CLIMA 2022

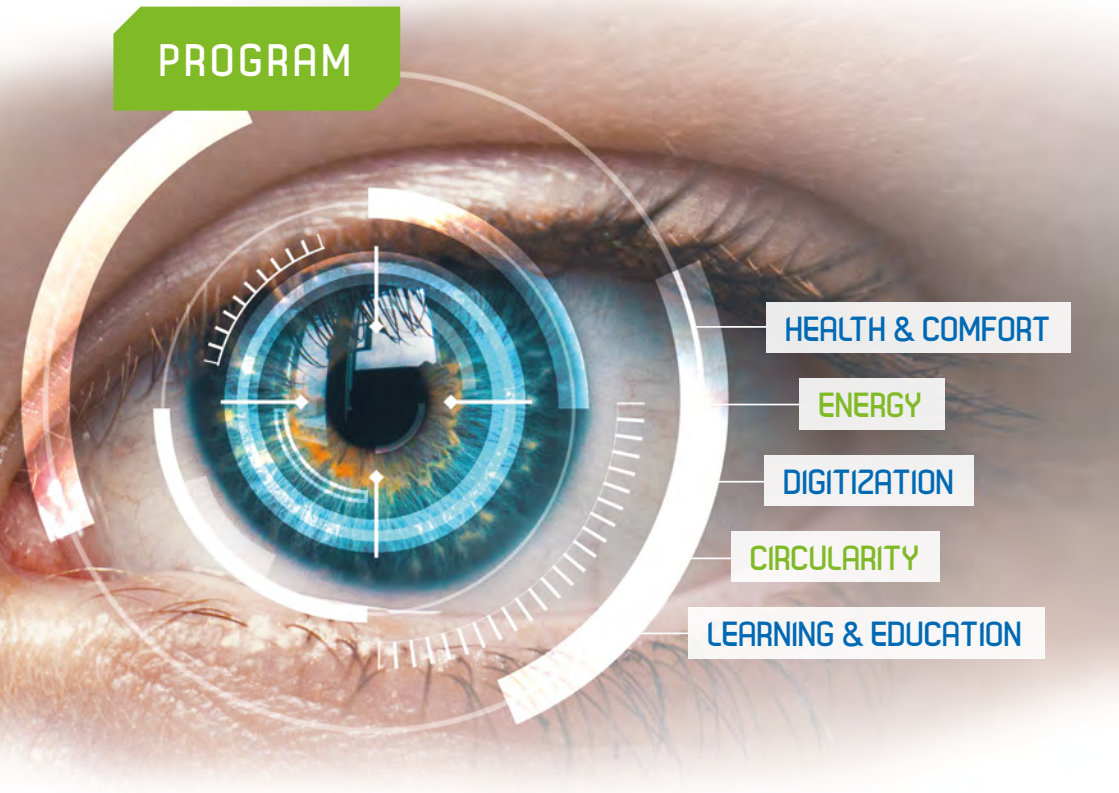
EYE ON 2030

Towards digitalized, healthy, circular and energy efficient HVAC

REHVA 14th HVAC World Congress

22nd - 25th May, Rotterdam, The Netherlands

PROGRAM



WWW.CLIMA2022.ORG

Main sponsor

Carrier

Theme sponsors

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Wij Techniek samen werken aan jouw ontwikkeling +GF+

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PREFACE

Dear attendee of CLIMA 2022,

Finally we meet again in person! As CLIMA Organising Committee, we warmly welcome you at CLIMA 2022 here in Rotterdam!

After 13 CLIMA congresses elsewhere in Europe, we could say that CLIMA is coming home. As some of you may know, REHVA was legally established in 1963 in The Hague, upon the initiative of 9 countries including TVVL. And now it's the first time the flagship event of REHVA, the 14th CLIMA World Congress actually is taking place here in the Netherlands.

