- 24, 2011
- ☐ TURBULENT COMBUSTION
  March 21-25, 2011
- ☐ RECENT DEVELOPMENTS IN UAV AND MAV (UNMANNED AERIAL VEHICLES AND MICRO AERIAL VEHICLES)
  April 4-8, 2011
- ☐ TURBULENCE IN HIGH SPEED FLOW
  May 16-20, 2011
- ☑ SINGLE & TWO-PHASE FLOW IN SAFETY DEVICES
  June 6-9, 2011
- ☐ ENGINE INTAKE AEROTHERMAL DESIGN: SUBSONIC TO HIGH SPEED APPLICATION (RTO-AVT-VKI)
  September 5-8, 2011
- ☐ UNCERTAINTY QUANTIFICATION IN COMPUTATIONAL FLUID DYNAMICS (RTO-AVT-VKI)
  October 24-28, 2011

OTHER EVENT

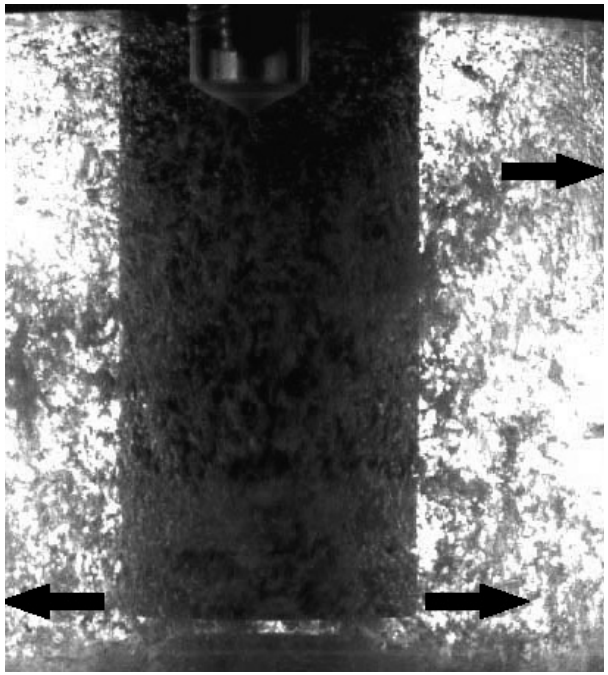
- ☐ SYMPOSIUM OF VKI PHD RESEARCH 2011
  February 28 - March 4, 2011

(Please correct your address if necessary)

Lecture Series Secretary
von Karman Institute for Fluid Dynamics
72 Chaussée de Waterloo
B-1640 Rhode-St-Genèse
Belgium

von KARMAN INSTITUTE
FOR FLUID DYNAMICS

SINGLE AND TWO-PHASE FLOW IN SAFETY DEVICES



Visualization of two-phase flow in safety valve

June 6-9, 2011

von Karman Institute for Fluid Dynamics
72, Chaussée de Waterloo
1640 Rhode-Saint-Genèse, Belgium

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INTRODUCTION

The objective of this 4-day lecture series is to provide a state of the art of flow modeling of control and safety devices with peculiar emphasis given to safety relief valves. Proper sizing and design of such equipment requires knowledge of flow and thermodynamic conditions upstream and downstream of the device, physical and thermal properties of the fluid(s). It is worth noting that two-phase flow is now frequently encountered in various relief processes. Thus situation becomes considerably more complex due to the large number of variables associated with the interaction of the phases and possible flashing occurrence.

Experts coming from the scientific, industrial and technological communities will discus their day-to-day experience in flow testing and CFD simulation exemplifying, nuclear, chemical and cryogenic applications.

The Lecture Series co-directors are Dr. Saïd Chabane from Technical Center for Mechanical Engineering, Cetim, in Nantes (France) and Prof. Jean-Marie Buchlin from the von Karman Institute for Fluid Dynamics in Rhode-Saint-Genèse (Belgium).

