

2021

REHVA ANNUAL REPORT 2021

From REHVA Board of Directors

Editor-in-Chief: Anita Derjanecz
Editorial Assistant: Nathalie Wouters

Authors:

Anita Derjanecz
Alexandre Dziergwa
Andrei Vladimir Litiu
Marie Joannes
Nicoll Marucciova
Spyridon Pantelis
Jasper Vermaut
Nathalie Wouters

Copyright © 2022 by REHVA

CONTENTS

WELCOME NOTE TO THE 2021 ANNUAL REPORT	5
REHVA BOARD OF DIRECTORS	6
REHVA MEMBERS, SUPPORTERS AND ASSOCIATE ORGANISATIONS	7
REHVA COVID-19 RESPONSE AND GUIDANCE	9
REHVA COVID-19 guidance page and online communication	9
REHVA COVID-19 course	9
European and global outreach	9
PUBLICATIONS, ONLINE TOOLS AND DIGITAL MEDIA COMMUNICATION	10
Guidebooks	10
Translations	11
Sales of guidebooks	11
REHVA European HVAC Journal	12
Published journals	12
Publishing information	13
Readers of the REHVA Journal in 2021	13
REHVA Journal Editorial Board 2021	14
REHVA Journal, Editor-in-Chief	14
REHVA Journal, Staff	14
REHVA Newsletter	15
Supporters' bulletin	15
EU policy Newsletter	15
REHVA Dictionary	15
REHVA App	15
REHVA Website and Online Services	16
Knowledge Hub	17
Online learning management system	17
Social media	18
EUROPEAN PUBLIC AFFAIRS AND GLOBAL COOPERATION	19
EU Policy events organised by REHVA	19
Co-operation with EU-level professional organisations	22
Co-operation with global MoU partners	23
TECHNOLOGY AND RESEARCH ACTIVITIES	26
Development and dissemination of technical information: task forces, guidebooks and reports	26
EU policy monitoring, position papers and policy implementation	27
Fit for 55 package	28
EPBD Implementation	29

Circular Economy & Level(s)	29
European projects and tenders	30
EDUCATION	34
REHVA Student Competition	34
HVAC World Student Competition	34
REHVA Community of Young Professionals	35
REHVA EVENTS	36
REHVA Brussels Summit 2021	36
Seminars and conferences at trade shows and industry fairs	36
REHVA representation at Members' events	36
Exhibitions	37
COOPERATION WITH SUPPORTER COMPANIES	38
Healthy Homes Design Competition	38
REHVA Journal special issue on IAQ and Humidity	38
Supporter events and podcasts	39
Expert talks with REHVA supporters	41
FELLOWS AND AWARDS	42
REHVA ADMINISTRATION	45
General Assembly	45
Board Meetings	45
Standing Committee Members	45
Awards Committee	45
Education and Training Committee	45
Publishing and Marketing Committee	46
Supporters Committee	46
Technology & Research Committee	46
In Memoriam	47
REHVA Office	47
ANNEX 1: REHVA MEMBERS	48
ANNEX 2: REHVA SUPPORTERS	50
ANNEX 3: REHVA ASSOCIATE ORGANISATIONS	51

WELCOME NOTE TO THE 2021 ANNUAL REPORT

2021 was the second distanced year with digital-only interaction between the REHVA Board, office staff and member associations. While the pandemic kept affecting our lives and work, the REHVA expert community continued to invest time and resources in the COVID-19 guidance related activities which helped to further increase the visibility and acknowledgement of REHVA at a global scale. One of the few advantages of this pandemic is the further rise of awareness about the importance of indoor air quality and ventilation, reaching more and more the agenda of political decision makers at national, EU and global level.

In 2021, REHVA HQ started to feel the negative economic impact of the pandemic, especially regarding cooperation with international events and industry fairs. For the second-year, major events were cancelled or shifted online, and congress organisers were careful with investing in promotional services or on-site REHVA seminars which impacted our related income. Following the trends, REHVA focused on developing online and digital knowledge services, which is a challenging new terrain that needs more resources. In the 3rd quarter of 2021, REHVA launched the new subscription-based Knowledge Hub service and we will focus on its marketing in the coming months hoping to increase income from this area.

2021 was an important year for EU policies on buildings and energy performance. Within the “Fit for 55” packages, the EC launched the revision of key EU directives relevant for our sector. REHVA has been actively following and engaging in the process. REHVA office dedicated lot of resources in the EU policy tracking section of the renewed Knowledge Hub and launched a new EU policy newsletter to better inform our members about the many policy and regulatory changes at EU level.

Going fully online is difficult for associations. Informal in-person exchange among members is a key element of the good functioning of the community. Although the bilateral meetings between member associations and the Board continued online throughout 2021, the 2nd year without physical meetings had its toll on REHVA. The more we hope to meet many community members at the 2022 AM & CLIMA congress in Rotterdam.

I wish you good reading!

Anita Derjanecz
REHVA Managing Director

REHVA BOARD OF DIRECTORS

The REHVA Annual report year 2021 was approved by the REHVA board of directors on the 1st of March 2022. The year 2021 was the 58th year since the founding of REHVA.

After the online General Assembly 2021, the REHVA Board of Directors were the following:



FRANK HOVORKA
President
AICVF, France
2013 - 2022



CATALIN LUNGU
Treasurer,
Vice-President
AIIR, Romania
2017 - 2023



KEMAL GANI BAYRAKTAR
Vice-President
TTMD, Turkey
2019 - 2022



ATZE BOERSTRA
Vice-President
TVVL, the Netherlands
2016 - 2022



MANUEL GAMEIRO DA SILVA
Vice-President
Ordem dos Engenheiros,
Portugal
2013 - 2022



IVO MARTINAC
Vice-President
SWEDVAC, Sweden
2019 - 2022



JUAN TRAVESI
Vice-President
ATECYR, Spain
2019 - 2022

REHVA MEMBERS, SUPPORTERS AND ASSOCIATE ORGANISATIONS

In 2021, REHVA continued its efforts to establish a better understanding of its members' needs. This dialogue is supported by a series of bilateral meetings between the REHVA task force composed by Kemal Gani Bayraktar, Catalin Lungu, Ivo Martinac and Nathalie Wouters and REHVA Members through video calls.

REHVA has the objective to explore the key needs, objectives, challenges, opportunities for collaboration and mutual support and other related issues with its members. It is also the occasion to exchange on a more casual level in a period where the opportunities for physical meetings are restrained by the pandemic situation.

The exchanges started with Poland's PZITS and Serbia's KGH Smeits meetings before 2021. During 2021, REHVA Board Members had 21 meetings with member associations (AHGWTEL/LATVAC, AiCARR, AICVF, AIIR/AGFR/AFCR, AIIRM, ATECYR, ATIC, CIBSE, DANVAK, EKVU, ÉTÉ/MMK, FINVAC, NORVAC, Ordem dos Engenheiros, SITHOK, SSTP, STP, SWEDVAC, SWKI, TTMD and TVVL). Ivo Martinac presented the key outcomes during the quarterly Member Associations Plenary meetings.

The meetings contributed to the definition of new and improved synergies between REHVA and its members to improve the inclusion of the Member Associations in REHVA activities and more broadly, a screening of the field and its challenges.

Some takeaways of the discussions regarding common interests and expectations of MAs:

- Improving the exchanges of information, knowledge, and expertise among the REHVA member network
- Enhanced collaboration in training and capacity building activities (webinars, online training, educational courses)
- More intelligence and information series about EU Regulations and policy development
- Interest in increased collaboration in EU and other joint projects
- Increased use of existing REHVA services by MAs, and closer cooperation between MA-professionals and REHVA HQ
- REHVA to serve as a hub to promote and market publications, tools, products and services developed by individual national organisations making available to broader professionals/markets
- Continue the work done with the REHVA Community of Young Professionals and generally the aim to reach younger professional audiences



LIST OF REHVA MEMBERS IN 2021

- ABOK, Russia
- AHGWTEL/LATVAC, Latvia
- AiCARR, Italy
- AICVF, France
- AIIR, AFCR, AGFR, Romania
- AIIRM, Moldavia
- ATECYR, Spain
- ATIC, Belgium
- CIBSE, United Kingdom
- DANVAK, Denmark
- Die Planer, Switzerland
- EKVÜ, Estonia
- ÉTÉ and MMK, Hungary
- FINVAC, Finland
- KGH-SMEITS, Serbia
- LITES, Lithuania
- NORVAC, Norway
- ORDEM Dos ENGENHEIROS, Portugal
- PZITS, Poland
- SITHOK, Slovenia
- SSTP, Slovakia
- STP, Czech Republic
- SWEDVAC, Sweden
- TTMD, Turkey
- TVVL, the Netherlands
- VDI, Germany

The membership fee was 2 850 € in 2021.

A detailed list of the members and their logos is in [ANNEX 1](#).

LIST OF REHVA SUPPORTERS IN 2021

- Aermec, Italy
- Arcelik, Turkey (NEW)
- Belimo Automation, Switzerland
- Camfil, Sweden
- Daikin Europe, Belgium
- Dosetimpex, Romania
- EPEE, Belgium
- Eurovent Certita Certification, France
- Evapco Europe, Italy
- Fläktgroup, Sweden
- Friterm, Turkey
- Granlund, Finland
- Halton, Finland
- Haskoning DHV, The Netherlands
- LG Electronics, France
- Lindab, Sweden
- Purmo Group, Finland
- RHOSS, Italy
- Smay, Poland
- Swegon, Sweden
- Systemair, Sweden
- Uponor Corporation, Finland
- Velux, Denmark
- Viega, Germany

The fee paid by the supporters was 3 000 € in 2021.

A detailed list of the supporters with their activities and logos is in [ANNEX 2](#).

LIST OF REHVA ASSOCIATE ORGANISATIONS IN 2021

- Enerbrain, Italy
- Enviromech, United Kingdom (NEW)
- ISIB, Turkey (NEW)
- OAER, Romania (NEW)

The Associate Organisations, as defined in the [articles](#), are organisations, associations or institutions in any country to which heating and air conditioning engineers and technicians in the country of establishment are affiliated or in any country to which engineers or technicians in the country of establishment are affiliated who are only indirectly concerned with heating and air conditioning. The annual fee differs, according to organisation type and company size from 500 € to 1500 €. A list of the Associate Organisations is in [ANNEX 3](#).

REHVA COVID-19 RESPONSE AND GUIDANCE

The COVID-19 response Task Force initiated in 2020 and led by TRC chair Jarek Kurnitski, continued its work in 2021, updated the main guidance document, published new annexes, and updated the infection risk calculators considering the Delta and Omicron virus variants detailed in chapter "Technology and Research activities".

REHVA COVID-19 guidance page and online communication

The REHVA COVID-19 guidance directory on the website stabilised itself in second place of the most visited part of the website and the related online and social media. After the wave of new visitors in 2020 and with the pandemic situation stabilising around the world, the visits on the REHVA website decreased in 2021 but still, REHVA managed to keep part of those new visitors of the website. This resulted in an exponential increase of followers and engagement on social media as detailed in the next chapter.

3.910 professionals downloaded the two COVID-19 calculators (960 downloads of the multi-room calculator and 2.950 of the Ventilation Calculator), which were updated twice during 2021. The COVID-19 related content on the website saw around 210.000 visits in 2020 and around 65.000 visits in 2021.

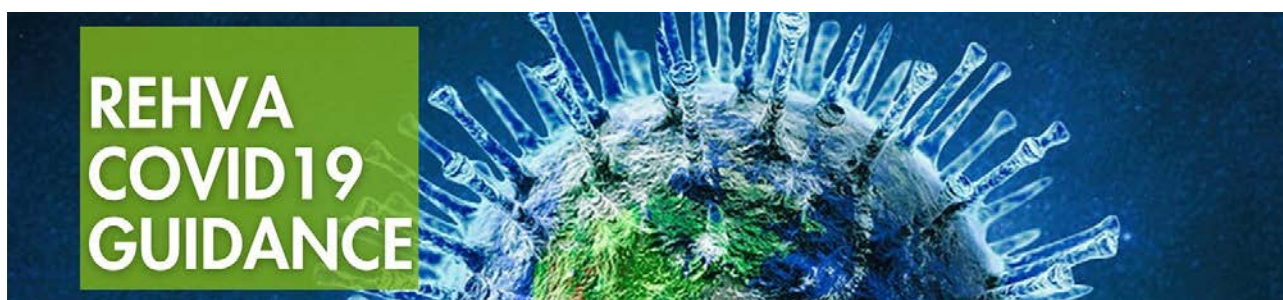
REHVA COVID-19 course

The course "[Safe operation of buildings and HVAC systems during the COVID-19 pandemic](#)" developed in 2020 attracted 45 new subscribers in the first quarter of 2021. The 8 hours on demand course targets practitioners involved in the management of indoor environment quality, building operation and system maintenance and consists of four modules of recorded presentations by REHVA experts. Participants get access also to the latest REHVA guidebooks on air filtration and the hygiene requirements of ventilation systems. After successful completion of the exams, 61 trainees obtained a certification in 2021.

European and global outreach

REHVA and experts of the COVID-19 Task Force continued the knowledge exchange with international scientific community and MoU partners. REHVA participates in the COVID expert group of the IEQ Global Alliance, which established contact with WHO to join their expert group dealing with ventilation in the context of the pandemic and airborne diseases.

The REHVA Board acknowledged the invaluable work of the REHVA COVID-19 Task Force members with a special recognition in 2021 (See page 44).



PUBLICATIONS, ONLINE TOOLS AND DIGITAL MEDIA COMMUNICATION

Guidebooks

REHVA European Guidebooks are at the heart of our mission and aim to disseminate the latest knowledge and technical information to members and professionals in the field of HVAC and building services technologies.

