

TRAINING BROCHURE

Advanced Thermal Management of Electronics



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Advanced Thermal Management of Electronics

Price: € 1,800 excl. VAT *

Duration: 4 consecutive half-day sessions

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

Intro

New technical developments bring greater thermal challenges, requiring advanced thermal management. Data centers, cloud and AI push component heat dissipation to new levels. The energy sector and variable drives in machinery and transportation also generate high heat losses. Without proper cooling, rising temperatures reduce performance, reliability, and lifespan. While fan-cooled heatsinks may be sufficient in some cases, liquid cooling is often necessary.

This training stands out due to:

- its focus on advanced topics - liquid cooling, two-phase systems, digital design optimization.
- hands-on guided exercises (steady-state, transient, forced-air and liquid cooling) which ensure direct application of theory.
- international peer group fostering global knowledge exchange and cross-industry insights.
- worked exercises that provide how-to examples of common engineering calculations for future reference.
- trainer and renowned expert [Wendy Luiten](#), with extensive domain knowledge through decades of industry experience.

This advanced training is available for open enrollment as well as for in-company sessions. For in-company sessions, the training can be adapted upon request, for instance by adding a tailor-made case study or an extra practice day.

Objective

After the course, the participant:

- has obtained a thorough understanding of heat transfer phenomena;
- knows the state-of-the-art of fan cooling;
- knows the state-of-the-art of liquid cooling;
- knows the state-of-the-art of various cooling solutions as heat exchangers, heatsinks, two-phase cooling;
- has insight in the pros and cons of numerical modeling used with simulations.

Target audience

This course is intended for thermal engineers and other engineers (electronic, mechanical/mechatronic, reliability) directly involved with thermal design and cooling of electronic components, modules and systems.

Prerequisites: technical college/university education.

To attend this course, it is required that the module [Electronics Cooling Thermal Design](#) has been attended or an equivalent level of background knowledge is present.



Certification

Participants will receive a High Tech Institute course certificate for attending this workshop.

Course leader

[Hans Vink MSc](#)

Trainers

[Wendy Luiten MSc](#)

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

Keep me posted



Program

The following program is offered in four half-day sessions:

- A recap of the Thermal Design module followed by a first case discussing the basics of steady state and transient heat transfer;
- Advanced fan cooling (fan noise, fan control);
- Advanced heat transfer (transient, conduction, convection);
- Heating length and heat exchangers;
- Large forced air cooled heatsinks, followed by a class exercise;
- Digital design optimization and robust design;
- Liquid cooling;
- Two phase cooling;
- A final case on liquid cooling of a heatsink.

Methods

The course consists of four live half-day online sessions (via Microsoft Teams).

In-depth lectures and many worked examples demonstrating use of Excel and circuit analyzer software and validated with computer simulation. Two hands-on guided class exercises (steady state and transient heat transfer and large forced air cooled heatsinks) and a final case on a liquid cooled heatsink.

Course material: 140+ page theory reader containing a copy of the slides. The booklet Heat Transfer Theory applied to Electronics Cooling by Lasance & Luiten is being updated and will become available.

A copy of relevant papers on the topics is available upon request.

Trainers

Wendy Luiten MSc

Frequency

Once per year.

Read the interview:



Trainer Wendy Luiten about good thermal design

"A proper design can save on expensive additional cooling components and cost of re-design."