The coming days you can enjoy presentations and discussions related to one of the 5 congress themes: Health & Comfort, Energy, Circularity, Digitization and innovative Learning & Education. The program includes close to 400 scientific presentations, 30 interactive sessions & workshops, 4 courses, 9 inspiring keynote presentations. And hopefully you are able to enjoy the whirlwind opening ceremony on Sunday and one of the vibrant night activities during CLIMA 2022.

We look forward to appreciating each other's company and pro-actively determine the path our field of expertise will take in the future, all with a sharp EYE ON 2030. We hope you enjoy everything CLIMA 2022 has to offer and wish you a successful congress.

The CLIMA 2022 Organisation Committee
Prof. dr. ir. Atze Boerstra, *Congress President and Professor of Building Services Innovation TU Delft*
Dr. ing. Lada Hensen Centnerová, *Congress Vice President and Operational Director Smart Buildings & Cities at TU Eindhoven*
Prof. dr. Laure Itard, *Congress Vice President and Professor of Building Energy Epidemiology at TU Delft*
Ing. John Lens, *Managing Director at TVVL*
Drs. ing. Olaf Oosting, *Board Member TVVL and General Manager at Valstar Simonis*

Scientific Program Themes

EYE ON 2030

Health & Comfort
Energy
Digitization
Circularity
Learning & Education



ABOUT THE VENUE

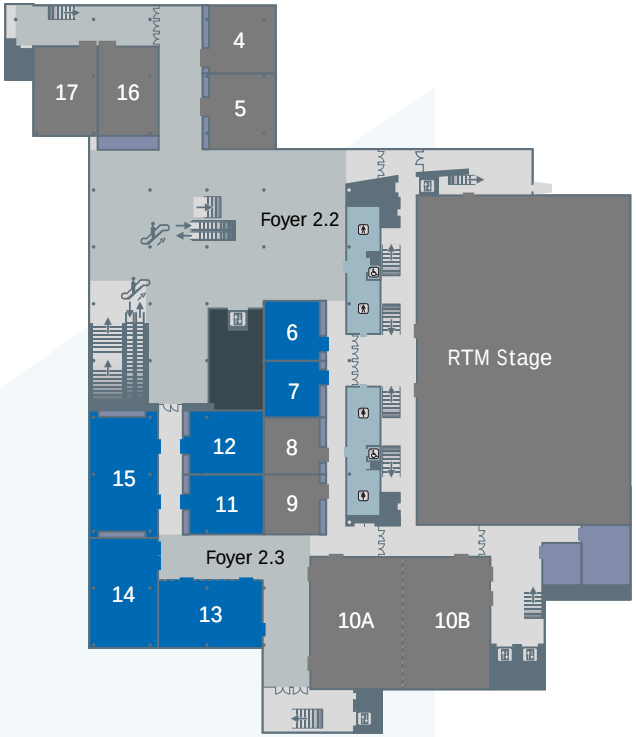
The venue of CLIMA 2022 is the Rotterdam Ahoy Convention Center, Ahoyweg 10 in Rotterdam (close to Zuidplein metro station). The congress takes place at the two top floors of the RACC. The maps on the following pages show the main congress rooms and areas. Please also follow the signage at the congress location itself and check the updated program online to find your way. All plenary sessions are in 'Rotterdam A' and all breaks are in the exhibition area (Port 1).