In 2021, REHVA published two guidebooks; guidebook No. 31 and the revision of GB No. 13, produced in collaboration with ISHRAE, the Indian Society of Heating, Refrigerating and Air Conditioning Engineers.

NZEB Design Strategies for Residential Buildings in Mediterranean Regions - Part 2 (Guidebook No.31)

The aim of this guideline is to support, in a practical way, a design process for realizing Nearly-Zero Energy Buildings (NZEB) in the context of Mediterranean-climate, focusing more on the mechanical systems than on the building envelope, which has previously been treated in Part 1. The Guidebook covers the design of Heating, Ventilation and Air Conditioning (HVAC) systems, energy recovery and free cooling aspects, renewable energy adaptation, and innovative system design approaches. Fundamental design and selection methodology has also been included.

Indoor Environment and Energy Efficiency in Educational Buildings (Guidebook No.13 – A revised 2nd edition)

Educational buildings represent a significant part of the building stock and also a noteworthy part of the total energy use. Indoor and Energy Efficiency in Educational Buildings Guidebook describes the optimal design and operation of schools with respect to low energy cost and performance of the students. This guidebook focuses particularly on energy efficient systems for a healthy indoor environment.



Translations

During 2021, the guidebook “Hygiene in Potable Water Installations in Buildings” (Guidebook No. 30) has been translated in Danish by VIEGA, a REHVA Supporter.

Sales of guidebooks

REHVA guidebooks have been an important REHVA income source. Most of the guidebooks have a price of 50€ (both pdf and hard copy). The Publishing and Marketing Committee may define lower prices depending on the year of publication and the market interest. Members and supporters are entitled to a discounted price. All guidebooks are available online in our [e-Shop](#).

Guidebook sales have been decreasing in the past years, as shown in **Figure 1**. In 2021, however, REHVA staff reached a special agreement with SagiCofim to purchase 300 own copies of GB No. 11 to distribute as company gift to customers and employees. This one order turned around the negative trend in 2021: 498 guidebooks in total, 60% of which is thanks to this single deal.

As result of the same deal, the trend of decreasing share of hard copy sales experienced in the past years, was counterbalanced in 2021 as **Figure 2**. shows. Among individual customers, however, the interest in PDF copies keep increasing and also the trend of decreasing purchases by individual customers continued in 2021.

In the coming years, REHVA should try to find similar opportunities and sell to interested organisations a high number of Guidebooks, allowing to reprint their special edition with the organisation’s logo in the inside cover for company branding. The purpose of these guidebooks can be a client gift or part of the company employee’s professional development.

GB sales by nr of copies (2018-2021)

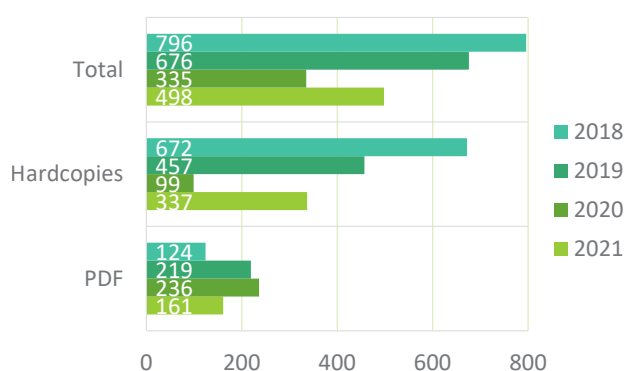


Figure 1. Evolution of guidebook sales in the past 4 years.

Evolution of pdf & hard copy sales (2018-2021)

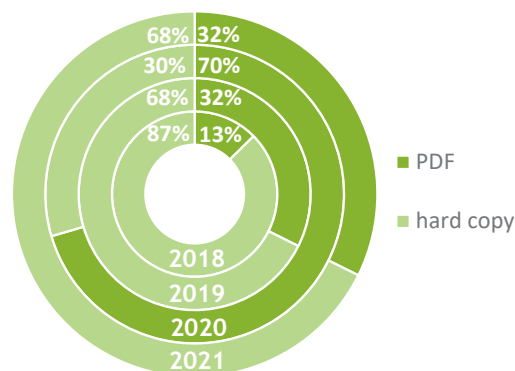


Figure 2. Total guidebook copies sold Hard copy vs PDF by year (2018-2021).

Share of direct REHVA sales & Knovel sales in total income (2019-2021)

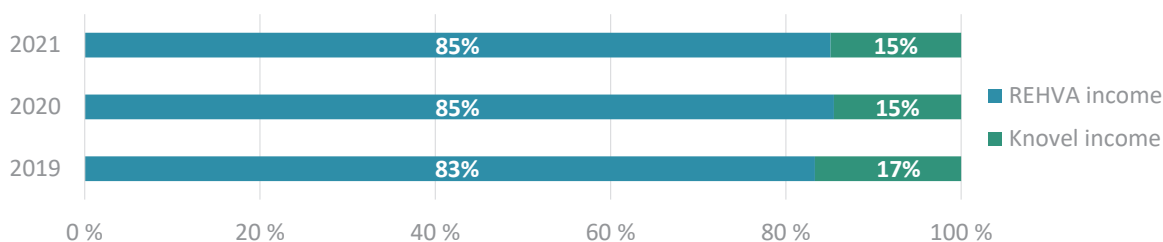


Figure 3. Total guidebooks income divided by sales done through the REHVA channels and the Knovel Elsevier platform.

To reply to the changing customer expectations, REHVA staff seeks also new ways of marketing and selling guidebooks in the digital age. Since 2018, REHVA has a contract with Knovel and Elsevier digital knowledge platform that offers a subscription based on demand access to the guidebook content. REHVA earns royalty based on the reader traffic. The share of Knovel income in the total sales income has been continuously increasing since 2018, this trend continued in 2021 if we correct the data with the SagiCofim sale. Considering only the sales to individual professionals and comparing the purchase of books in the REHVA e-SHOP with those of the Knovel platform, the share of income via Knovel increased near to 23%.

Since 2019, REHVA also offers the e-book version of all guidebooks in the [REHVA Knowledge Hub](#) (previous “experts area”) for an annual subscription fee, providing also other content (EU policy tracking, recorded courses and webinars, etc.).

The TRC and PMC are working on further solutions to make guidebooks more attractive to practitioners and develop new digital knowledge products beside guidebooks.

REHVA European HVAC Journal

Published journals

The REHVA European HVAC Journal is a technical, practical journal for HVAC industry professionals published bi-monthly. It is read by designers, consultants, manufacturers, investors, mechanical contractors, sales and representative companies, architects energy sector’s professionals, governmental institutions authorities, etc.

In 2021, REHVA published five regular issues and one special issue in collaboration with Swegon. This issue, published in December 2021, focused on “Indoor air humidity” was co-financed by Swegon. The average volume was about 90 pages per issue.

REHVA Journal issues are available for free in digital format on the REHVA website. Individual technical papers are available online as HTML or downloadable in PDF format, the entire journal issue is also downloadable as PDF document. The REHVA website is optimised for search engines, so the individual articles are easier to find online. Jarkko Narvanne, the Graphical Designer, provides the HTML and PDF versions. REHVA office uploads the technical papers of each issue on the REHVA website and promotes each new issue by sharing each technical paper on all REHVA social media (LinkedIn, Facebook, Twitter). REHVA Member Associations continued to receive 2 free copies of each issue of the REHVA Journal, while the REHVA Supporters received 1 free copy. Beyond members, the printed journal is only available to paying subscribers for [an annual fee of 60€](#). Following the update of the “expert area” into the new Knowledge Hub service, the subscription to the REHVA Journal is no longer linked to the service and can only be purchased on its own.



Publishing information

The situation with events saw some positive evolution and live/hybrid events started to be tentatively held and planned again, however the REHVA Journal was not distributed at events in 2021. The situation in 2022 is looking favourable to start distributing the REHVA Journal again, especially at the REHVA CLIMA World Congress 2022 event in Rotterdam.

The December issue deserves a special mention as this collaborative issue with Swegon, one of REHVA's Supporters saw a close collaboration in the Editorial process of creation. Thanks to the combined network of experts and knowledge of REHVA and Swegon, this issue allowed to bring up a specific and sometimes overlooked aspect of indoor air quality in the spotlight, thus creating discussion and idea sharing in the sector.

Issue	Theme
1/February	<ul style="list-style-type: none"> – EU focus on Taxonomy – How ALDREN integrated SRI – Microclimate impact on EPB in Mediterranean
2/April Guest-Editors: Martin Thalfeldt and Olli Seppanen	<ul style="list-style-type: none"> – How to assure good indoor air quality? – Air flow rates, air cleaners, humidity – NZEB requirements in Denmark, Estonia and Finland
3/June	<ul style="list-style-type: none"> – Level(s) – European Framework for Sustainable Buildings
4/August	<ul style="list-style-type: none"> – Heat Pump Special – EU Green Deal – Fit for 55 by 2030 – A Paradigm Shift on Ventilation
5/October	<ul style="list-style-type: none"> – Revision of the Heat Pumps system standard EN15316-4-2 – Portable Gas-Phase Air Cleaners – TripleA-Reno labelling scheme – Revision of key EU directives
6/December	<ul style="list-style-type: none"> – Indoor air humidity – Special

Readers of the REHVA Journal in 2021

In 2021, more than 2400 copies of the REHVA Journal were printed and distributed. On the REHVA website, the journal pages have reached more than 53 000 unique page views in total, a 23% increase in traffic compared to 2020 numbers. Considering the cumulative number of visits in all individual article and REHVA Journal pages, the journal became the most viewed content on the REHVA website in 2021, exceeding the cumulative views of the COVID-19 guidance pages. This popularity is a result of the continuous posting and promotion of individual REHVA articles on all REHVA social media platforms.

REHVA Journal page view by region in 2021

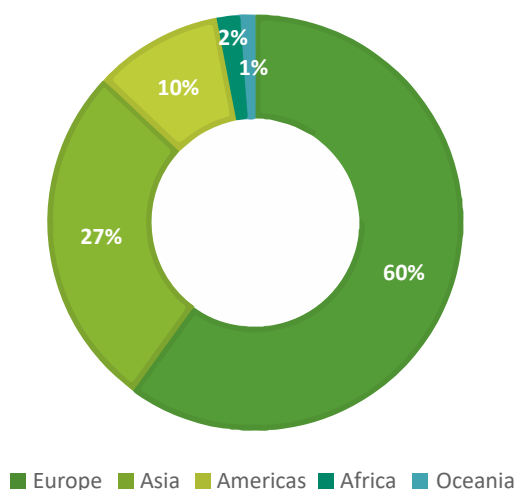


Figure 4. Geographical distribution of online REHVA Journal readers.

REHVA Journal page view by age groups in 2021

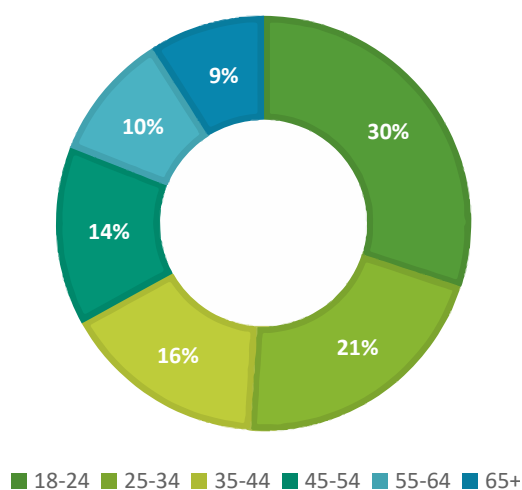


Figure 5. Age demographics of online REHVA Journal readers.

The REHVA Journal had 11 hardcopy individual subscribers through the REHVA eShop in 2021. Most of the distribution list of the REHVA Journal is composed of REHVA Members, Supporters and partners.

The top 10 articles by views in 2021 are the following:

1. **01/2018** (1.811 views) [India's First District Cooling System at GIFT City](#)
2. **05/2020** (1.415views) [Ventilation rate and room size effects on infection risk of COVID-19](#)
3. **02/2021** (976 views) [What we know and should know about ventilation](#)
4. **02/2012** [How to improve energy efficiency of fans for air handling units](#)
5. **03/2017** (824 views) [Green Air Conditioning- Using indoor living wall systems as a climate control method](#)
6. **04/2021** (815 views) [European heat pump market](#)
7. **01/2021** (803 views) [Filter Class Conversion between EN 779 and EN ISO 16890-1](#)
8. **01/2021** (726 views) [CO₂ monitoring and indoor air quality](#)
9. **02/2021** (656 views) [Infection probability of COVID-19 in a large lecture room with mechanical ventilation](#)
10. **01/2021** (637 views) [Can HVAC Systems Spread the Coronavirus / COVID-19?](#)

The demographics of the online readership was evaluated with the Google Analytics tool. They allow us to better understand and connect with our readers. Some key facts emerged from our analysis: the age group of the viewers is young, 51% of them are between 18 and 34 years old, 67% are under 44 years old. Regarding geographical coverage; 60% of online readers are in Europe, the rest are spread worldwide with notably 27% in Asia and 10% in Americas. The top 5 of European countries in the readership are the United Kingdom (9%), Italy (5%), Belgium (5%), Germany (4%) and the Netherlands (4%).

