**PRELIMINARY PROGRAM**

**Workshop/Training Course**

**‘Pulsation and Vibration Control in Process Installations’**

**TNO Delft, 8-9 April, 2024**

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*Monday April 8*

***Plenary***

08.30 – 09.00 Welcome coffee

09.00 – 09.15 Introduction to TNO/PVC course

09.15 – 10.15 Pulsation and Vibration effects in Process Installation

10.15 – 10.30 Coffee break

10.30 – 11.30 Fundamentals of wave propagation in piping

11.30 – 12.00 Fundamentals of mechanical response analysis

12.00 – 13.00 Lunch buffet

***Parallel sessions***

Positive displacement machinery

13.00 – 14.15 Pulsations in Reciprocating Compressor

14.15 – 14.30 Break

14.30 – 15.30 Pulsations in Reciprocating Pump systems

15.30 – 15.45 Break

15.45 – 16.15 Pulsations in screw compressors (Rens)

16.15 – 17.00 Application to Hydrogen compression systems

Flow induced pulsations/vibrations

13.00 – 14.00 Water hammer

14.00 – 14.45 Pulsations in turbo compressor systems

14.45 – 15.00 Tea break

15.00 – 15.45 Flow induced Pulsations

15.45 – 17.00 Multiphase forcing

***Plenary***

19.00 – 22.00 Dinner in the city centre of Delft.



*Tuesday April 9*

***Plenary***

08.30 – 09.00 Welcome coffee

09.00 – 10.00 Introduction to pipe vibrations

10.00 – 10.15 Coffee break

10.15 – 11.15 Measuring pulsations and vibrations

11.15 – 12.15 Introduction to fatigue

12.15 – 13.15 Lunch buffet

***Parallel sessions***

Positive displacement machinery

13.15 – 14.00 API Workflow, Acoustics

14.00 – 14.45 API Workflow, Mechanics

14.45 – 15.00 Tea break

15.00 – 16.30 API Workflow, Case Study

Flow induced pulsations/vibrations

13.15 – 14.45 AVIFF Workflow, guidelines

14.45 – 15.00 Tea break

15.00 – 16.30 AVIFF Workflow, Case Study

**PRESENTERS LIST**

**Workshop/Training Course**

**‘Pulsation and Vibration Control in Process Installations’**

**TNO Delft, 8-9 April, 2024**

*Stefan Belfroid*

Studied applied physics at the Technical University of Eindhoven. After 4 years at Stork Product Engineering now works for over 20 years as senior scientist for TNO on topics on Flow-Induced Pulsations and Dynamic Multiphase Flow. His current interests are in CO2 storage and on the intersection of multiphase flow and pipe vibrations.

*Leonard van Lier*

Studied physics at the Technical University of Eindhoven. In his 20 year career at TNO, he specialized in Pulsations, Vibrations and Noise. In addition, he is taskforce leader of the Working Group Trainings, for the European Forum for Reciprocating Compressors (EFRC).

*Pieter van Beek*

Technical Lead on Fluid Dynamics, Acoustics and Asset Integrity at TNO. More than 20 years of experience in contract research, consultancy and Root Cause Analysis (RCA) on pulsation, vibration & noise and mechanical integrity of rotating & reciprocating equipment and adjacent process installations.

*Rens Bazuin*

Specialist in the field of pulsation and vibration control. Involved in both field measurements and numerical simulations. Lead developer of the acoustic part of the TNO simulation tool Pulsim.

*Néstor González Díez*

Senior project leader with a focus on questions connected to flow-induced vibration and turbomachinery in the energy infrastructure.

*Wilbert Vink*

Pulsations and Vibration consultant for positive displacement machines in accordance with API-618/619/674 standards, with 15 years of experience in this field. Responsible for Pulsim software development, support, training and sales.

*Lennert Buijs*

Project manager and program manager for Energy Infrastructure Integrity studies within TNO Energy Transition. Over 10 years of experience as consultant in projects related to fluid structure interaction related, API compliance studies and process dynamics.

*Swen Konings*

Conducts technical consultancy work at the Heat Transfer and Fluid Dynamics department. Specialist on pulsation and vibration control for positive displacement machines in accordance with API-618 and API-674 studies. Lead developer of the mechanical part of the TNO simulation tool Pulsim.

