

International Training Course

ClimaCheck-based Performance Analysing, Trouble-Shooting and Optimisation

International Training – March 19-20, 2015 in Stockholm, Sweden

ClimaCheck offer an innovative methodology for performance analyses and energy monitoring of refrigeration, air-conditioning and heat pump systems. This information is required to optimise systems that consume 15-20% of the electricity produced globally. With increasing energy costs and the focus on global warming, the RAC industry is now facing new demands from customers who have identified these systems as their major energy user and the high maintenance cost often associated with them. There is also an increased focus on measuring and validation, as well as early warning to achieve maximum reliability. To maintain temperature is critical for the end-user business but maintaining temperature alone is no longer sufficient. The ClimaCheck Performance Analyser gives you state-of-the-art methodology for true performance analysis of all types of RAC systems and is increasingly becoming part of the everyday work for contractors, consultants and equipment owners across the world.



Competence is the key for the future professionals to lead the change.

Certification from "ClimaCheck Training" is required to be listed as "ClimaCheck Partner".

ClimaCheck Sweden AB invites you to a two day Technical Training Course, focused on:

- Practical measurement of Refrigeration, Air-Conditioning and Heat Pump Systems
- Use of ClimaCheck Portable and Fixed performance Analysing Equipment
- Performance Inspections and Energy audits
- Experiences from Cases
- Trouble-Shooting and Energy Optimisation



Target Groups: The Course is aimed at professionals with a good experience and understanding of refrigeration processes in **refrigeration, air conditioning and heat pump systems**. Basic understanding of the thermodynamics and practical understanding of the components of a system are prerequisites for the course. Exchange of experiences between participating experts will be an important part of training.

The training will be divided into two "Levels":

Level 1 - basics of ClimaCheck hard and software. How to use and interpret results and create reports on standard systems. This training is aimed for technicians and engineers who has limited experience of ClimaCheck analyses. For those who has no experience we will send out a demo software version upon registration which we recommend participants to study prior to training.

Level 2 – Focus on advanced use of ClimaCheck and optimisation of systems for those who has practical experience from a number of measurements and want to develop the skills to measure and analyse more complex systems. Focus is on analyses, optimisation and reporting rather than ClimaCheck hard- and software.

Prior experience of ClimaCheck is required to participate in Level 2.

Date: March 19-20 2015 **Start:** 9 a.m. Thursday / **Finish:** 4 p.m. Friday

Cost 2-Day Course: 400 Euro (including documentation, two lunches, one dinner).

Reserve your place to Level 1 or 2 now to ensure availability.

(Maximum 20 participants per course will be accepted).

Register before February 10 at training@climacheck.com

Location: Stockholm - Quality Hotel Nacka, Värmdövägen 84, Nacka

Phone: +46 8 506 160 00, e-mail: q.nacka@choice.se.

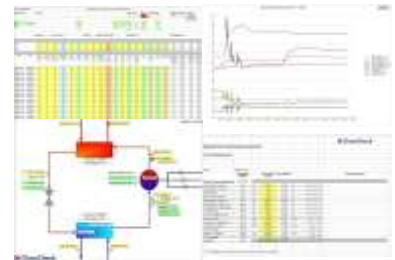
Language: Training will be done in English.

Accommodation: Rooms are available at the conference hotel at special price (aprox. 150 Euro/night) refer to ClimaCheck reservation or ask us for assistance.

Experienced Lecturers from ClimaCheck and experts in the ClimaCheck network will guide the participants through practical and theoretical training sessions. Some sessions will be common and others will be split in groups based on prior experience.

Training will cover:

- Theory for the ClimaCheck Internal Method
- Accuracy of Measurements
- Practical Measurements and Evaluation of Data
- Use of ClimaCheck Hardware, Software and Website
- Customising Measurements and Results Presentation
- Evaluation and Reporting of Case Studies
- System Efficiency Index and on-going research projects



Social dinner

After the first day of training we will share experiences of good and bad examples in our industry at a nice restaurant in Stockholm!



ClimaCheck Sweden AB,
www.climacheck.com
info@climacheck.com,
+46 8 50 255 250



ClimaCheck Training

ClimaCheck is the global leader in performance analysing of air-conditioning, refrigeration and heat pump systems. ClimaCheck open the "black box" and document the performance of the process and all involved components in a way that has not been cost effective with conventional methods. ClimaCheck continuously develop methodologies and capabilities of our "tools" and train the industry in their use.

ClimaCheck certified technicians is a pre-requisite to be listed as ClimaCheck Partners.

Business opportunities for those with competence in energy optimisation

Equipment owners are gradually becoming aware of the unnecessary high running cost and environmental impact of their refrigeration and air-conditioning systems. The interest for "Measuring and Validation", energy optimisation and performance contracting is growing. Savings have been achieved in many energy consuming technologies in the building sector such as lightning, heating and ventilation but in air-conditioning and refrigeration the saving potential is largely untapped due to lack of established methods to document, analyse and optimise systems cost effectively. The industry largely lack tools and competence to deliver the 20-40% savings many surveys show as possible with no or low investment.

Preliminary program ClimaCheck Level 1 and 2 training

Below is an outline for Level 1 and 2 training that will be adapted to the participant's background and interest. We encourage participants to inform us about interesting cases to evaluate prior to our trainings. We have extensive experience of thousands of plants and try to select and adapt "cases" to the interest of the participants. Experience exchange is an important part of the training as several of the lecturers and participants are leading experts in their sector of the industry.

		Day 1		Day 2	
		Level 1 (basic)	Level 2 (advanced)	Level 1 (basic)	Level 2 (advanced)
9:00-09:45	1	Global Outlook Intro to ClimaCheck software and ClimaCheck online updates		9	ClimaCheck online - overview - capabilities
09:45-10:45	2	System Efficiency Index - SEI* Introduction to a new way to benchmark systems and components		10	Software, practical work
					ClimaCheck online Energy profiling - statistics - alarms
11:00-11:45	3	Hardware, sensors application standard program, accuracy, configuration	Software - Special templates i.e. oil cooling, economiser, air properties, transcritical	11	Interpretation of data - Evaluation - components - System and controls
11:45-12:30	4			12	
12:30-13:15		Lunch			
13:15-14:00	5	Software - standard, use and handling	Interpretation of data - Trouble shooting	13	New refrigerants - Market opportunities - R404A alternatives/retrofits - HFOs - Hydrocarbons -CO2 - NH3
14:00-15:00	6			14	
15:15-16:00	7	Hardware, none standard sensors, communication options, Integration options		15	Conclusions - Market opportunities - Cases from around the world, experiences - questions
16:00-17:00	8	Reporting - communication of results Templates and examples			
18:30		Common Dinner			

* ClimaCheck is leading the work with developing the concept of System Efficiency Index – SEI – that facilitates benchmarking and communication of performance to "none experts".

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