REHVA Journal Editorial Board 2021

- Francis Allard, France
- Ahmet Arisoy, Turkey
- Marianna Brodach, Russia
- Guangyu Cao, Norway
- Tiberiu Catalina, Romania
- Stefano P. Corgnati, Italy
- Francesca R. d'Ambrosio, Italy
- Ioan Silviu Dobosi, Romania
- Jaap Hogeling, the Netherlands
- Karel Kabele, Czech Republic
- Jarek Kurnitski, Estonia
- Livio Mazzarella, Italy
- Renato Merati, Italy
- Birgit Müller, Germany
- Ilinca Nastase, Romania
- Dusan Petras, Slovakia
- Olli Seppänen, Finland
- Branislav Todorovic, Serbia
- Peter Wouters, Belgium



REHVA Journal, Editor-in-Chief

- Jaap Hogeling

REHVA Journal, Staff

- Nicoll Marucciová, Advertisements
- Alexandre Dziergwa, Editorial Assistant
- Jarkko Narvanne, Graphic Designer

REHVA Newsletter

Six bi-monthly electronic newsletters were published in 2021. This newsletter is distributed electronically to a list of 4288 subscribers. They are also [downloadable](#) from the REHVA website. This newsletter offers exclusive insights about major HVAC industry topics, policy coverage, EU projects news and worldwide HVAC events updates.

Supporters' bulletin

Six issues of the Supporters' Bulletin were published in 2021. The Supporters' Bulletin is a bi-monthly electronic newsletter exclusively for REHVA Supporter companies to provide useful knowledge and tailored information about EU policy trends, REHVA community updates and events.

EU policy Newsletter

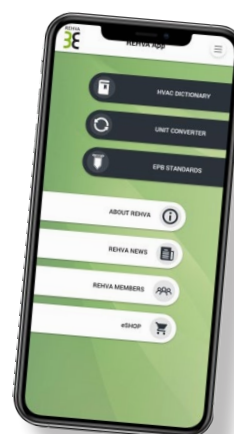
In 2021, REHVA launched a new [EU Policy Newsletter](#) to cover the extensive amount of policy developments under the EU Green Deal and the Fit for 55 package. The EU policy newsletter contains news about ongoing policy issues, background studies, updates about REHVA advocacy activities, and a selected review of blogposts and policy information available in more detail on the REHVA website.

REHVA Dictionary

The [REHVA Dictionary](#) is available in the REHVA website as a free service containing technical words and terms used in the building services. The REHVA Dictionary is an online translation service, which provides technical words and terms frequently used in building services. The REHVA Dictionary offers a unique tool for HVAC professionals that allows to search and translate a word or term simultaneously in 20 languages. The dictionary search lists all related expressions and word combinations of the searched term.

REHVA App

Since 2017, REHVA has been transferring the popular online dictionary also into a user-friendly App for tablets and smart phones, downloadable on [App Store](#) and [Google Play](#). In 2021, there have been no major developments in the REHVA mobile app.



REHVA Website and Online Services

After the make-over of the REHVA website and implementation of SEO in 2019 and the boom which doubled our visitors in 2020 due to the COVID-19 related content, we see a slight decrease of visitors in 2021 from the previous year, yet still with a positive trend (see **Figure 6**).

Over 85% of the page views came from new website visitors, as seen in **Figure 7**. This is a good sign showing that the market is not yet saturated, and we are still able to reach new audience.

Figure 8 shows that in 2021, the number of views on all COVID-19 related content started to decrease compared to the 2020 wave. This was an expected outcome with decreasing new content on COVID. With a share of 15% of page views, it ended up in second place behind the REHVA Journal content with 18,4% of all page views.

In the last quarter of 2021, REHVA has added a Google based translation feature to all the REHVA members' languages to help accessibility of readers in national languages. This translates all HTML content of the website, including REHVA journal articles or all EU policy briefing in the Knowledge Hub. We hope this will further increase our visibility and the page visits from our members' networks.

Evolution of REHVA website total page views

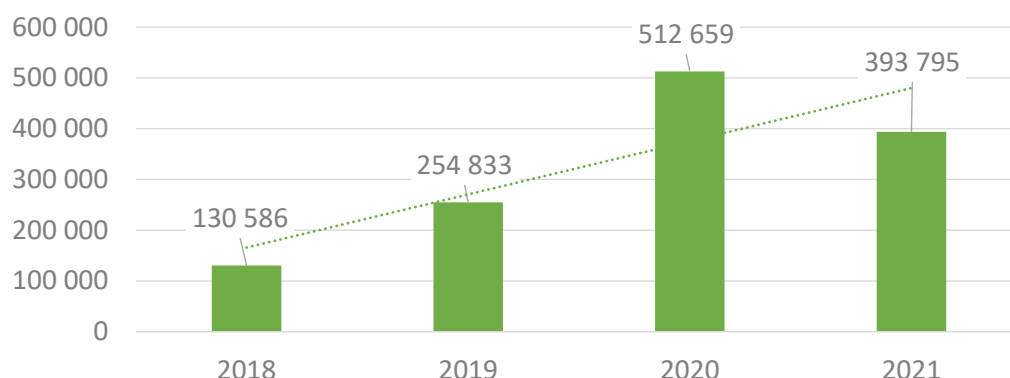


Figure 6. Increase of REHVA website page views in the past 4 years.

■ New visitor ■ Returning visitor

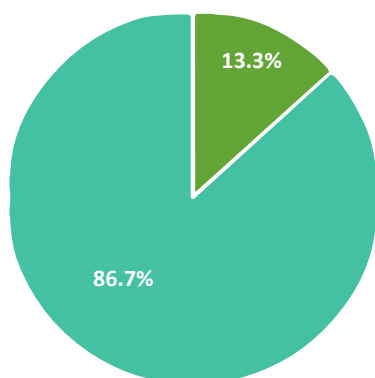


Figure 7. Shares of returning and new visitors on all website pages in 2021.

Popularity of website content in share of total pageviews 2021

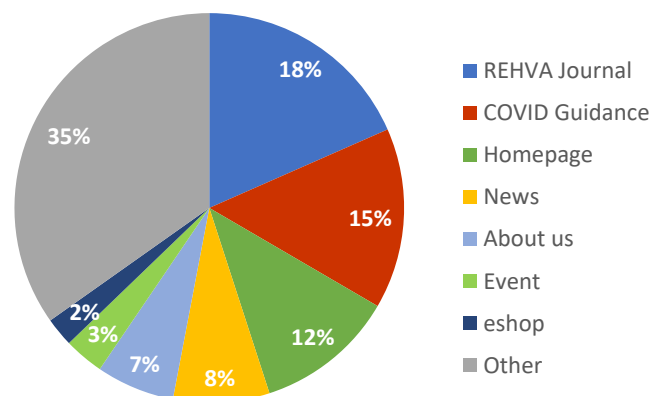


Figure 8. COVID-19 page views compared to the most popular website pages in 2021.

Knowledge Hub



In 2021, the REHVA team has extensively worked on updating the old “experts area” into the new “REHVA Knowledge Hub”.

With the 2019 website revamp, REHVA created a new digital knowledge service a subscription based expert area starting with the following main content items: REHVA guidebooks repository in an online e-format, policy issue tracking with updates and insider information on the EU policy issues covered by REHVA and recorded courses and workshops.

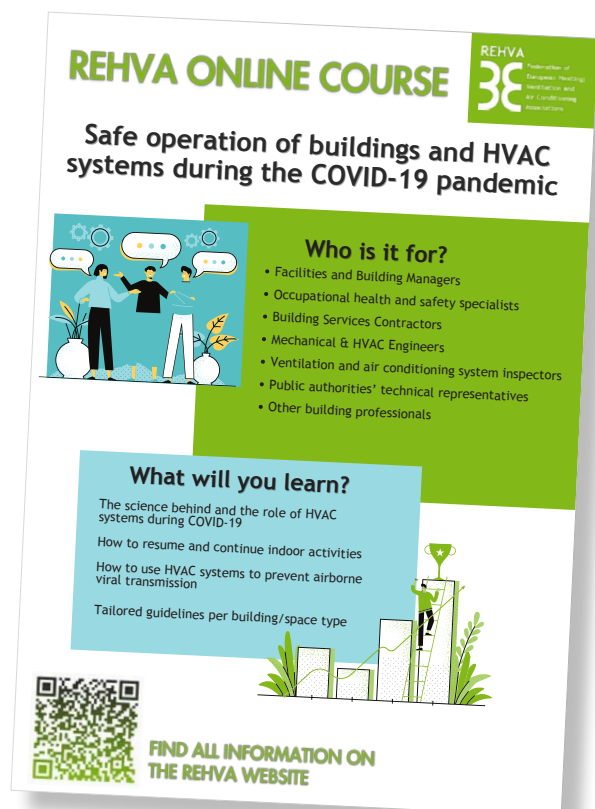
The Knowledge Hub has been launched in October 2021, and since then has been regularly updated. This digital platform offers subscribers independent, high quality, trustable information about building services and indoor climate. The subscribers get several benefits from the platform; access to all the REHVA e-Guidebooks, recorded courses and workshops in the REHVA Academy, regular EU policy tracking updates, a glossary of HVAC terms and definitions. The Knowledge Hub also has a featured topics part, which will be updated based on relevant topics of the moment. During 2021, the featured topics were: EPB Standards, Circular Economy and COVID-19.

Online learning management system



In 2020, REHVA invested in the development of a Moodle based online learning management system which was first used with the COVID-19 course. The course has been live during 2021.

We will use the LMS infrastructure to develop other courses in the coming years based on guidebooks or other topics, relying on TRC experts and in cooperation with supporter companies.



Enrolment to the REHVA COVID-19 course in 2020 and 2021

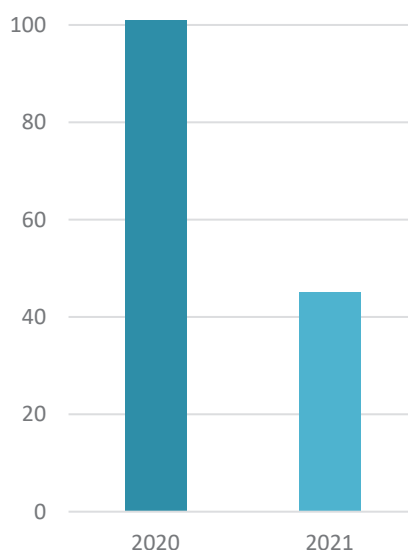


Figure 9. COVID-19 courses purchased in 2020 and 2021.

Social media



REHVA is active on the 3 main social media channels on a daily basis: Twitter, Facebook, and LinkedIn.



The REHVA Social Media accounts LinkedIn ([REHVA Page](#), [REHVA Energy Group](#), [REHVA Community of Young Professionals](#)), [Facebook](#) and [Twitter](#) have significantly increased the reach of the REHVA audience and knowledge dissemination.



In 2021, REHVA counts a total of 7 842 followers and members in all social media channels that is continuously increasing (see **Figure 10**). REHVA also links the social media groups of its EU projects to the REHVA channels to generate synergies.



[YouTube](#) is used to share videos about REHVA activities and events, and it is available as a promotional channel also for our supporter companies.

In 2021, REHVA staff continued its effort to boost its presence on social media, based on a daily communication plan of new content to disseminate REHVA knowledge, information of our activities and community news, and to promote our knowledge services to our stakeholders. REHVA staff invested in tools and skills to produce graphic design, infographics, videos, and other digital content in house, which resulted in significant impact on all digital communication channels.

LinkedIn proved to be an effective focus point of the strategy to engage with stakeholders along with our website and newsletter.

The content calendar of the social media channels of REHVA includes the latest news, activities, and industry highlights, as well as promotion of publications, REHVA events and other events relevant to the industry, events, and news from REHVA Member Associations or REHVA Supporters.

Highlighted posts on social media are often related to REHVA activities and 2021 was no exception to this trend. The live coverage on Twitter as well as the building up to the REHVA Brussels Summit 2021 had an important impact. COVID-19 activities were always followed by REHVA's social media followers, although the number of followers was lower than in the previous year, which is also reflected in the website visits. Still, the update of COVID-19 guidance, COVID calculator were widely engaged with and shared, more so on LinkedIn.

Increase of followers on REHVA social media channels

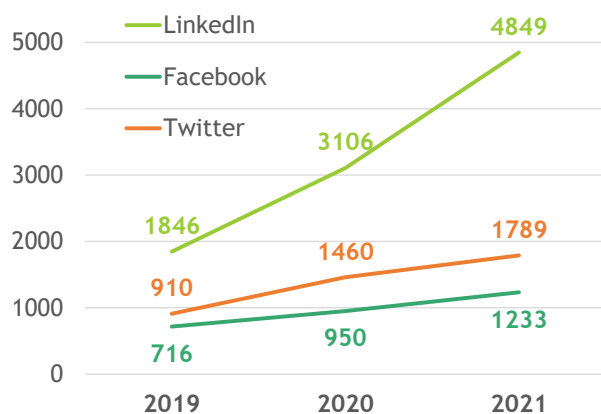


Figure 10. Increase of REHVA followers on social media from 2019 to 2021.

Top 15 industries represented by REHVA LinkedIn followers (% of total)

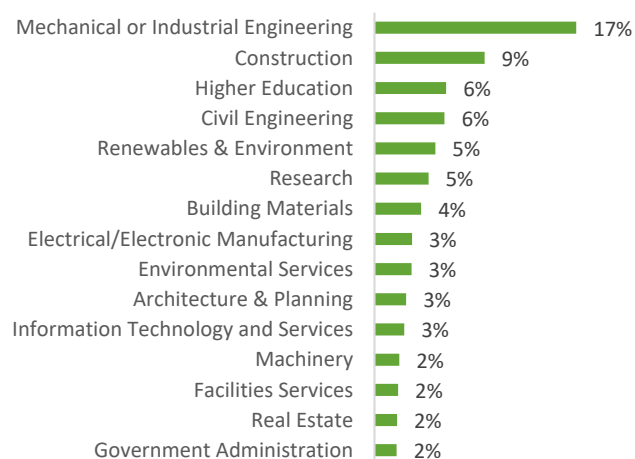


Figure 11. REHVA LinkedIn followers by industry.

