

### International Training Course

### ClimaCheck-based Performance Analysing, Trouble-Shooting and Optimisation

International Training – April 14-15, 2016 in Madrid, Spain.

ClimaCheck and RefriApp in Spain offer a training in performance analysing of refrigeration, air-conditioning and heat pump systems. Globally 15-20% of the electricity is used by refrigeration processes used everywhere in the society to preserve perishable goods, avoid overheating of processes and keep acceptable comfort for people by cooling or heating.

To maintain temperature is critical for the end-user business but maintaining temperature alone is no longer sufficient.

The new environment offers new business opportunities for consultants and contractors and ClimaCheck has developed state of the art technology to analyse and optimise these systems.

ClimaCheck onsite and ClimaCheck online 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 around the world.



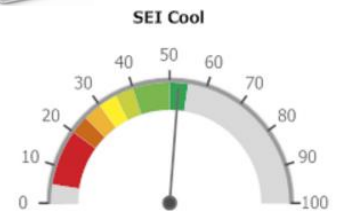
**Competence is the key for the future professionals to lead the change.**

**Certification from “ClimaCheck Training” is required to be listed as “ClimaCheck Partner”.**



**ClimaCheck Sweden and RefriApp** invite you to a two day Technical Training Course, focused on:

- Business opportunity and challenges when focus on energy efficiency increase in RAC sector.
- ClimaCheck **onsite** and **online** performance analysing
- Performance Inspections and Energy audits
- Discuss experiences from Cases with experts
- Trouble-Shooting and Energy Optimisation



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.

**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, trouble shooting, optimisation and reporting rather than ClimaCheck hard- and software.

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

**Date:** April 14 – 15, 2016 **Start:** 9 a.m. Thursday / **Finish:** 5 p.m. Friday

**Language:** Training will be done in English.

**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 March 20<sup>th</sup> at [training@climacheck.com](mailto:training@climacheck.com) or [training@refriapp.es](mailto:training@refriapp.es)**

**Location:** Madrid - Hotel Maydrit, C/Piragua 1, Madrid

**Bookings: Ref. ClimaCheck training:**

Phone: +34 911969200, e-mail: [reservasmaydrit@h-santos.es](mailto:reservasmaydrit@h-santos.es)

Free Shuttle Bus from Airport.

**Accommodation:** Rooms are available at the conference hotel at special price 75-90 Euro/night refer to RefriApp/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 thermodynamic evaluation method
- Accuracy of Measurements
- System Efficiency Index and energy signatures
- Practical Measurements and Evaluation of Data
- Use of ClimaCheck hardware, software and website
- Presentation of measurements and results
- Reporting and Case Studies



**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 Madrid!



**ClimaCheck Sweden AB**  
www.climacheck.com  
[training@climacheck.com](mailto:training@climacheck.com)  
**+46 8 50 255 250**

**RefriApp, S.L.**  
www.refriapp.es  
[training@refriapp.es](mailto:training@refriapp.es)  
**+34 950 304 479**

## Typical training program ClimaCheck International 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. ClimaCheck continuously develop methodologies and capabilities of our “tools” and train the industry in their use.

**Companies with ClimaCheck certified technicians can 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	Level 2	Level 1	Level 2
09:00 - 09:45h	Global Outlook into to CC software & CC On-line updates		Climacheckonline - overview - capabilities	
09:45 - 10:45h	System Efficiency Index - SEI Introduction to a new way to benchmark systems a& components		Software: practical work	Climacheck online Energy profiling - statistics - alarms
	coffee break --- coffee break --- coffee break ---		coffee break --- coffee break --- coffee break	
11:15 - 12:00h	Hardware, Sensors application, standard program, accuracy, configuration	Software-Special templates oil cooling, economiser, transcritical, air properties	Interpretation of data Evaluation - components System and control	Optimisation, chiller Recip. - Screw - Centrifugal
12:00 - 12:45h				
12:45 - 13:30h	Software - standard use and handling	Data interpretation Trouble shooting Experiences - Application Worldwide cases	New Refrigerants - Market opportunities R404A alternatives /retrofits - HFO's - Hydrocarbons - CO2 - NH3	
13:30 - 14:30h			Optimisation -reporting System - example	Optimisation - Supermarkets Direct - Indirect - Transcritical
14:30 - 15:15h	lunch --- lunch --- lunch --- lunch --- lunch ---		lunch --- lunch --- lunch --- lunch --- lunch	
15:15 - 16:00h	Hardware: none standard sensors, communication/Integration options		Conclusions - Market opportunities - Worldwide Cases	
16:00 - 17:00h	Reporting - communication of results: templates samples		Experiences - Questions	
20:30h	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”.