

Clean Heat Training program

General information

Number of Training Days: 5 Days

Duration: August 17th – August 21st, 2026

Location: Millennium Hilton Bangkok, and School of Energy, Environment and Material, KMUTT, Bangkok

Scope & Form: The class is taught on full days from 9:00-17:00. The teaching will be a combination of lectures, Q&A sessions and project work.

Evaluation: Pre- and Post-tests, Assignment, Software simulations, and Physical experiments

Clean Heat Curriculum

Day 1 (17th August 2026)

Module 1: Thermal System Engineering

Speakers:

Prof. Dr.-Ing. Horst Kreimes

Location:

Millennium Hilton Bangkok

9:00 - 9:20

– Welcome and course introduction (20 min)

9:20 - 9:30

– Pre-test

9:30 - 10:30

Session 1: Introduction to Thermodynamics

– Fundamental thermodynamic principles (First and Second laws)

– Heat transfer mechanisms (Conduction, convection, radiation)

– Basic energy concept (Energy efficiency and management)

10:30 - 10:45

Coffee break

10:45 - 12:00

– Heat exchanger fundamentals and design principles

12:00 - 13:00

Lunch

13:00 - 14:30

Session 2: Pinch Analysis

– Pinch analysis concept

– Composite curve construction and pinch point identification (Step-by-step procedure)

14:30 - 15:30

– Heat exchanger network synthesis

– Case studies

15:30 - 15:45

Coffee break

15:45 - 16:45

– Assignment

16:45 - 17:00

– Post-test

Day 2 (18th August 2026)**Module 2: Renewable Thermal Technologies****Speakers:**

Prof. Dr.-Ing. Horst Kreimes

Location:

Millennium Hilton Bangkok

9:00 - 9:10 – Pre-test

9:10 - 10:30 Session 1: Waste heat recovery

- Characteristics of waste heat (Temperature, Sources/sector of waste heat)
- Technology solutions for using waste heat

10:30 - 10:45 Coffee break

10:45 - 12:00 – Applications for waste heat (e.g. drying processes in food and agro-industries)

– Case studies

12:00 - 13:00 Lunch

13:00 - 14:00 Session 2: Industrial heat pump

- Working principles of heat pumps
- Heat pump types
- Technological potential and limitations

14:00 - 15:00 – High temperature heat pumps (HTHP) in practice

- Component design for HTHP
- Safety and compliance

15:00 - 15:15 Coffee break

15:15 - 16:45 – Performance measurements

– Examples of practical experience in commercial and industrial sectors

– Assignment

16:45 - 17:00 – Post-test

Day 3 (19th August 2026)**Module 3: Process Optimization and System Integration****Speakers:**

Dr. Yanin Sukjai, KMUTT

Location:

School of Energy, Environment and Material, KMUTT, Bangkok

9:00 - 9:10 – Pre-test

9:10 - 10:30 Session 1: Optimization & Integration

– Process integration of industrial heat pumps

10:30 - 10:45 Coffee break

10:45 - 12:00 – Energy savings potential via pinch analysis and energy demand management

– Power management using demand response measures

12:00 - 13:00 Lunch

13:00 - 14:00 Session 2: HTHP Workshop

– Laboratory visit : HTHP at KMUTT

14:00 - 15:00 – Assignment I : Heat pump performance evaluation

15:00 - 15:15 Coffee break

15:15 - 16:15 – Assignment II : Energy saving /CO₂ reduction potential

16:15 - 16:30 – Post-test

Day 4 (20th August 2026)
Module 4: Energy Storage Systems

	Speakers: Prof. Dr.-Ing. Horst Kreimes Dr. Siricharn Jirapongphan Dr. Pipat Chaiwiwatworakul Location: Millennium Hilton Bangkok
9:00 - 9:10	– Pre-test
9:10 - 10:30	Session 1: Thermal energy storage – Thermal energy storage
10:30 - 10:45	Coffee break
10:45 - 12:00	– Energy storage density and performance metrics (e.g. MWh/m ³ , efficiency, discharge rate)
12:00 - 13:00	Lunch
13:00 - 14:30	– CHILLOX thermal energy storage applied in building and cold storage Session 2: Financial analysis Speakers: – Value of waste heat
14:30 - 15:30	– Financial analysis and business models of heat pump • CAPEX & OPEX of HTHP – Break-even COP
15:30 - 15:45	Coffee break
15:45 - 16:45	– Economic analysis and viability of HTHP – Levelized cost of heat for industrial process heat – Assignment
16:45 - 17:00	– Post-test

Day 5 (21st August 2026)**Module 5: Policy and Market Frameworks for Clean Heat**

	Speakers: Prof. Dr.-Ing. Horst Kreimes Dr. Paweetida Sungwornpatansakul Dr. Sontaya Krichnavaruk Location: Millennium Hilton Bangkok
9:00 - 9:10	– Pre-test
9:10 - 10:30	Session 1: Policy and Market Framework – Status of clean heat: An international outlook – Technical and economic barriers – Policy initiatives and actions to promote clean heat (German and EU clean heat standard)
10:30 - 10:45	Coffee break
10:45 - 12:00	– Clean heat policy in Asean countries
12:00 - 13:00	Lunch
13:00 - 14:00	Session 2: Carbon Trading – Carbon trading scheme
14:00 - 15:15	– Carbon emission assessment
15:15 - 15:30	Coffee break
15:30 - 16:45	– Project assignment
16:45 - 17:00	– Post-test