EUROPEAN PUBLIC AFFAIRS AND GLOBAL COOPERATION

REHVA keeps liaison with the European Union Institutions: European Commission Services, such as DG Energy, DG GROW, DG Environment, DG Research and Innovation, the Joint Research Centre, and the Commissions' Executive Agencies CINEA and INEA, as well as with the European Parliament's ITRE and ENVI Committees, and the Council of the EU. REHVA is acknowledged by DG Energy and DG RDI as a European stakeholder organisation and regularly receives invitations to policy consultations and stakeholder meetings, as well as information about on-going policy making work. REHVA is registered in the EU Transparency Register and has access to the relevant Committee Meetings (ITRE, ENVI) of the European Parliament.

In 2021, REHVA focused especially on the "Fit for 55 package", the Renovation Wave and the related revision of the EPBC, EED and REDII directives, and followed also the policy development on circular economy and the EU taxonomy on sustainable finance. The details and technical support of our EU advocacy activities is detailed in the chapter "Technology and Research activities" on page 26.

EU Policy events organised by REHVA

EUSEW 2021 online policy session "Next Generation Energy Performance Certificates: making buildings fit for the energy transition"

The 2021 edition of EUSEW was again organised as an online event. REHVA (event leader), BPIE, FEDARENE and Sympraxis Team, hosted by the BuildUp Portal, brought together key actors from the Next Generation Energy Performance Certificates for buildings Horizon 2020 cluster of projects for a lively and informative moderated panel discussion between the project's representatives with 2 prior short 'setting the scene' keynotes from DG ENER and BPIE to benefit all EPBD stakeholders, with a slightly enhanced focus on EU Member States and specifically decision-makers and influencers of the EPBD revision process. REHVA President, Frank Hovorka, did the honours of starting and moderating the event. The recording and slide deck can be easily accessed here in [REHVA website's Knowledge Base](#).



REHVA at Sustainable Places 2021 with U-CERT

REHVA was present with U-CERT at the hybrid workshop *Building Energy Performance Certificates: The Enabler Smart Readiness Indicator* during the [Sustainable Places 2021 conference](#) discussing the implementation and further development of the Smart Readiness Indicator (SRI) at both EU and national levels. Experts from various sister projects joined forces to support to the European Commission services and the EU's Member States in the upcoming SRI national testing and the further development of the SRI method towards measuring in-use smart performance and a coherent framework for building performance related digital assessment tools like EPCs, Digital Building Logbooks, Renovation Roadmaps & Passports, or the Level(s) scheme.



Brussels Summit Policy conference “Fit for 55. The bumpy road to decarbonising the EU building stock”

REHVA organised the 2021 edition of its REHVA Brussels Summit again online. The policy conference “**Fit for 55. The bumpy road to decarbonising the EU building stock**” held on 4 November 2021 discussed latest EU policy developments and practical tools with focus on building decarbonisation.






The first session “EU policies to pave the way for decarbonization” covered building decarbonisation related aspects of the Fit for 55 package and updates about changing EU policies:

- Stefan Moser, Head of Unit of DG Energy gave an overview of the Fit for 55 packages with focus on the EPBD review
- Renewable heating and cooling and the revision of the Renewable Energy Directive by Lukas Kranzl, Senior researcher, TU Wien
- Jarek Kurnitski, REHVA TRC Chair and Oliver Rapf, General Director of BPIE presented policy option and discussed how the EPBD should tackle building decarbonisation

The second session “Assessing building performance to achieve Sustainable and healthy buildings” discussed how the existing frameworks and tools to assess building performance and sustainability can work together to deliver building decarbonisation in practice:

- Josefina Lindblom from DG Environment and Shane Donatello from the EU JRC presented a new EU Guidance on how to use LEVELS in building projects
- Anna Braune from DGNB discussed how the EU Taxonomy criteria can ensure sustainable investments
- Johann Zirngibl, ALDREN project coordinator explained how ALDREN tools could be used to improve building performance assess in practice in line with common EU schemes

The slide is a program overview for the REHVA Brussels Summit Policy Conference. It features a green and blue color scheme with a grid of speaker portraits and names. The top left corner has the REHVA logo and 'BRUSSELS SUMMIT 2-5 November 2021'. The top center reads 'POLICY CONFERENCE' and the top right shows 'THURSDAY 4TH NOVEMBER 2021'. The content is organized into two columns: Session 1 (left, blue background) and Session 2 (right, green background). Each session lists four speakers with their photos, names, and titles.

SESSION 1: EU policies to pave the way for decarbonization	SESSION 2: Assessing building performance to achieve Sustainable and healthy buildings
 Stefan Moser Head of Unit C4, DG Energy, European Commission	 Josefina Lindblom Policy Officer DG Environment
 Lukas Kranzl Senior researcher, TU Wien	 Shane Donatello Scientific Policy Officer EU Joint Research Centre
 Oliver Rapf Executive Director, BPIE	 Anna Braune DGNB Head of research Climate Positive Europe Alliance
 Jarek Kurnitski REHVA TRC Chair, Taltech	 Johann Zirngibl ALDREN project coordinator

Co-operation with EU-level professional organisations

REHVA cooperates with several Brussels-based EU-level professional and industry associations involved in the field of HVAC, building performance as well as health and indoor environmental quality. The level and scope of cooperation varies between the different organisations. With some, REHVA has MoUs, while with others the cooperation is less formal and includes the exchange of technical and policy related information, inviting each other as speaker at own events, coordinating select advocacy actions targeting the EU energy and climate policies and regulations. For example, in 2021, REHVA attended meetings of the informal “IEQ gathering” and co-signed a [joint letter on Healthy buildings for all](#) sent to the Commissioners and high level EU officials ahead of the EPBD review.

A non-exhaustive list of these organisations are: Eurovent Association, EVIA, EPEE, EHPA, eu.bac, EHI, EFA, EuroACE, SmartEN, Orgalime. Short summaries below highlight only the most important activities in 2021.

Eurovent Association: REHVA signed a Memorandum of Understanding (MoU) with Eurovent Association on 28 May 2015 that serves as basis of co-operation. Eurovent expert Igor Sikonczyk is member of the TRC and the REHVA COVID-19 Task Force. In 2021, Eurovent Association published a [Residential Heat Recovery Ventilation Units Guidebook](#) in which they used chapters of REHVA Guidebook No. 25.



EPB Center: REHVA and ISSO have created the EPB Center as a joint organisation with the aim to support the uptake of EPB standards (in 2019, REHVA became 50% shareholder). The aim of the EPB Center is to disseminate, promote, and provide guidance on the application of EPB standards. REHVA plays a key role in disseminating the support tools, guidance documents, and webinars to help professionals applying the standards and connected tools.



Frank Hovorka and Catalin Lungu are the REHVA representatives at EPB Center Shareholders and EPB Center Board of Directors levels. Since June 2021, Andrei Litiu (REHVA in-house consultant) has been appointed the Executive Director of the EPB Center, which supported the recruitment of the first full time staff member, Gabriela Ana, which started in August 2021.

In 2021, the EPB Center’s vision and mission to become a self-sustaining business model meant to support via business collaboration REHVA Member Associations has been refined and brought closer to operational reality. One such workstream worth highlighting is the CEN-CE scheme of which EPB Center is becoming the Central Scheme Operator and shall deploy it across the EU in partnership with REHVA Member Associations as National Training Operators. The very first commercial roll-out has started in Romania with [AIIR](#) kick-starting with the Train-the-Trainer programme. More details can be read (EN) in the CEN-CE scheme article published in the Romanian equivalent of the REHVA Journal issue 1/2021 i.e. “[Revista Ingineria Instalațiilor](#)”. Another workstreams REHVA manages is the [LinkedIn group EPB Standards Community \(#EPBstandards\)](#) dedicated to all information exchange on the standards and news about EPB Center’s activities that gained 240 new members in 2021, resulting in 769 experts.

The 3-years long service contract with DG ENER successfully ended in 2021 with appreciative and positive feedback received from the colleagues at the European Commission services. Although, all deliverables have been approved by DG ENER in 2021 some (i.e. further FAQs, model national annexes, case studies) still required further fine-tuning before publishing (foreseen latest during Spring 2022) on the EPB Center website and promoted on EPB Center's social media channels and newsletter.

[European Construction Technology Platform](#) (ECTP): REHVA is member of the European Construction Technology Platform since 2013. ECTP is involved in the planning of the related Horizon Europe call topics and programming documents. REHVA attended the General Assembly and committee meetings organised by ECTP in 2021 to get information about the upcoming research topics in the field and maintain contact with potential partners for EU project proposals. The platform also became a key partner in the Built4People PPP initiative (B4P) launched by the European Commission in 2020. In 2021, REHVA joined the International Partnership Board of B4P, represented by the Managing Director Anita Derjanecz, and contributed with comments to the programming document and the topic descriptions.



[European Federation of Engineers, FEANI](#). In 2019, REHVA started a cooperation with FEANI, a federation that joins engineering associations from 32 countries, representing 6 Million engineers. REHVA joined the [Engineers Europe Advisory Group](#) signing a Lol along with 26 other signatories and submitted a joint proposal to create an Erasmus+ Knowledge Alliance that was not approved. In 2021, REHVA continued to work on a new submission to foster new trends in engineering education and innovating engineering careers.



Co-operation with global MoU partners

REHVA cooperates with [sister associations](#) beyond Europe to facilitate knowledge exchange at a global scale, and to spread European engineering knowledge, HVAC technologies and standards in the world. REHVA has global partners in India, China, Korea, Japan, North and South America. The COVID-19 pandemic had still this year a negative impact on the cooperation with MoU partners, as key events where we meet them usually were cancelled.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

REHVA has renewed its MoU with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) after two years without a valid MoU, via an electronic document signed by both parties. This will aim to developing a work plan and to the next steps for reinvigorating the REHVA/ASHRAE relationship. A physical ceremony is planned to be held during CLIMA 2022.



Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE)

The renewal of the existing MoU should have been signed during ACREX 2021, but this year's edition was cancelled due to COVID-19. It is expected that this will happen in 2022 when REHVA and ISHRAE will meet physically at CLIMA 2022.



China Innovation Alliance for Heating, Ventilation and Air-conditioning (CAHVAC)



On 17 September 2021, REHVA delegates met online with the delegation of CAHVAC to renew the MoU between the two organisations. This renewal marks 10 years of collaboration and is a statement of the bond created through the years.



The renewal was officialised during an online meeting between the two delegations. REHVA President, Frank Hovorka together with Catalin Lungu, President-elect, Kemal Gani Bayraktar, Manuel Gameiro da Silva, Vice presidents and Guangyu Cao, TRC co-chair welcomed the [CAHVAC](#) representatives: Xu Wei, Chairman, Lu Bin, Yu Xiaoming, Chen Zuming, Yao Yang, Vice Chairmans, Wang Dongqing, Secretary General and Wu Jianlin, Head of international affairs.

The delegates went over the 10 years of strong relation and cooperation between REHVA and CAHVAC at events, workshops, seminars and meeting through the years leading to this day and the renewal of the MoU until 2023.

Climate Positive Europe Alliance (CPEA)



The Climate Positive Europe Alliance (CPEA) launch event was set on Thursday 18 March 2021 to announce the creation of this non-for-profit membership-based think tank. From 13 August 2021, CPEA is registered in Brussels. REHVA is one of the four founding members together with the German Sustainable Building Council [DGNB](#), the Austrian Sustainable Building Council [ÖGNI](#), Green Building Council España [GBCe](#).

All four founding members share a deep commitment to a holistic understanding of sustainability, encompassing environmental, economic and sociocultural factors. So their vision is just as much about the environment as it is about economic viability and people.

The mission of CPEA is to collaboratively accelerate market transformation towards more sustainable market practices by facilitating cross-sectoral dialogue and providing sectoral insights and tangible solutions for the most pressing challenges faced by the construction and real estate stakeholder community. This project is in line with the European Climate Pact launch in December 2020 by the European Commission.

Federation of Ibero-American Associations in Air-conditioning and Refrigeration (FAIAR)

A MoU was signed between FAIAR and REHVA on 26 September 2018 and should be renewed in 2022 during the [CIAR congress](#).



Indoor Environmental Quality – Global Alliance (IEQ-GA)

In 2019, the IEQ-GA registered in Brussels an association (AISBL) to enable further development of the organisation in a formalised way. IEQ-GA has six founding full members (AIHA, AiCARR, AIVC, ASHRAE, IAQA, ISHRAE and REHVA). The founding members of the association represent professionals from various disciplines linked to indoor environment.



The current membership includes [11 full members](#) and [3 affiliate members](#) across the world. They are committed to working together and promoting education, research and knowledge exchange at a global scale, developing standards, codes, guidelines, as well as advocating the well-being of the general public in indoor environments globally.

In 2021, IEQ-GA continued to work within the COVID-19 task Force to exchange information about the COVID-19 response by the global partners.

REHVA continued to work as the secretariat of the association and taking care of the daily management of IEQ-GA. Frank Hovorka is a member of the IEQ-GA board, Jaap Hogeling serving the board as Treasurer.

Society of Heating, Air Conditioning and Sanitary Engineers of Japan (SHASE)

REHVA has renewed its MoU with the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE) via an electronic document signed by both parties. A physical ceremony is planned to be held during CLIMA 2022.