FLOOR PLAN RACC

Second floor
Registration/information desk and Dock rooms

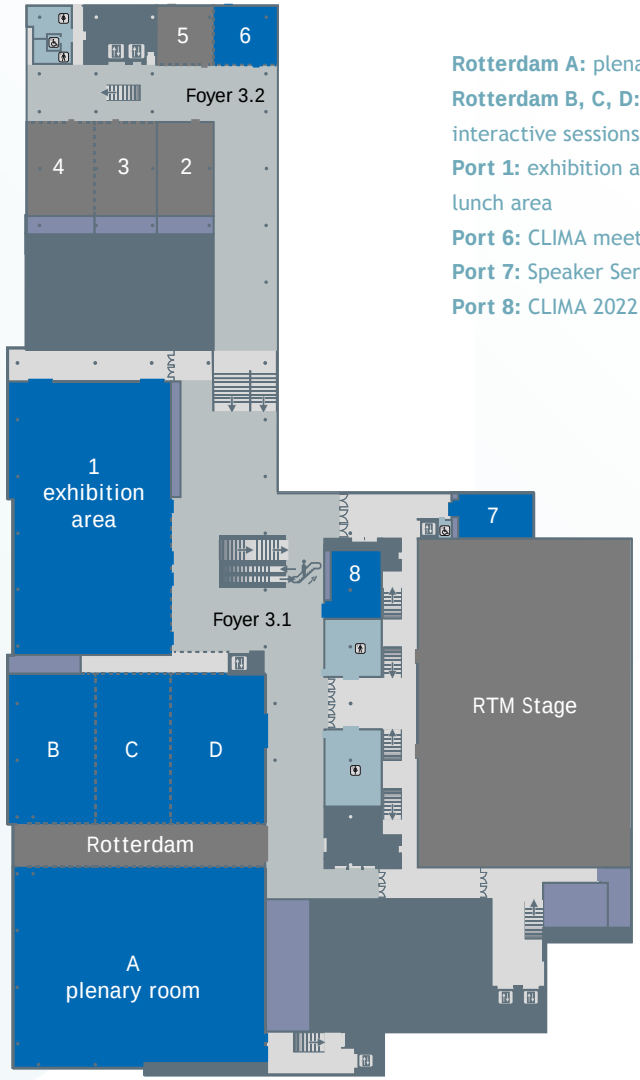
Foyer 2.2: registration desk / info booth
Dock 6, 7 and Dock 11, 12, 14 and 15: workshops & interactive sessions + parallel sessions
Dock 13: poster area



FLOOR PLAN RACC

Third floor
Rotterdam rooms and exhibition area

Rotterdam A: plenary room
Rotterdam B, C, D: workshops & interactive sessions + parallel sessions
Port 1: exhibition area + coffee break & lunch area
Port 6: CLIMA meeting room
Port 7: Speaker Service Center
Port 8: CLIMA 2022 headquarters







SUNDAY 22 MAY

Program at a glance

Opening ceremony

TIME (HRS)	EVENT
16:30 - 17:25	**Opening speeches** Atze Boerstra, CLIMA 2022 Congress President Frank Hovorka, past REHVA president & Catalin Lungu, new REHVA president John Lens, General Manager TVVL & Olaf Oosting, board member TVVL Representatives REHVA Associate Organisations Arno Bonte, Alderman Sustainability at City of Rotterdam
17:25 - 17:35	**Presentation Carrier, main sponsor CLIMA 2022**
17:35 - 17:55	**Keynote Lecture Marjan Minnesma, Urgenda** *Acceleration now!*
17:55 - 18:15	**Keynote Lecture Roland Bal, Erasmus University** *Preparing for the unknown. Towards resilient societal responses?*
18:15 - 18:35	**Discussion with keynote speakers & selection of sponsors**
18:35 - 18:55	**CODARTS modern dance intermezzo**
18:55 - 19:00	**Practical congress information and official opening by Catalin Lungu and Atze Boerstra**
19:00 - 21:00	**Opening Reception with buffet**



