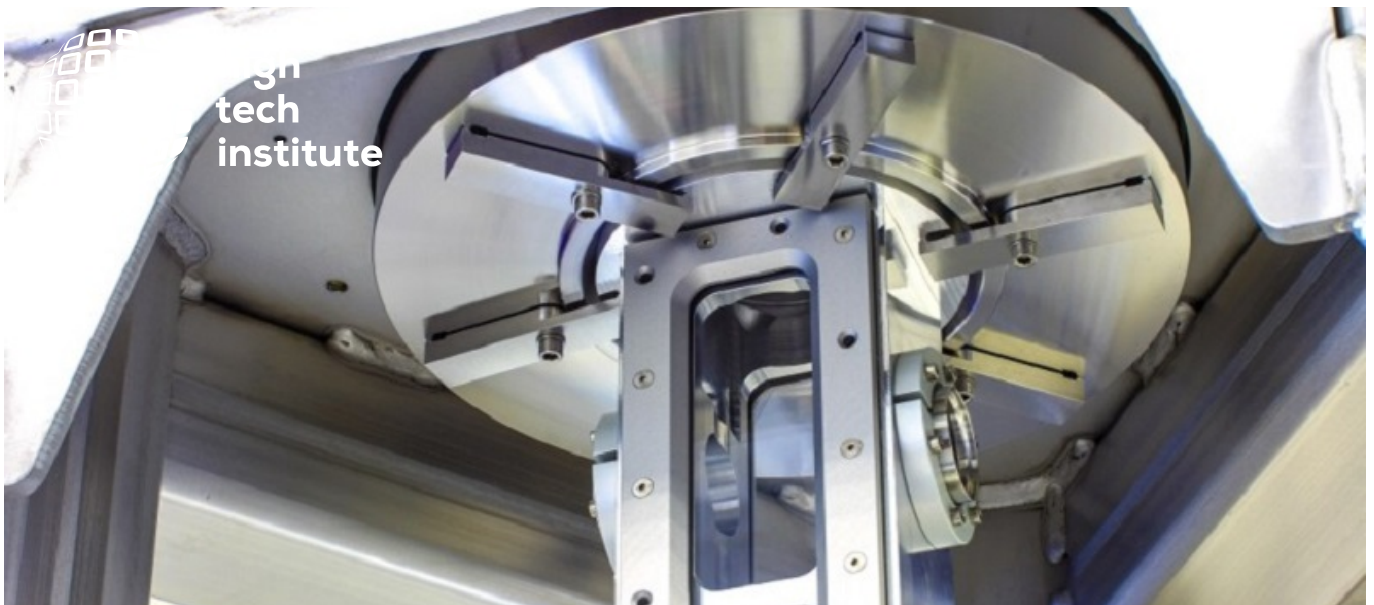


TRAINING BROCHURE

Basics & design principles for ultra-clean vacuum training



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Basics and design principles for ultra-clean vacuum

Price: € 2,385 excl. VAT *

Duration: 4 consecutive days

Contact: training@hightechinstitute.nl, +31 85 401 3600

Score: 8.8 ★★★★★☆

Intro

Since vacuum is unknown in daily life, no reference framework exists for those who are not involved in this technique. To acquire the necessary level of understanding the trainees will be introduced to the basic principles of vacuum technique as well as in the required design principles to achieve ultra-clean vacuum conditions.

Key issue is to become aware of the fact that the whole chain of design, machining, cleaning and the assembly of the components is an integrated process which is as strong as the weakest link in the production chain.

This training is available for open enrollment as well as for in-company sessions.

Objective

During the course the trainees will acquire an understanding of the basic principles of ultra-clean vacuum and its implications for the production of ultra-clean vacuum systems.

Intended for

The course is meant for employees of BSc and higher levels who are responsible for the design of components to be implemented in ultra-clean vacuum systems.

Certified by



Certification

This course is certified by the European society for precision engineering & nanotechnology ([euspen](#)) and the Dutch Society for Precision Engineering ([DSPE](#)) and leads to the [ECP2-certificate](#).

Course leader

[Dr. Adrian Rankers](#)

Trainers

[Dr. Dick van Langeveld](#)
[Dr. Gesa Welker](#)
[Mark Meuwese](#)
[David Schijve](#)
[Sven Pekelder MSc](#)
[Thom Bijsterbosch](#)

** Prices are subject to change. Price correction will be applied at the end of the year.*

Keep me posted



Program

Day 1

- Introduction
- Basic principles
- Interaction of gases with Surfaces (adsorption, desorption)
- Flow of gases (viscous, molecular & intermediate regime)
- Selected exercises
- Dry backing vacuum pumps and molecular pumps
- Total pressure measurement
- Partial pressure measurement (residual gas analysis)

Day 2

Part 1: Vacuum as a engineering aspect

- Vacuum fundamentals
- Pumping speed
- Gas loads
- Materials
- Joining techniques
- Vacuum seals

Part 2: Mechatronic systems in a vacuum environment

- Heat transfer
- Tribology
- Feedtroughs
- Activators
- Dynamics
- Electronics/Sensors
- Adhesives
- Vacuum budgetting
- Tips & tricks

Day 3

- Cases of construction in vacuum
- Cases in design for UCV

Day 4

- Cleaning, work discipline
- Leak testing
- Exercises & seminar on questions students

Methods

Lectures, selected exercises & calculations, workshop.

Read the interview:



Mark Meuwese (Trainer)

"A vacuum is more thermally challenging than ultraclean."

Remarks from participants:

- "Nice introductory slightly advanced course. Good to get more confidence in what I was doing already." > Diederik Morsink , DENS Solutions
- "It was a good training, very helpful for my understanding of vacuum design." > Bas Severins - ASML
- "Good, fast, much information in a short time." > Frank de Groot , Tegema
- "Most important items learned; Vacuum engineering, practical approach of vac-systems." > Frank Tacken , ASML