Society of Air-conditioning and Refrigerating Engineers of Korea (SAREK)

REHVA has renewed its MoU with the Society of Air-conditioning and Refrigerating Engineers of Korea (SAREK) via an electronic document signed by both parties. A physical ceremony is planned to be held during CLIMA 2022.



REHVA has also MoUs with the following associations:

[ABRAVA](#), Brazilian Association of Refrigeration, Air Conditioning and Heating

[AIVC](#), Air Infiltration and Ventilation Centre of International Energy Agency

[EUROVENT](#), the European Committee of HVAC & R Manufacturers

[IBPSA](#), International Building Performance Simulation Association

[IIR](#), International Institute of Refrigeration

[Venticool](#), The international platform for ventilative cooling



TECHNOLOGY AND RESEARCH ACTIVITIES

The Technology and Research Committee (TRC) oversees activities related to the exchange of technical information, knowledge transfer and disseminating the latest technology developments, constituting the most important action field of REHVA.

In 2021, REHVA Office published an updated version of its [task force guidelines](#) together with a template for drafting the work plans of new task forces. The updated guidelines and the template aim to assist task force chairs to structure their work plans in harmonised way and provide useful information regarding the marketing and promotion details, necessary for the evaluation by the PMC.

Development and dissemination of technical information: task forces, guidebooks and reports

In 2021, REHVA experts continued their voluntary work on several topics, the COVID-19 Task Force continued the developed and update of our guidance documents. REHVA published an updated version of its [main COVID-19 guidance document \(version 4.1\)](#) and its translation [into the German language](#).

REHVA published two new Annexes targeting specific issues regarding air cleaning technologies: an overview about the [UVGI disinfection technology](#) and guidance about [Criteria for room air cleaners for particulate matter](#).

Moreover, REHVA published two calculators assessing infection risk and the spread of Sars-Cov-2 spread indoors:

- [REHVA COVID-19 Ventilation Calculator](#) for estimating the infection risk in single spaces
- [REHVA COVID-19 Multi-room and Recirculation Calculator for HVAC systems operational strategy assessment for reducing infection risk in buildings](#) assessing virus spread in multi-room spaces equipped with mechanical ventilation systems

In 2021, the TRC coordinated the work of several Task Forces and published 2 new guidebooks:

- The updated [Guidebook No. 13 - Indoor Environment and Energy Efficiency in Educational Buildings](#)
- [Guidebook No. 31 - NZEB Design Strategies for Residential Buildings in Mediterranean Regions](#).

In 2021, REHVA had six active Task Forces:

- REHVA COVID-19 response Task Force, chaired by Prof. Jarek Kurnitski
- Targeted Ventilation for Occupied Spaces (TVOS), chaired by Arsen Melikov
- nZEB Design Strategies for Residential Buildings in Mediterranean Regions Part II, chaired by Ahmet Arisoy
- Personalized Systems, chaired by Mariya Petrova Bivolarova and Ongun Berk Kazanci
- IEQ in nZEB schools (REHVA-ISHRAE), chaired by Livio Mazzarella
- Towards Zero Energy Hospital Buildings (REHVA-ASHRAE), chaired by Wim Maassen

In 2021, three New Task Forces were launched:

- REHVA IEQ requirements - input for revising EN 16798-1, chaired by Jaap Hogeling
- Evaporative cooling, chaired by Livio Mazzarella
- Energy efficient renovation of buildings for HVAC professionals, chaired by Tomasz Cholewa

REHVA expresses its deepest gratitude to all the volunteers from its Member Associations and Supporter Companies for their indispensable contribution and support.

Task Forces not active, but may be reactivated:

- Office buildings' EPC common scale, chaired by Martin Thalfeldt and Prof. Jarek Kurnitski
- Indoor climate surveys and investigation procedures, chaired by Quan Jin
- Smart Buildings, chaired by Andrei Litiu and Ivo Martinac

EU policy monitoring, position papers and policy implementation

REHVA follows European policy developments linked to building performance, indoor environmental quality, energy efficiency and the sustainable build environment at large. In 2021, we closely monitored the Fit for 55-package under the Green Deal with a special focus on the EPBD recast, besides the revisions of the EED & REDII. REHVA staff publishes regular updates on EU policy developments, overview articles in the REHVA Journal and puts new updates on its website, social media, e-Newsletter and Supporters' Bulletin. This activity is supported by the TRC that coordinates the development of position papers and technical comments supporting evidence based European policy development.

In 2021, REHVA monitored various policy issues under the Green Deal and the implementation of the Renovation Wave strategy:

- 1) The Fit for 55-package:
 - a) EPBD recast
 - b) REDII and EED revisions
 - c) EU ETS extension to the building sector
- 2) EPBD implementation:
 - a) Promotion and dissemination of the new EPB standards
 - b) Smart Readiness Indicator
 - c) Renovation passport and building digital logbook
- 3) Circular Economy and Level(s)
- 4) Built4People Partnership
- 5) Eco-design and Energy labelling updates (including the EPREL database implementation)

In 2021, REHVA and the TRC experts spent the most effort on following and commenting the EPBD revision under the Fit-for-55 package. In addition, REHVA continued to follow the Smart Readiness Indicator and promote the harmonised application of EPB standards at national level in cooperation with the EPB Center.

In 2021, REHVA Office improved the EU policy tracking section in the revamped [REHVA Knowledge Hub](#), providing exclusive policy briefings and intelligence services to our members and subscribers. The issue tracking provides expert briefings, a well-structured coverage of technical meetings with insider information,

as well as REHVA internal documents about specific advocacy actions linked to the current revisions of the EPBD, REDII and EED, the EU Green Deal, Renovation wave and “Fit for 55 package” an information on technical studies relevant to the HVAC sector.

Fit for 55 package

EPBD Recast

Under the Renovation Wave strategy the European Commission mandated an unexpected revision of the EPBD in 2020. The EC opened the new revision process in February 2021, with the objective to strengthen the legal framework of the EPBD for doubling the annual energy renovation rate of buildings by 2030 and shift towards building decarbonisation. REHVA followed and actively contributed at each step of the process, collecting inputs from REHVA members. On 15 December 2021, the Commission published the proposal of the EPBD recast.

- REHVA collected the opinion of TRC experts and Member Associations to draft a [feedback on the EPBD review Inception Impact Assessment roadmap](#), which was submitted in March 2021.
- Between 31 March and 3 June 2021, DG Energy organised 5 online stakeholder workshops. REHVA staff and TRC Chair, Jarek Kurnitski attended and reported about the workshops.
- REHVA [responded to the public consultation](#) of the EC in June 2021.
- In November 2021, REHVA prepared a briefing and shared the leaked version of the EPBD review proposal of the EC.
- An expert talk on “**Deep energy renovation in the new EPBD**” was organised in the Supporters Committee with presentations by DG ENER Policy Officer Pau Garcia Audi, TRC Chair Jarek Kurnitski, Mikko Iivonen (Purmo Group) and Claus Händel (EVIA).

REDII and EED Revisions

REHVA reported about the ongoing revision of the REDII and EED directives, as the requirement of decarbonising the building sector put a strong focus on heating and cooling. The European Commission published its proposal of both directives in July 2021. REHVA prepared briefings in the EU Policy Tracking section about the revised directives, providing an overview of what has been proposed and discussed and the background of the EC studies on Renewable Heating and Cooling that were also presented by the study team at the Policy Conference of the 2021 REHVA Brussels Summit. Within the context of the REDII revision, REHVA has been following the adoption of the Delegated Regulation on a calculation methodology for Member States to account for renewable cooling.

EU ETS extension to the building sector

A small briefing about the EU ETS extension to the building sector and proposal for establishing a Social Climate Fund was prepared in the Policy Tracking section of the Knowledge Hub. REHVA also followed the stakeholder workshop organised by shadow-rapporteur for the EU ETS in the ENVI Committee, Emma Wiesner, which was included in the briefing.

EPBD Implementation

Smart Readiness Indicator

In 2021, DG ENER resumed activities on the implementation of the SRI at national level by starting in May the SRI support contract (follow-up of the 2 previous technical studies) giving shape to the so-called SRI support team (VITO, Waide Strategic Efficiency, R2M Solution, LIST). The activities mostly ran behind closed doors in collaboration with Member States ([CA EPBD Core Team 6 Smart Buildings](#)) until Autumn.

REHVA continued acting as chair of the historical SRI Topical Group C keeping it coagulated and leveraging this commitment to the SRI activities as means to keep in close contact with DG ENER and the SRI support team. This approach made it possible for REHVA to act as thought leader and co-organise the hybrid workshop during Sustainable Places in September 2021 [Building Energy Performance Certificates: The enabler Smart Readiness Indicator](#) (hybrid) with the participation of DG ENER, the SRI support team and 4 EU Member States (Austria, Denmark, France and Italy). This event shed light on how exactly the SRI Topical Group C activities (in-use smart building performance - quantitative assessment) can continue under REHVA's leadership in 2022 within the scope of the [SmartBuilt4EU project](#) (brings together all innovation activities linked to smart buildings and the Smart Readiness Indicator while shaping the upcoming research agenda on this topic with published white papers) taking further the [recommendation report](#) prepared with the support of REHVA TRC members and the involved stakeholders.

Since Autumn 2021, the SRI support team's activities are active also on the [public side with everything being communicated and disseminated via the European Commission's publishing service](#). REHVA has been collating this information and more (including elements which are normally made available by the SRI support team upon request only e.g. the latest SRI assessment package) in the REHVA Knowledge Hub.

In December 2021, the SRI platform has been officially launched during an online event attended by REHVA staff and TRC experts. REHVA will continue to take part in the 2 closed thematic groups of the SRI support contract and shall engage REHVA TRC experts as needed during the next SRI development steps in 2022.

Circular Economy & Level(s)

REHVA has been monitoring and informing about the policy changes regarding circular economy/construction and the LEVELS scheme. This was the topic of the REHVA Expert talks organised during the 2021 Annual Meeting, discussed with supporter companies as this topic was selected as the most interesting in a supporter survey conducted in 2020.

European projects and tenders

REHVA joins European projects aiming at the development and market deployment of innovative technologies, as well as capacity development and training of professionals related to buildings energy efficiency and indoor environment quality. In 2021, REHVA has been involved in seven H2020 projects and one DG ENER tender detailed below. REHVA continuously informs about the latest updates and news on these activities in the Newsletter and on the [EU project sections of the REHVA website](#).

U-CERT project (Towards a new generation of user-centred Energy Performance Assessment and Certification), 2019-2022

U-CERT aims to introduce a next generation of user-centred Energy [Performance Assessment and Certification Scheme](#) to value buildings in a holistic and cost-effective manner. U-CERT has a focus on strengthening actual implementation of the EPBD by providing and applying insights from a user perspective and creating a level playing field for sharing implementation experience to all involved stakeholders, facilitated and empowered by the EPB Center. U-CERT activities are implemented with the direct (AiCARR, AIIR, ATECYR) and indirect (AICVF, EKVU, ETE/MMK, SWEDVAC) involvement of REHVA Member Associations.

In 2021, U-CERT team mostly focused on its actions related to the set of EPB standards, the 15 case studies in the 11 U-CERT countries and the U-CERT digital tools ([U-CERT proceedings](#)). AIIR organised a [dedicated U-CERT session](#) during its annual (12th edition) Romanian Conference on Energy Performance of Buildings moderated by REHVA President-elect Catalin Lungu. REHVA co-organised 4 web events (1 hybrid): [Building Energy Performance Certificates for the people](#), [Building Energy Performance Certificates: Convergent evolution ?!](#) (collaboration with EPB Center) moderated by REHVA Journal Editor-in-Chief Jaap Hogeling, [Building Energy Performance Certificates: The enabler Smart Readiness Indicator](#) (hybrid), [EUSEW 2021 policy session](#) moderated by REHVA President Frank Hovorka.

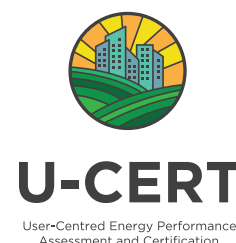
Website: <https://u-certproject.eu/>

TRI-HP (Trigeneration systems based on heat pumps with natural refrigerants and multiple renewable sources), 2019-2023

TRI-HP project aims to develop and validate flexible energy-efficient and affordable trigeneration systems, based on electrically driven natural refrigerant (propane and carbon dioxide) heat pumps coupled with renewable electricity generators (PV), using cold (ice slurry), warm and electricity storages to provide heating, cooling and electricity to multi-family residential buildings with a renewable share of 80%.

In TRI-HP project, REHVA as a leader of dissemination and communication activities, organised an EU stakeholders' workshop in the framework of the REHVA Brussels Summit 2021 programme, and participated with an online session in the KGH 52nd International HVAC&R Congress and Exhibition organised by its Serbian Member Association KGH-SMEITS. TRI-HP also published an article in the REHVA Journal in August 2021, showcasing the project's innovations on natural refrigerant heat pumps.

Website: <https://www.tri-hp.eu/>



QUEST project (Quality Management Investments for Energy Efficiency), 2019-2022

QUEST promotes investments in sustainability and energy efficiency by identifying and empirically risk-grading factors that influence energy performance of buildings. QUEST has developed a toolkit to evaluate the financial added value of different quality management services to support their integration in building projects and de-risk green investments. REHVA co-organised an EU-wide webinar in March 2021 on “***Taxonomy-Compliant Methodologies for De-risking Investments in Buildings***” to discuss the impact of the EU Taxonomy on building projects and how the QUEST toolbox can help investors with this. Stakeholder workshops were organised by REHVA in November 2021, including a session with the TRC members and a workshop with external experts, to present the QUEST methodology and toolbox and gather feedback.