MONDAY 23 MAY

Program at a glance

Day theme Health & Comfort

TIME (HRS)	LOCATION	CODE	EVENT
8:30 - 10:00	Rotterdam A	MK1	**Keynote Lecture Lidia Morawska, Queensland University of Technology** *Why is healthy indoor air an unmet challenge?* **Keynote Lecture Arsen Melikow, Technical University of Denmark** *We need a ventilation paradigma shift* **Discussion Covid-19**
10:00 - 10:30	Port 1	MBr1	**Break**
10:30 - 12:30	Dock 14	M1_01	**Interactive session (Energy + Health & Comfort)** Workshop: Future ventilation solutions and indoor environment
	Dock 15	M1_02:	**Interactive session (Health & Comfort)** Workshop (Halton): Safety in Indoor Settings
	Dock 12	M1_03	**Interactive session (Energy)** 10:30 - 11:30 Seminar: "Towards Smart Ventilation" in Mid-sized buildings. 11:30 - 12:30 Nearly Zero Energy Buildings
	Dock 6	M1_04	**Interactive session (Digitization + Health & Comfort)** Seminar: Smart buildings & interfaces for managers of buildings and facilities & Intelligence needed for occupant-HVAC interfaces at room level
10:30 - 12:30	Dock 14	MA01	**Parallel session (Energy 1)**
	Rotterdam D	MA02	**Parallel session (Energy 2)**
	Rotterdam A	MA03	**Parallel session (H&C - Residential Buildings)**
	Rotterdam B	MA04	**Parallel session (H&C - Self-reported health & comfort)**
	Dock 7	MA05	**Parallel session (Digitization - Building Performance Monitoring)**
10:30 - 17:00	Dock 11	-	**REHVA Student Competition**
12:30 - 13:30	Port 1	MLu	**Lunch break**
13:30 - 14:00	Rotterdam A	MK2	**Keynote Lecture Ben van Berkel, founder and principal Architect at UNStudio and UNSense** *What we want has never been done*

TIME (HRS)	LOCATION	CODE	EVENT
14:00 - 14:15	-	MTr1	**Transfer time**
14:15 - 15:45	Rotterdam C	M3_01	**Interactive session (Health & Comfort)** Workshop: COVID-19 implications on ventilation criteria and design
	Dock 15	M3_02	**Interactive session (Health & Comfort)** Workshop (Carrier): Challenges to balance Health, Comfort with Efficiency and Sustainability
	Dock 12	M3_03	**Interactive session (Energy)** Energy performance and comfort of intelligent buildings - where is the limit of automation of building management processes?
	Dock 6	M3_04	**Interactive session (Digitization)** Course: An Introduction to Semantic Metadata for Data-Driven Buildings.
14:15 - 15:45	Dock 14	MC01	**Parallel session (Energy 3)**
	Rotterdam D	MC02	**Parallel session (Energy 4)**
	Rotterdam A	MC03	**Parallel session (Health & Comfort - Infection risk)**
	Rotterdam B	MC04	**Parallel session (Health & Comfort - Thermophysiology)**
	Dock 17	MC05	**Parallel session (Digitization - Systems and Sensors 1)**
15:45 - 16:15	Port 1	MBr2	**Break**
16:15 - 17:45	Rotterdam C	M4_01	**Interactive session (Health & Comfort)** Workshop: Advanced airflow distribution methods for reduction of cross infection and exposure to indoor pollution.
	Dock 12	M4_02	**Interactive session (Health & Comfort)** Sponsor workshop (Belimo): 7 Essentials of Healthy Indoor Air
	Dock 15	M4_04	**Interactive session (Energy)** Seminar: Passive solutions.
16:15 - 17:45	Dock 14	MD01	**Parallel session (Energy 5)**
	Rotterdam D	MD02	**Parallel session (Energy 6)**
	Rotterdam A	MD03	**Parallel session (Health & Comfort - Mitigation strategies for COVID-19**
	Rotterdam B	MD04	**Parallel session (Health & Comfort - IAQ assessment**
	Dock 7	MD05	**Parallel session (Digitization - Simulation and Control 1)**