VON KARMAN INSTITUTE FOR FLUID DYNAMICS

TIMETABLE

Monday 6 June 2011

08:45 Registration
09:15 Welcome, introductory remarks
09:30 Introduction to safety devices
Dr. S. Chabane, CETIM, France
11:15 Fundamentals of two-phase flows
Prof. Y. Bartosiewicz, UCL, Belgium
14:00 Modeling of flashing choked flows
Prof. Y. Bartosiewicz
15:45 Measurements techniques in two-phase flows
To be determined
17:00 Reception

Tuesday 7 June 2011

09:00 CFD approach in two-phase flows
Dr. D. Lakehal, ASCOMP, Switzerland
10:45 CFD approach in two-phase flows (continued)
Dr. D. Lakehal
14:00 Factors influencing operation and flow caracteristics of direct loaded safety valves
Pr. V. Dossena, Politecnico di Milano, Italy
15:45 Laboratory tests for the definition of operational and flowing characteristics of SV size ranges, including back pressure service
Pr. V. Dossena

Wednesday 8 June 2011

09:00 Flow-induced vibration in safety relief valves in incompressible or compressible flows
Dr. S. Chabane
10:45 Sizing of two-phase control and safety valves applying the non-equilibrium HNE-DS model
Prof. J. Schmidt, Karlsruhe Institute of Technology, Germany
14:00 Application to the HNE-DS model
Prof. J. Schmidt
15:45 Aerodynamic interactions between the Vulcain 2 LOX turbine and the upstream valve
Prof. G. Paniagua, von Karman Institute, Belgium

Thursday 9 June 2011

09:00 Experimental study of air-water flow in safety relief valves
Mr. V. Kourakos, von Karman Institute, Belgium
10:45 Case study of calculation of the flow rate of a pressure relief valve for the sub-cooled case
Mr. S.M. Egan, Rhodia , France
14:00 Guide to when two-phase flow can be expected in a pressure relief valve
Mr. S.M. Egan
15:45 Valves applications to space
Dr. V. Thomas, Techspace Aero, Belgium
17:00 End of Lecture Series

Lunch will be taken from 12h30 to 13h45. Coffee breaks are scheduled each morning and afternoon. The afternoon sessions will normally finish at about 17h00.

ONLINE REGISTRATION AVAILABLE

http://www.vki.ac.be/registration

It is highly recommended that the registration/hotel reservation form is sent at the latest 15 days before the beginning of the course. A letter of acceptance and additional information will be sent on receipt of the application form.

COURSE FEE

The fee for the lecture series is 1350 euro, applicable to citizens of NATO countries contributing to the financing of the VKI (Belgium, Czech Republic, France, Germany, Hungary, Iceland, Italy, Luxemburg, Norway, Portugal, Spain and Turkey). For citizens of other NATO countries and of NATO partner countries, the fee is 1760 euro. For non-NATO citizens the fee is 1920 euro. These prices include 21% VAT. The fee includes printed notes, lunches, beverages, and administrative costs. Lectures will be given in English and printed notes will be distributed during registration.

FELLOWSHIPS

To encourage greater participation in our Lecture Series programme by university members, the Institute has established a limited number of VKI Lecture Series fellowships for citizens of NATO countries contributing to the financing of the VKI, as well as for citizens of other NATO countries and NATO partner countries coming from a university in a VKI financing country. The recipient of such fellowship is entitled to attend the Lecture Series at a reduced fee, which will be 675 euro (VAT included) for assistants not having a Ph.D. degree and for Ph.D. candidates, and 300 euro (VAT included) for undergraduate students. For non-NATO citizens coming from a university in a VKI financing country, the fee is 960 euro (VAT included) for assistants not having a Ph.D. degree and for Ph.D. candidates, and 400 euro (VAT included) for undergraduate students.

The request to be considered for an award must accompany the application to attend the Lecture Series, and the applicant must provide a recommendation letter from his or her professor; if not done so, the request will not be taken into consideration. All possible alternative sources of funding should be investigated before aid is requested under this scheme, so that those most in need will benefit.

METHODS OF PAYMENT

Payment 2 weeks prior to the beginning of the course (name and course title clearly indicated) by bank transfer to our account Nr 210-0315330-35 at BNP Paribas Fortis Bank, avenue de la Forêt de Soignes 322, 1640 Rhode-Saint-Genèse, Belgium, IBAN BE57 2100 3153 3035 (strongly recommended). SWIFT BIC GEBABEBB. *Late registration can be paid in cash (euro), or by VISA or Eurocard at the beginning of the course.*