A QUEST article was published in the REHVA Journal in May 2021 providing a clear overview of the QUEST methodology and toolbox. REHVA co-authored and coordinated the writing process of the “***QUEST Technical Manual***”, to be published in March 2022, which is a practical guide for investors and building owners on how they can easily integrate quality measures into their building projects.

Website: <https://project-quest.eu/>

QUEST-Tool: <http://quest-tool.synavision.de/>



BIM-SPEED project (Harmonised building Information speedway for Energy-Efficient Renovation), 2018-2022

BIM-SPEED aims to facilitate the EU-wide adoption of BIM in renovation by developing an open, affordable and reliable cloud-based BIM platform with a set of BIM tools and interoperability solutions integrates in a BIM platform with validated and standardised procedures for BIM-based activities throughout the whole renovation process. These solutions are tested and demonstrated in real cases.

In 2021, REHVA coordinated the set up and implementation of the “[EU BIM for Building Renovation Competition](#)” for students and professionals active in BIM, with the participation of the TRC BIM task force chair in the jury panel. REHVA also organised two national workshops in [Greek](#) and [French](#) language, inviting also its French speaking members. The [training material](#) developed under the project are available for REHVA Member Associations to use and adapt for training purposes for their members. These material are also available in the [PROF/TRAC platform](#).

Website: <https://www.bim-speed.eu/en>



TripleA-reno project (Attractive, Acceptable and Affordable deep Renovation by a consumer orientated and performance evidence-based approach) 2018-2021

The overall aim of TripleA-reno, which finished in October 2021, was to make acceptance and decision making on deep and NZEB renovation attractive for consumers and end-users through clear and meaningful information and communication on proven performances on energy, Indoor Environmental Quality



and personal health. To achieve this, the consortium, under the lead of REHVA member Prof. Zoltan Magyar, has developed a labelling scheme which combines the assessment of energy performance with IEQ & well-being indicators to enhance the information provided to owners and tenants on their buildings. REHVA strongly promoted this labelling scheme under the TripleA-reno Road Show by organising sessions at the REHVA Annual Meeting and at ClimaMed in May 2021 to present the labelling scheme, presented also to TRC members in June 2021.

Two TripleA-reno articles were published in the REHVA Journal in October 2021 about the TripleA-reno Combined Labelling Scheme and its demonstration in four different countries.

Website: <https://triplea-reno.eu/>

hybridGEOTABS project (Model Predictive Control and Innovative system Integration of GEOTABS in hybrid Low grade Thermal Energy systems), 2016-2021

hybridGEOTABS develops and promotes an integrated solution of geothermal heat pumps combined with thermally activated building systems that will provide a near optimal design strategy for the MPC GEOTABS concept, with model predictive control integrated design.

The project ended in February 2021 and REHVA disseminated project results even after the project closure. One of the most important outcomes that REHVA coordinated was the publication of the 'hybridGEOTABS [technical manual](#) which complements and enriches the knowledge found in [REHVA's Guidebook No. 20](#). A printed copy of the technical manual will be distributed to members at CLIMA 2022.

Website: <http://www.hybridgeotabs.eu/>

EPC RECAST project (Energy Performance Certificate Recast: New toolbox to assess building energy performance and retrofit needs) 2020-2023

EPC RECAST develops a process and toolbox supporting the development, implementation and validation of a new generation of Energy Performance Assessment and Certification, with focus on residential buildings undergoing energy renovation. It aims at enhancing EPCs usability, reliability, and comparability at linking them to renovation roadmaps and building digital notebooks.

As the responsible partner for the project's communication and dissemination activities, REHVA has coordinated the creation of the project's visual identity and website in 2021. Two newsletters were also published and shared, in [June](#) and [December](#), providing a clear overview to the target audiences about the project activities and progress.

REHVA organised a couple of closed workshops with the sister projects, [CINEA](#) and [DG ENER](#) (dedicated public consultation session for the EPBD revision) between April and June 2021, effectively coordinating and setting up the "Next Gen EPCerts cluster". Under REHVA's leadership 5 public workshops (see also U-CERT project above) were organised including on [BuildUp portal](#) in May, at [Sustainable Places](#)



in September and at [EU Sustainable Energy Week](#) (moderated by REHVA President Frank Hovorka) in October 2021. To support the implementation of the Energy Performance of Building Directive (EPBD), EPC RECAST also participated to the EPBD Concerted Action Plenary Meeting in December 2021 to present the project results to representatives of Member States.

Website: <http://epc-recast.eu/>

EPB Center service contract, 2018-2021

REHVA had a subcontract with ISSO to help with the dissemination activities of the EPB Center aimed to support the uptake of the energy performance of buildings standards.



The service contract with DG ENER successfully ended in 2021 with appreciative and positive feedback received from the colleagues at the European Commission services.

The conducted activities have been grouped under the following sections:

- Supporting Member States and National Standardisation bodies that wish to complete the national annexes of the overarching standards.
- EPB Center website - as online knowledge hub for EPB Standards Community.
- Setting up a public frequently asked questions database on filling in annexes, practical application of the standards, etc.
- A pool of practical case studies to support the use of standards and tailored to the needs of different stakeholders
- EPB Standards webinar series
- Calculation tools for the individual EPB standards
- Disseminating and developing calculation tools for individual standards
- Setting up a large network of current practitioners and future practitioners (i.e. building physics students) and support the uptake of standards by organising regular hands-on workshops, training sessions, etc.

TRC experts have been informed about the outcomes and involved in the service contract's activities as technical expert as needed.

Website: <https://epb.center/>

EDUCATION

REHVA Student Competition

As the REHVA Student Competition 2020 has been postponed and took place online on 11 January 2021, the REHVA Board has decided not to organise the 2021 edition and to postpone it to CLIMA 2022 by having again a regular cycle of the competitions from next year. They realised that it is really short notice to organise a national selection for 2021.

HVAC World Student Competition

Due to the COVID-19 pandemic, the HVAC World Student Competition 2020 was postponed till 27 May 2021 and was held online in collaboration with ISHRAE who was very helpful in organising the competition virtually. Four of the total six MoU partners that participate in this initiative have delegated candidates to this competition: ASHRAE (United States), CAHVAC (China), ISHRAE (India) and SAREK (South Korea). REHVA delegated the winner of the REHVA Student Competition 2020, **Maaïke Leichsenring** (Delft University of Technology, the Netherlands), who represented Europe in the contest.

The jury composed by Manuel Gameiro da Silva ([REHVA](#)), Jun Chjoi ([SAREK](#)), Joe Firrantello ([ASHRAE](#)), Narayanan Srikantan Chandrasekar ([ISHRAE](#)), and Angui Li ([CAHVAC](#)) were assigned to judge the performance and quality of the work of the competitors.

After deliberation, the jury declared **Maaïke Leichsenring** (REHVA, the Netherlands) as winner for her work on “Flow Visualization of Ammonia inside a Corrugated Plate Heat Exchanger Condenser”. The second place was awarded to **Jianyun Wu** from CAHVAC (China) and the third place to **Song Yong Woo** from SAREK (South Korea).

A new award was established, in the form of a ‘Best Poster’ award, which was also given to **Maaïke Leichsenring** (The Netherlands).



FINAL RESULTS



Jianyun Wu
China

II



Maaïke Leichsenring
the Netherlands

I



Song Yong Woo
South Korea

III

During the virtual ceremony, Manuel Gameiro da Silva, Chair of the REHVA Education and Training Committee, and the jury informed the three awardees that they receive an electronic certificate for winning the competition in addition to a financial reward from our sponsor Eurovent Certita Certification. All students have also received an electronic certificate of participation. The winner received the trophy cup.

In addition and as part of the event, ISHRAE conducted a Round Table session between representatives of all the participating associations. This was done after the students have presented their papers and while the Jury was having the internal deliberations.

The discussion was based on sharing the activities undertaken / guidelines developed / Government support rendered specifically for “Strategies for Indoor Spaces in Covid-19” by each association.

The topic of the round table was **“COVID-19 Mitigation Strategies for Indoor Spaces -”Strategies adapted by various Countries and recommendations of the associations”**. Each association shared steps taken by their Government and advisory for COVID-19 Mitigation in Indoor spaces using HVAC.

REHVA Community of Young Professionals

The REHVA Community of Young Professionals will be facilitating professional activities and knowledge exchange between young professionals (below 35 years) in the fields of indoor climate management, HVAC and building services. We reach out first to former participants of the REHVA student competition and invite them to join our initiative.

REHVA is committed to advancing its programs and services for young engineers, helping them build their professional foundations and carrier. REHVA organises courses for students and young professionals and promotes their participation in the REHVA network event by discounts. The CLIMA World Congresses are inviting young researchers to submit abstracts.

REHVA will support the joint activities defined later together with the community members and offer advantages relying on the existing REHVA knowledge sources and services, such as free or discounted access to REHVA guidebooks, events and trainings, publication possibility in the REHVA Journal, specific sessions at REHVA events for the community. Our aim is to create an online community and information hub tailored to the interest of community members.

Due to COVID-19, most social activities are frozen.

A section is available on the [REHVA website](#), a LinkedIn group is alive with announcements. This group has 94 members from the REHVA Student Competition participants and graduated PhD and MSc professionals in the field. Moreover, a logo has been created.



The first outcome of the RCYP is the Book of Papers 2019, that compiles the works presented by students in Bucharest in 2019. This Book is the first created and will be implemented for upcoming editions of the REHVA Student Competition.

REHVA EVENTS

The COVID-19 pandemic continued to have its hard toll also on the events in 2021. Most industry fairs were cancelled or postponed and the few events that happened were all organised online.

REHVA Brussels Summit 2021

Despite the attempts to meet in person after two years at the Brussels Summit in November, REHVA had to organise also the 2021 edition of the summit online on 5 November 2021. The committee meetings and the Members Plenary meetings happened along the entire first week of November 2021. The summit closed with the policy conference **“Fit for 55” - the bumpy road to decarbonising the EU building stock** providing first-hand knowledge from high-level stakeholders. The conference gave an overview of the changing EU policies on building decarbonisation presented by high level speakers from the European Commission and discusses practical tools and frameworks helping policy implementation to deliver a decarbonised European building stock (see details in chapter “European public affairs and global cooperation” on page 19).

Seminars and conferences at trade shows and industry fairs

ISH Digital 2021

In 2021, REHVA has been present in the Digital fair of ISH with an online booth, showcasing the REHVA COVID course, REHVA Guidebooks and more. During the fair, we were able to reach 40 participants interested in REHVA, our products and services.

During ISH, REHVA organised as well a webinar on **“Indoor Air Quality and the role of ventilation beyond the COVID-19 era”**. REHVA’s expertise on the topic was showcased with the moderation of the REHVA Vice-President Atze Boerstra, and expert speakers from the REHVA experts’ network; Technology and Research Committee chair Jarek Kurnitski, and Atze Boerstra were joined by Camfil’s Tobias Zimmer and Swegon’s Mikael Börjesson for individual presentations followed by a productive discussion with the audience.

REHVA representation at Members’ events

CLIMAMED 2020

Due to COVID-19, CLIMAMED was postponed to 2021. It was organised under the umbrella of REHVA as an online meeting. Vice-president Kemal Gani Bayraktar represented REHVA at the conference.

During the conference, REHVA also hosted a crash course into **“NZEB Design Strategies for Residential Buildings in Mediterranean Regions”**. This course is based on the Guidebook No. 31 about NZEB in Mediterranean Regions. REHVA expert and fellow Murat Çakan is the instructor of this course, which can now be found as a recording in the REHVA Academy digital platform.

CLIMAMED was a good opportunity to organise a TripleA-reno roadshow, where Zoltan Magyar from ETE presented the IEQ labelling scheme developed by the TripleA-reno project.

KGH 52nd International HVAC&R Congress and Exhibition

The traditional congress of SMEITS was organised as a hybrid event, Serbian participants could meet in person, while all international participants joined online. REHVA president Frank Hovorka sent a video message for the opening ceremony of the congress.

REHVA was virtually present at the congress with the TRI-HP project, following the kind invitation of KGH-SMEITS. The [online workshop Heat pumps with natural refrigerants and multiple renewable sources for the decarbonization of multi-family buildings](#) was opened by Spyridon Pantelis, REHVA's Project and Technical Officer followed by the presentation of project partners and closed by an interactive discussion.

List of member's events endorsed by REHVA

- Aquatherm Moscow 2021, 4 February
REHVA was represented by Frank Hovorka
- 15th RoomVent Virtual Conference, 14-17 February
REHVA was represented by Catalin Lungu and Manuel Gameiro da Silva
- Cold Climate HVAC & Energy, online, 20-21 April
REHVA was represented by Atze Boerstra who was a keynote speaker
- Climamed 2021, virtual, 11 May
REHVA was represented by Kemal Gani Bayraktar
- 37th AICVF General Assembly, Metz, France, 8 October
REHVA was represented by Frank Hovorka
- Cold Climate HVAC & Energy, 20-21 April
REHVA was represented by Atze Boerstra who was a keynote speaker
- KGH 52nd International HVAC&R Congress and Exhibition, 1-3 December
REHVA was represented by Frank Hovorka

Exhibitions

REHVA is endorsing international fairs and exhibitions of the HVAC and construction sector each year, to promote our publications and expertise. During the year 2021, many events were cancelled, postponed, or organised virtually or hybrid according to the current situation of the pandemic:

- Aquatherm Moscow 2021, Moscow, Russia, 2-5 February
- RoomVent, online, 22-26 March
- ISH digital, 22-26 March
- Cold Climate HVAC & Energy, online, 20-21 April
- Climamed 2021, virtual, 11 May
- Indoor Air 2022, Kuopio, Finland, 12-16 June
- Healthy Building 2021, Hybrid, Oslo, Norway, 21-23 June
- WSED, Wels, Austria, 21-25 June
- 12th International BUILDAIR Symposium, 25-26 June
- IBPC 2021, Copenhagen, Denmark, 25-27 August
- MCE Live+Digital, Vicenza, Italy, 3-4 September
- Aquatherm Tashkent, Uzbekistan, 22-24 September
- ISK Sodex, Istanbul, Turkey, 29 September-2 October
- Eurovent Summit, Antalya, Turkey, 12-15 October
- KGH 52nd International HVAC&R Congress and Exhibition, hybrid, 1-3 December
- Refcold 2021, virtual, 17-18 December

COOPERATION WITH SUPPORTER COMPANIES

REHVA has been involved in many ways with its Supporter companies allowing them to reach and interact with the REHVA network. With the pandemic still ongoing, occasion to meet face to face were limited, nevertheless REHVA stayed in close contact with its Supporters companies and put the spotlight on the topics of interest highlighted in the 2020 survey, resource efficiency and circularity in the HVAC sector. REHVA also served as a reference point during the COVID-19 crisis and its expertise continued to prove useful in 2021.