Theme sponsor

Halton

Main sponsor CLIMA 2022

Carrier





TUESDAY 24 MAY

Program at a glance

Day theme Energy | Learning & Education

TIME (HRS)	LOCATION	CODE	EVENT
8:30 - 9:15	Rotterdam A	TK1	**Keynote lecture Pau Garcia Audi, policy officer EPBD** *Buildings in 2030 and 2050 – The revision of the EPBD*
9:15 - 9:30	-	TTr1	**Transfer time**
9:30 - 10:30	Rotterdam C	T1_01	**Interactive session (Energy)** Workshop (Daikin): Energy for Comfort
	Dock 15	T1_02	**Interactive session (Energy)** Workshop (Carrier): transition to decarbonization
	Dock 11	T1_03	**Interactive session (Health & Comfort)** Discussion forum: How to assess multi-domain exposure situations in indoor environments? Discussing new research approaches for comfort and behavior
	Dock 6	T1_04	**Interactive session (Learning & Education)** Seminar: Education & Learning in the HVAC sector: what's next? Session 1: sharing experiences with invited speakers from companies and educative bodies
9:30 - 10:30	Rotterdam A	TA01	**Parallel session (Energy 7)**
	Rotterdam B	TA02	**Parallel session (Energy 8)**
	Dock 14	TA03	**Parallel session (H&C - Monitoring and Control)**
	Rotterdam D	TA04	**Parallel session (H&C - Cooking and other pollutants)**
	Dock 7	TA05	**Parallel session (Digitization - Simulation and Control 2)**
10:30 - 11:00	Port 1	TBr1	**Break**
10:30 - 16:00	Port 7		**Healthy Home Design Competition**
11:00 - 12:30	Rotterdam C	T2_01	**Interactive session (Energy)** Workshop: Trigeneration systems based on heat pumps with natural refrigerants and multiple renewable sources
11:00 - 12:30	Dock 15	T2_02	**Interactive session (Learning & Education + Energy)** Workshop: CEN-CE scheme roll-out: harmonised training and certification of experts on EPB standards
11:00 - 12:30	Dock 11	T2_03	**Interactive session (Health & Comfort)** Discussion forum: Accounting for occupants in building design and operation
	Dock 6	T2_04	**Interactive session (Learning & Education)** Seminar: Education & Learning in the HVAC sector: what's next? Session 2: shaping the future: blue print for professional continuous education
11:00 - 12:30	Rotterdam A	TB01	**Parallel session (Energy 9)**
	Rotterdam B	TB02	**Parallel session (Energy 10)**
	Dock 14	TB03	**Parallel session (Health & Comfort - Cooling systems)**
	Rotterdam D	TB04	**Parallel session (Health & Comfort - Offices)**
	Dock 7	TB05	**Parallel session (Circularity)**
12:30 - 13:30	Port 1	TLu	**Lunch break**
13:30 - 14:00	Rotterdam A	TK2	**Keynote Lecture Lieve Helsen, KU Leuven & EnergyVille** *Energy systems for a sustainable built environment: a system of systems approach*
14:00 - 17:00	Dock 12	-	**HVAC World Student Competition**
14:00 - 14:15	-	TTr2	**Transfer time**
14:15 - 15:45	Rotterdam C	T3_01	**Interactive session (Energy)** Workshop: Impact of the EU Taxonomy on Building Projects - Bridging the gap with financial actors
	Dock 6	T3_02	**Interactive session (Energy)** Workshop: Deep Renovation Concepts
	Dock 11	T3_03	**Interactive session (Health & Comfort)** Seminar: IEA EBC Annex 80 - Resilient Cooling in Buildings

TIME (HRS)	LOCATION	CODE	EVENT
14:15 - 15:45	Dock 15	T3_04	**Interactive session (Health & Comfort)** Workshop: Low relative humidity in indoor air - an important element of indoor air quality
14:15 - 15:45	Rotterdam A	TC01	**Parallel session (Energy 11)**
	Rotterdam B	TC02	**Parallel session (Energy 12)**
	Dock 14	TC03	**Parallel session (H&C - Personal ventilation)**
	Rotterdam D	TC04	**Parallel session (H&C - IEQ and energy efficient retrofit)**
	Dock 7	TC05	**Parallel session (Learning & Education)**
15:45 - 16:15	Port 1	TBr2	**Break**
16:15 - 17:45	Rotterdam C	T4_01	**Interactive session (Energy)** Workshop: Support, consultancy and services for the implementation and practical use of the set of Energy Performanceof Buildings standards
	Dock 15	T4_02	**Interactive session (Energy)** Workshop: Deep energy renovation of buildings for HVAC professionals.
	Dock 11	T4_03	**Interactive session (Health & Comfort)** Seminar: New IEA EBC Annex on Personalized Environmental Control Systems (PECS)
16:15 - 17:45	Rotterdam A	TD01	**Parallel session (Energy 13)**
	Rotterdam B	TD02	**Parallel session (Energy 14)**
	Dock 14	TD03	**Parallel session (H&C - Modeling thermal comfort and overheating)**
	Rotterdam D	TD04	**Parallel session (H&C - Thermal perception)**
	Dock 7	TD05	**Parallel session (Digitization - Simulation and Control 2)**
	Dock 6	TD06	**Parallel session (Learning and Education)**

Theme sponsor

DAIKIN

Theme sponsor

Wij Techniek
samen werken aan jouw ontwikkeling

Main sponsor CLIMA 2022

Carrier







WEDNESDAY 25 MAY

Program at a glance

Day theme Digitization | Circularity

TIME (HRS)	LOCATION	CODE	EVENT
8:30 - 9:15	Rotterdam A	WK1	**Keynote Lecture Clayton Miller, National University of Singapore** *Scalability, Benchmarking, and Skills: A Roadmap for Built Environment Digitization*
9:15 - 9:30		WTr1	**Transfer time**
9:30 - 10:30	Rotterdam C	W1_01	**Interactive session (Digitization)** Theme sponsor: Siemens
	Dock 15	W1_02	**Interactive session (Digitization)** Main sponsor: Carrier
	Rotterdam A	W1_03	**Interactive session (Circularity)** 9:30 - 12:30 Masterclass on Circularity: Engage in real life cases from Georg Fischer
	Dock 12	W1_04	**Interactive session (Health & Comfort)** Seminar: Bedroom ventilation & sleep quality
9:30 - 10:30	Rotterdam B	WA01	**Parallel session (Energy 15)**
	Dock 14	WA02	**Parallel session (Energy 16)**
	Rotterdam D	WA03	**Parallel session (Health & Comfort - Schools 1)**
	Dock 7	WA04	**Parallel session (Health & Comfort - CFD and building simulation)**
	Dock 11	WA05	**Parallel session (Digitization - Information modelling)**
10:30 - 11:00	Port 1	WBr1	**Break**
11:00 - 12:30	Rotterdam C	W2_01	**Interactive session (Digitization)** Workshop: Digital transformation facilitating building performance convergence and enabling operational rating
	Dock 15	W2_02	**Interactive session (Digitization)** Sponsor workshop: The Future of HVAC as a Service
11:00 - 12:30	Dock 6	W2_03	**Interactive session (Digitization)** Sponsor workshop: Efficiency beyond the building: the leverage of advanced HVAC control systems in the management of Dock 6 Energy Communities
11:00 - 12:30	Rotterdam B	WB01	**Parallel session (Energy 17)**
	Dock 14	WB02	**Parallel session (Energy 18)**
	Rotterdam D	WB03	**Parallel session (Health & Comfort - Schools 2)**
	Dock 7	WB04	**Parallel session (Health & Comfort - Sleep quality)**
	Dock 11	WB05	**Parallel session (Digitization - Building performance monitoring 2)**
	Dock 12	WB06	**Parallel session (Digitization - Systems and sensors 2)**
12:30 - 13:30	Port 1	WLu	**Lunch break**
13:30 - 14:00	Rotterdam A	WK2	**Keynote Lecture Thomas Auer, TU Munich** *High-tech, Low-tech, Circular & Robust*
14:00 - 15:30	Rotterdam A		**Closing ceremony**