Healthy Homes Design Competition



A new project saw the light of the day in 2021, the [Healthy Homes Design Competition](#). This project born out of the collaboration of VELUX and REHVA aims to encourage and challenge students and young professionals working within the field of building and buildings service systems, operation, and construction to explore the theme of healthy living - and to create a deeper understanding of indoor environmental qualities as well as exploring the impact of future climate changes. The

award celebrates and promotes excellence in projects with focus on people's health and indoor climate solutions in their living environments and at the same time balancing energy use.

Two prize categories are involved: one for teams that consists of students only and one for teams that consist of young professionals. Each prize category will have a winner team, appointed by an international jury during the CLIMA 2022 conference in Rotterdam, the Netherlands, and entitled to a prize of 5000€. In the process of organisation and launching, REHVA relied on its network and especially on the Member Associations' network to have a support in promoting the initiative. Universities and professors were contacted to spread the word among students, suggesting the possibility of integrating the competition in existing courses' programmes or creating ad hoc courses. Announcements in printed and digital media were utilized to advertise the competition and REHVA digital channels were used to increase the awareness and reach a broad audience.

REHVA Journal special issue on IAQ and Humidity

The REHVA Journal issue of December 2021 was based on a close collaboration between REHVA and Swegon. The supporter company co-financed the issue focused on Indoor Air Humidity that was published in December 2021. The editorial process was shared among the collaborators to create an issue that could retain the technical quality expected of the REHVA Journal while connecting with the interest points of the industry. It received high readership numbers, bringing to light the interest in the topic from REHVA Journal's readers.



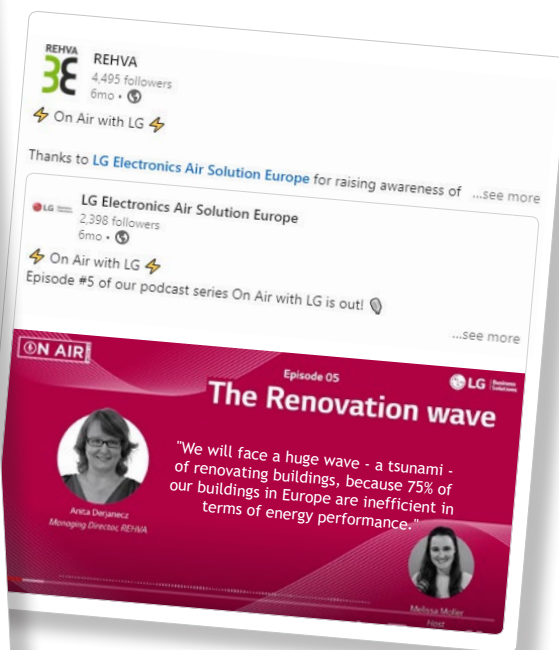
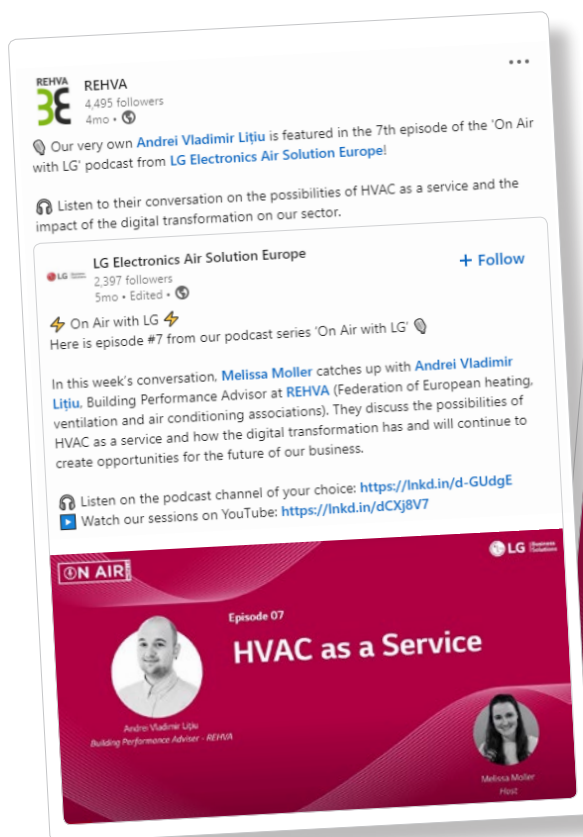
Figure 12. REHVA Journal December 2021.

Supporter events and podcasts

Build For Life Conference is a global digital event presented by VELUX that brought together architects, housebuilders, researchers, engineers, activists, and other industry professionals to discuss how to leverage buildings to benefit the environment and improve the quality of life for people everywhere. The three-days conference featured more than 90 speakers presenting over multiple channels and reaching out to global viewers from the building industry and beyond. Each session was broadcasted live from TV studios in Copenhagen reaching viewer-participants worldwide. REHVA Managing Director, Anita Derjanecz took part in the Healthy Panel Discussion “What is the value proposition of good indoor climate in buildings?” representing the views of REHVA on IAQ and IEQ.



LG invited two REHVA experts to talk on separate episodes of their Podcast “On Air with LG”. Anita Derjanecz, REHVA Managing Director, discussed about the challenges and opportunities of the Renovation wave across Europe’s building industry and the related opportunities for the HVAC community. Andrei Vladimir Litiu, REHVA Project Consultant discussed the possibilities of HVAC as a service and how the digital transformation has and will continue to create opportunities for the future of HVAC business.



Camfil invited REHVA Vice-President, Atze Boerstra to speak at its podcast “Let’s talk clean air” to answer questions about reducing risk in buildings regarding COVID-19 and REHVA COVID-19 Guidance. He was invited again later in the year for a special “Ask the experts” episode to represent REHVA’s expertise about airborne virus transmission and HVAC. This collaboration with Camfil continued when REHVA Vice-President, Atze Boerstra was invited by Camfil to take part in their webinar series. It was a prime opportunity that encapsulates the possibilities for cooperation between REHVA and its supporters. Atze Boerstra came to share REHVA’s knowledge about airborne virus risk mitigation.



REHVA’s expertise was put to contribution at the ISH 2021 Digital event where it organised a seminar on the topic of “Indoor Air Quality and the role of ventilation beyond the COVID-19 era”. REHVA Vice-President Atze Boerstra and Technology and Research Committee chair Jarek Kurnitski were joined by Camfil’s Tobias Zimmer and Swegon’s Mikael Börjesson for individual presentations followed by a moderated discussion.



Expert talks with REHVA supporters

At the REHVA Annual Meeting 2021, REHVA organised an **Expert Talk on Circular Economy in the HVAC Industry** chaired by REHVA Vice-President Juan Travesi. Josefina Lindblom from DG ENVI, who is responsible for the implementation of the new Level(s) framework within the European Commission presented the LEVELS scheme, followed by presentations of Mirko Sauvan (Swegon) and Olaf Oosting (TVVL, Valstar Simonis) on the importance and challenges for the HVAC sector to integrate principles of life-cycle analysis and circularity. A moderated discussion allowed for an open discussion among REHVA members and supporters about Level(s) and the role it can play in the buildings. This theme was dear to our Supporters as demonstrated in the 2020 survey efforts made by REHVA.

16th December 2021, the very day when the European Commission published its proposal of the EPBD recast, REHVA organised a second **Expert Talk on Deep energy renovation with the new EPBD**. Pau Garcia Audi from the European Commission gave first insights into the oven fresh EPBD recast document, Mikko Iivonen from Purmo Group shared first-hand practical experiences about the deep energy renovation of HVAC systems. Jarek Kurnitski, REHVA TRC Chair discussed how to design and deliver high quality deep energy renovations and Claus Händel, Technical Director of EVIA, presented the energy renovation solutions to deliver efficiency and healthy indoor climate. The presentations were followed by a Q&A session with the audience.



How deep is deep? Novelties and ambition of the revised EPBD

Pau Garcia Audi
European Commission

How to design and deliver high quality deep energy renovations

Jarek Kurnitski
TalTech University



Deep energy renovation concepts for technical systems

Mikko Iivonen
PURMO Group

Energy renovation solutions for efficiency and healthy indoor climate

Claus Händel
EVIA



FELLOWS AND AWARDS

Fellows

REHVA has granted the status of REHVA fellow in the year 2021 to **Murat Çakan** (TTMD - Turkey).

During the online General Assembly, Frank Hovorka congratulated him and he has received electronically a memorial certificate. He has now the right to state “REHVA Fellow” under his name.

REHVA grants the status of “REHVA Fellow” for significant contributions to REHVA, the board, the committees and to the task forces.



Awards

REHVA congratulated the 2021 REHVA Awards recipients, who have been recognised for their outstanding achievements in different activities within the HVAC fields or for their special contribution to REHVA and received an electronic REHVA Award.

The awardees were invited to join the online General Assembly and Frank Hovorka congratulated them individually. They were invited to say few words.

The following members of REHVA Member Associations received an electronic REHVA Award:

Fatma Çölasan (TTMD - Turkey) and **Roberto Taddia** (AiCARR, Italy) received a **REHVA professional award in design** and were recognised for their outstanding achievements in the design of HVAC systems and for their contributions to improve energy efficiency and the indoor environment of buildings.

Jose Manuel Pinazo (ATECYR, Spain), **Kaido Hääl** (EKVÜ - Estonia) and **Marcel Loomans** (TVVL - The Netherlands) received a **REHVA professional award in education** and were recognised for their outstanding academic achievements and for their contribution to improve energy efficiency and the indoor environment of buildings.

Marco Dell'Isola (AiCARR - Italy) and **Livio Mazzarella** (AiCARR - Italy) received a **REHVA professional award in science** and were recognised for their outstanding achievements in science and for their contribution to improve energy efficiency and the indoor environment of buildings.

Metin Duruk (TTMD - Turkey) and **Michele Vio** (AiCARR - Italy) received a **REHVA professional award in technology** and were recognised for their outstanding achievements in technology and for their contributions to improve energy efficiency and the indoor environment of buildings.

Roel Loonen (TVVL - The Netherlands) and **Ece Kalaycioğlu Özdemir** (TTMD - Turkey) received a **REHVA Young Scientist Award** and were recognised for their outstanding scientific achievements and for their contribution to improve energy efficiency and the indoor environment of buildings.

SUMMARY OF REHVA AWARDS IN 2021

Professional Award in DESIGN



Fatma Çölasan
TTMD – Turkey

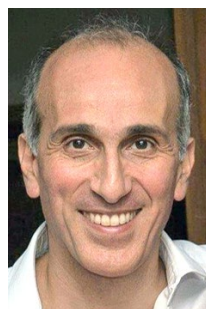


Roberto Taddia
AiCARR, Italy



Michel Marino
AICVF, France

Professional Award in SCIENCE



Marco Dell'Isola
AiCARR - Italy



Livio Mazzarella
AiCARR – Italy

Professional Award in EDUCATION



Jose Manuel Pinazo
ATECYR, Spain



Kaido Hääl
EKVÜ – Estonia



Marcel Loomans
TWL – The Netherlands

Professional Award in TECHNOLOGY



Metin Duruk
TTMD – Turkey



Michele Vio
AiCARR – Italy

YOUNG SCIENTIST Award



Roel Loonen
TWL – The Netherlands



Ece Kalaycioğlu Özdemir
TTMD – Turkey



REHVA also expressed its sincere gratitude to the REHVA COVID-19 Task Force members for their great contribution to this Task Force and guidance document. Their much-appreciated work provided REHVA with a very solid evidence basis enabling to draft the document timely in the crisis. This guidance document had a massive impact in Europe and was translated in 13 languages, sent to many government departments and praised by professionals across the world.

The REHVA Award Committee Members and the REHVA Board of Directors decided to honour their contribution with a **REHVA Recognition Award** in recognition of their commitment and substantial contribution to the REHVA COVID-19 Task Force work providing crucial guidance to HVAC professional and public health officials on the safe operation of buildings during the pandemic. Frank Hovorka handed out virtually these awards during the General Assembly on 19 April 2021 to the following REHVA COVID-19 Task Force Members. Jarek Kurnitski, as leader of this Task Force, received also a **REHVA Recognition Award**.