Theme sponsor Digitization

SIEMENS

Theme sponsor Circularity

+GF+

Main sponsor CLIMA 2022

Carrier



Program at a glance
Social events

DATE	TIME (HRS)	LOCATION	EVENT
Monday 23 May	19:30 - 22:30	Restaurant Oliva	**REHVA VIP Dinner (upon invitation only)**
Monday 23 May	19:30 - 22:30	BIRD	**REHVA Young Professional Community Event**
Monday 23 May	22:00 - 24:00	BIRD	**Concert Halton Ärräpää Orchestra** (Free entrance. Venue opens at 21:30 hrs)
Tuesday 24 May	19:30 - 23:30	Wereldmuseum	**Congress Dinner** (Buy tickets via www.clima2022.org)
Tuesday 24 May	7:30 - 8:30	Bar Prachtig	**CLIMA Early Morning Run** (Starting point north side of the Erasmusbrug)
Wednesday 25 May	7:30 - 8:30	Bar Prachtig	**CLIMA Early Morning Run** (Starting point north side of the Erasmusbrug)



LOCATIONS SOCIAL PROGRAM

REHVA VIP DINNER
(Upon invitation only)
Restaurant Oliva
Witte de Withstraat 15A
3012 BK Rotterdam

REHVA COMMUNITY YOUNG PROFESSIONAL EVENT
BIRD
Raampoortstraat 24-28
3032 AH Rotterdam

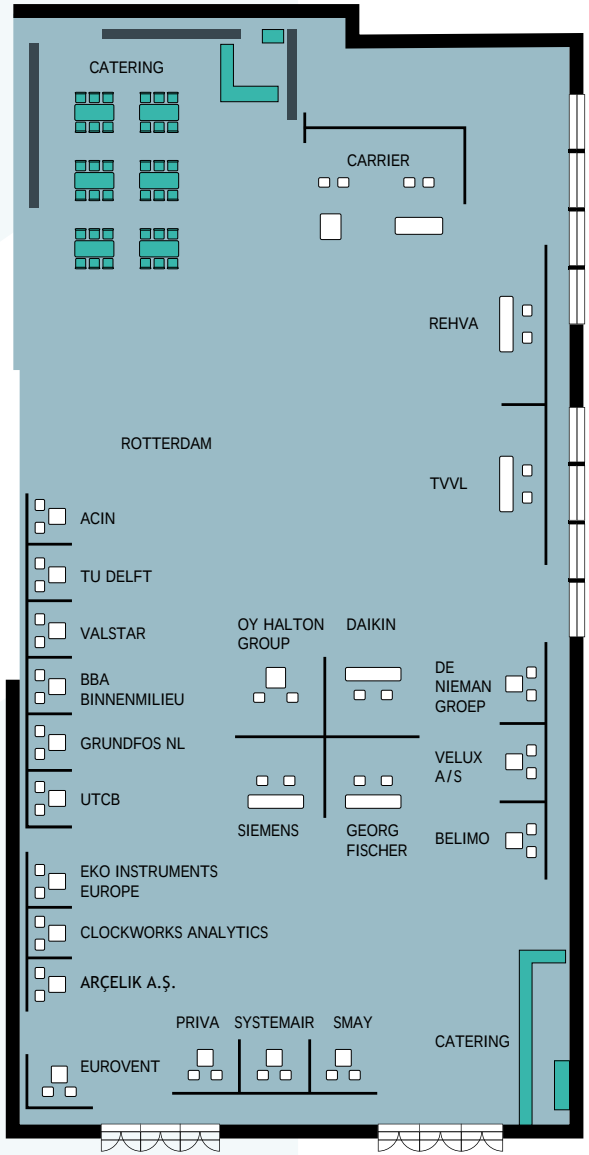
CONCERT HALTON ÄRRÄPÄÄ ORCHESTRA
BIRD
Raampoortstraat 24-28
3032 AH Rotterdam

CONGRESS DINNER
Wereldmuseum
Willemskade 25
3016 DM Rotterdam
+31 (0)10 2707172

STARTING POINT MORNING RUN
Bar Prachtig, north side of Erasmusbrug

EXHIBITION

Third Floor, exhibition area (Port 1)



MAP OF ROTTERDAM



GENERAL INFORMATION

TRANSPORTATION TO CONGRESS VENUE

Transportation from the main congress hotels to the congress venue Ahoy Rotterdam is easy with metro line D or E. You can buy an E-ticket for the metro with the RET Barcode app or at the ticket vending machines at the metro station. Please note that there is no congress shuttle.

ONLINE CONGRESS PLATFORM

CLIMA 2022 takes place in hybrid form. During and after CLIMA 2022 you will have online access to all key note speeches, scientific presentations and workshops and interactive sessions. All plenary sessions and some workshops and interactive sessions will be streamed live, all other sessions will be available on demand. You can access the online congress platform via:
https://clima2022.dive-digitalvenue.com/login

BUFFET OPENING CEREMONY COFFEE BREAK AND LUNCHES

A light lunch and coffee/tea is included in the registration fee and will be served in Port 1 as per the times indicated in the program. If you have a 3,5 day congress ticket the opening reception and buffet on Sunday is also included in your fee. Please let the caterer at the congress venue know if you have any dietary requests.

CLIMA 2022 HEADQUARTERS (PORT 8, THIRD FLOOR)

The room for general support regarding the congress, program or your presentation is located on the 3rd floor of the venue. Opening hours are the same as opening hours of the congress.

CLOAKROOM

There is a manned cloakroom on the ground floor of the RACC where you can store your clothing piece at a rate of € 2.00 per piece. Neither the organisation of CLIMA 2022 nor the management of the RACC is liable for theft and / or the loss of items of clothing.

GENERAL INFORMATION

EMERGENCY SITUATION AND MEDICAL INFORMATION

You certainly hope it will not be necessary, but something might happen during your visit which requires medical attention. In case of emergency, always dial 112 and notify the first aiders present in our part of the building.

Nearest hospital
Ikazia Ziekenhuis
Montessoriweg 1
3083 AN Rotterdam

Nearest emergency dentist
Dental365
Dr. Molewaterplein 30
3015 GD Rotterdam

In case of any medical emergencies during the congress, two first aider are on site during the congress.

In case of urgent matters email info@clima2022.org this email will be checked continuously during office hours.

Other essential information regarding medical help can be found here:



COVID MEASURES

STAY SAFE - TAKE NOTE OF OUR COVID-19 MEASURES

Because of the declining number of COVID-19 cases in the Netherlands, there are no official measures in place surrounding COVID-19 in the Netherlands. Of course we follow the developments around COVID-19 closely to make sure the congress is a safe place to meet. If you visit CLIMA 2022 in person, please take note of the basic measures (below) and conform to them;

Basic measures



Stay at home/in your hotel if you have symptoms



Cough or sneeze in your elbow



Wash your hands often and well

Precautions at event venue

To ensure a safe environment during CLIMA 2022, the congress venue maintains various precautions such as:



Thorough cleaning of the location



We will provide for hand sanitizers



All spaces are well ventilated and monitored



*COVID-19 self tests kits will be available.**

Test locations

There are several COVID-19 testing locations surrounding the congress location and in the city centre of Rotterdam.

Coronatestlab Rotterdam Oude Noorden:
Bergweg 180
3036 BL Rotterdam

Coronatestlab near Ahoy:
Gooilandsingel 109
3083 DP Rotterdam

**Should you develop any symptoms during the congress, you can pick up a test at our central desk.*

CLIMA 2022 COMMITTEES AND SPONSORS

The organization of CLIMA 2022 would not have been possible without the tremendous effort of many volunteers who participated in different committees and beyond. For a complete overview of all who have worked so hard to make the 14th REHVA HVAC World Congress CLIMA 2022 a success, please scan the QR code below.

And of course also a very big thank you to all our sponsors and partners as mentioned on page 1.

International partners

CLIMA 2022

EYE ON 2030

Towards digitalized, healthy, circular and energy efficient HVAC

CLIMA 2022 is organised by

REHVA TVVL TU Delft TU/e Eindhoven University of Technology