REHVA RECOGNITION Award



Jarek Kurnitski

Estonia – Leader of the
REHVA COVID-19 Task Force

REHVA COVID-19 Task Force:

Atze Boerstra
Guangyu Cao
Hywel Davies
Manuel Gameiro da Silva
Jaap Hogeling
Jarek Kurnitski
Catalin Lungu
Livio Mazzarella
Ilinca Nastase
Riccardo Romano
Olli Seppänen
Igor Sikenczyk
Froukje van Dijken



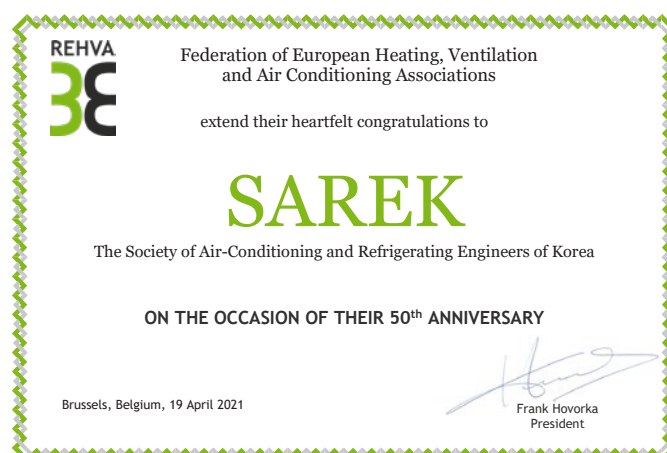
In the picture above from left to right: Michel Duclos, president of AICVF, Michel Marino and Frank Hovorka, president of REHVA.

Frank Hovorka handed over to his French colleague of AICVF a REHVA Award on the occasion of their General Assembly which was held on 8 October in the hotel Mercure of Metz, France.

Michel Marino received a **REHVA professional award in design** and was recognised for his outstanding achievements in the design of HVAC systems and for his contributions to improve energy efficiency and the indoor environment of buildings (please see picture below).

SAREK (the Society of Air-conditioning and Refrigerating Engineers of Korea), our South-Korean partner, received a REHVA award in occasion of its 50th anniversary. This was sent electronically.

Furthermore, a Special REHVA Supporters' award was announced. REHVA congratulated **Friterm** for its 40th anniversary and expressed its heartfelt gratitude for being a true REHVA supporter for almost fifteen years. On this occasion, Naci Sahin, CEO of Friterm attended online.



REHVA ADMINISTRATION

General Assembly

The 65th General Assembly was for the second year held online on 19 April 2021.

Frank Hovorka opened the REHVA General Assembly thanking all for being so numerous again this year. That was the second time that the General Assembly took place virtually due to COVID-19.

Frank Hovorka has hosted the General Assembly with an overview of REHVA's 2020 main activities and the plan of strategic activities for the upcoming years. The most relevant outcome of the General Assembly has been the election of the President-elect, Catalin Lungu. Catalin has been involved with REHVA as a Board Vice-President and Treasurer since 2013. His mandate will start in 2021.

The General Assembly approved the annual report and the accounts of the year 2020 as well as the budget for 2021 and the preliminary 2022 budget. 25 out of the 26 Member Associations were present at the 65th General Assembly. The quorum needed to vote (half of the Members present or represented) was met. One Member Association was neither present, nor represented. 46 delegates represented these 25 Member Associations that attended the General Assembly.

Board Meetings

Seven board meetings were held in 2021. All were organised via WebEx because of the pandemic on 13 January, 03 March, 29 March, 16 April, 28 June, 6 September and 5 November.

Standing Committee Members

In 2021, REHVA activities have been organised under five Standing Committees in order to have an active core of colleagues strongly involved in their activities. The core members of the Standing Committees participated actively in the committee meetings and activities.

Please find the list of the core members of all the Standing Committees (as per 31/12/2021):

Awards Committee

- Chair: Frank Hovorka, France
- Francis Allard, France
- Stefano P. Corgnati, Italy
- Karel Kabele, Czech Republic
- Livio Mazzarella, Italy
- Bjarne W. Olesen, Denmark
- Secretary: Nathalie Wouters

Education and Training Committee

- Chair: Manuel Gameiro da Silva, Portugal
- Co-Chair: Ivo Martinac, Sweden
- Co-Chair: Tiberiu Catalina, Romania
- Francis Allard, France
- Edith Barna, Hungary
- Marianna Brodach, Russia
- Murat Cakan, Turkey
- Ivan Chmurny, Slovakia
- Francesca R. d'Ambrosio, Italy
- Egils Dzelzitis, Latvia
- Robert Gavriluc, Romania
- Frank Hovorka, France

- Karel Kabele, Czech Republic
- Targo Kalamees, Estonia
- Risto Kosonen, Finland
- Catalin Lungu, Romania
- Zoltan Magyar, Hungary
- Joris Mampaey, Belgium
- Saso Medved, Slovenia
- Birgit Müller, Germany
- Uwe W. Schulz, Switzerland
- Marija Todorovic, Serbia
- Juan Travesi, Spain
- Rafael Vazquez, Spain
- Cas Wegman, The Netherlands
- Torun Widström, Sweden
- Secretary: Nathalie Wouters

Publishing and Marketing Committee

- Chair: Francesca R. d'Ambrosio, Italy
- Co-Chair: Kemal Gani Bayraktar, Turkey
- Anna Bogdan, Poland
- Marianna Brodach, Russia
- Tiberiu Catalina, Romania
- Christian Feldmann, France
- Jaap Hogeling, the Netherlands
- Frank Hovorka, France
- Karel Kabele, Czech Republic
- John Lens, the Netherlands
- Siru Lönnqvist, Finland
- Birgit Müller, Germany
- Olaf Oosting, the Netherlands
- Rafael Vasquez, Spain
- Secretary: Nicoll Marucciova

Supporters Committee

- Chair: Juan Travesi, Spain
- Ilari Aho, Finland
- Mikael Börjesson, Sweden
- Ioan Silviu Dobosi, Romania
- Jaap Hogeling, the Netherlands
- Frank Hovorka, France
- Bengt Johanssen, Finland
- Henk Kranenberg, the Netherlands
- John Lens, the Netherlands
- Livio Mazzarella, Italy
- Erick Melquiond, France
- Michael Mieszczański, Belgium
- Panu Mustakallio, Finland

- Olaf Oosting, the Netherlands
- Leonardo Prendin, Italy
- Naci Sahin, Turkey
- Christian Schauer, Germany
- Morten Schmelzer, Czech Republic
- Marc Thuillard, Switzerland
- Andrea Voigt, Belgium
- Secretary: Anita Derjanecz

Technology & Research Committee

- Chair: Jarek Kurnitski, Estonia
- Co-Chair: Guangyu Cao, Norway
- Co-Chair: Ilinca Nastase, Romania
- Francis Allard, France
- Ahmet Arisoy, Turkey
- Edith Barna, Hungary
- Hans Besselink, The Netherlands
- Anatolijs Borodinecs, Latvia
- Hywel Davies, United Kingdom
- Ioan Silviu Dobosi, Romania
- Christian Feldmann, France
- Serafin Grana, Portugal
- Lars Gunnarsen, Denmark
- Jaap Hogeling, The Netherlands
- Frank Hovorka, France
- Quan Jin, Sweden
- Karel Kabele, Czech Republic
- Ogun Berk Kazanci, Denmark
- Risto Kosonen, Finland
- Michal Krajčík, Slovakia
- Jussi Kummu, Finland
- Niklas Lavesson, Sweden
- Wei Liu, Sweden
- Catalin Lungu, Romania
- Zoltan Magyar, Hungary
- Ivo Martinac, Sweden
- Gabrielle Masy, Belgium
- Livio Mazzarella, Italy
- Birgit Muller, Germany
- Pedro Vicente Quiles, Spain
- Jorma Railio, Finland
- Olli Seppänen, Finland
- Igor Sikarczyk, Belgium
- Iurii Tabunshchikov, Russia
- Martin Thalfeldt, Estonia
- Branislav Todorovic, Serbia
- Andreas Wagner, Germany
- Secretary: Spyridon Pantelis

In Memoriam

Prof. hon. Dr Eng. D.H.C. Liviu Dumitrescu passed away in March. He was a member of REHVA since 1995 and the President of AIIR from 1990 to 2016. He received a REHVA fellow in 2011 and a REHVA Professional Award in Science in 2012.

REHVA and its members remember him not only for his professionalism but most importantly for his kind heart and friendliness.



REHVA Office

The REHVA registered seat is in rue Washington 40, 1050 Brussels, Belgium.

In 2021, the REHVA team included:

- **Anita Derjanecz**, Managing Director
- **Nathalie Wouters**, Office and Membership Manager
- **Nicoll Marucciová**, Marketing & Knowledge Dissemination Officer
- **Jasper Vermaut**, EU Policy and Project Officer
- **Spyridon Pantelis**, Assistant Project Engineer
- **Camilla Bordin**, Marketing and Promotion Assistant (till November 2021)
- **Alexandre Dziergwa**, Communication and Publication Assistant



Anita Derjanecz
Managing Director
✉ ad@rehva.eu



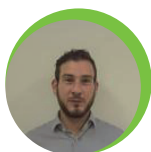
Nathalie Wouters
Office and Membership
Manager
✉ nw@rehva.eu



Nicoll Marucciová
Marketing & Knowledge
Dissemination Officer
✉ nm@rehva.eu



Jasper Vermaut
EU Policy and Project Officer
✉ jv@rehva.eu



Spyridon Pantelis
Assistant Project Engineer
✉ sp@rehva.eu



Camilla Bordin
Marketing and Promotion
Assistant (till November 2021)
✉ cb@rehva.eu



Alexandre Dziergwa
Communication and
Publication Assistant
✉ adz@rehva.eu



ANNEX 1: REHVA MEMBERS



[ABOK](#), Association of Engineers in Heating, Ventilation, Air-conditioning, Heat Supply & Building Thermal Physics, RUSSIA



[AHGWTEL / LATVAC](#), Association of Heat, Gas and Water Technology Engineers of Latvia, LATVIA



[AICARR](#), Associazione Italiana Condizionamento dell'aria, Riscaldamento Refrigerazione, ITALY



[AICVF](#), Association des Ingénieurs en CLIMATIQUE, Ventilation et Froid, FRANCE



[AIIR-AGFR](#), Romanian Association of Building Services Engineers (AIIR) and Romanian General Association of Refrigeration (AGFR), ROMANIA



[AIIRM](#), Installation Engineers Association from Moldova, MOLDAVIA



[Atecyr](#), Asociación, Técnica Española de Climatización y Refrigeración, SPAIN



[ATIC](#), Association Royale Technique de l'Industrie du Chauffage, de la Ventilation et des Branches Connexes, Koninklijke Technische Vereniging van de Verwarmings en Verluchttingsnijverheid en der Aanverwante Takken, BELGIUM



[CIBSE](#), Chartered Institution of Building Services Engineers, UNITED KINGDOM



[Danvak](#), Danish Society of Heating, Ventilating and Air conditioning Engineers, DENMARK



[Die Planer - Swiss Society for Engineering](#), Energy and Environment



[EKVÜ](#), the Estonian Society of Heating and Ventilation Engineers, ESTONIA



[ETE-MMK](#), complex society of building experts with a special section for heating, ventilating, air-conditioning, HUNGARY



[MMK](#), Magyar Mérnöki Kamara (Hungarian Chamber of Engineers), HUNGARY



[FINVAC](#), joint organisation in which 4 national societies of HVAC organisations (SuLVI, VSF, SIY, LIVI), FINLAND



[KGH](#), Serbian HVAC-R Society c/o Union of Mechanical and Electrical Engineers of Serbia (SMEITS), SERBIA



[LIŠTIA](#), Lietuvos šiluminės technikos inžinierių asociacija (Lithuanian Thermotechnical Engineer's Society), LITHUANIA



[NORVAK](#), Norwegian Society of HVAC Engineers, NORWAY



ORDEM
DOS
ENGENHEIROS

[ORDEM DOS ENGENHEIROS](#), Portuguese Association of Engineers, PORTUGAL



[PZITS](#), Polskie Zrzeszenie Inżynierów i Techników Sanitarnych, POLAND



[SITHOK](#), Slovenian Association of Engineers for Cooling, Heating and Air Conditioning Technologies, SLOVENIA



[STP](#), Slovenska spoločnosť pretechniku prostredia (Slovak Society for Environmental Technology), SLOVAKIA



[STP](#), Společnost pro techniku prostředí (Society of Environmental Engineering), CZECH REPUBLIC



[SWEDVAC](#), Energi- och Miljötekniska Föreningen (Swedish HVAC Society - Society of Energy and Environmental Technology), SWEDEN



[TTMD](#), Türk Tesisat Mühendisleri Derneği (Turkish Society of HVAC and Sanitary Engineers), TURKEY



[TVVL](#), Nederlandse Technische Vereniging voor Installaties in Gebouwen (Dutch Society for Building Services), THE NETHERLANDS



[VDI](#), Verein Deutscher Ingenieure e.V. (Association of German Engineers) - Fachbereich Technische Gebäudeausrüstung der VDI-Gesellschaft Bauen und Gebäudetechnik - VDI/GBG (Division Building Services of VDI- Society for Civil Engineering and Building Services), GERMANY

ANNEX 2: REHVA SUPPORTERS



[Aermec](#), Italy - Air-conditioning



[Arçelik](#), Turkey - Developer, manufacturer and distributor of white goods and HVAC systems with global footprint



[Belimo Automation](#), Switzerland - Developer, manufacturer and distributor of electric actuators for air dampers and valve technology for heating, ventilation and air conditioning systems (HVAC)



[Camfil](#), Sweden - Manufacturer of filters and clean air solutions



[Daikin Europe](#), Belgium - Air-conditioning, heating and refrigeration solution provider



[Dosetimpex](#), Romania - Designing, executing and delivering installation equipment for constructions



[Eurovent Certita Certification](#), France - Certification of the performance ratings of air- conditioning and refrigeration products according to European and international standards



[Evapco Europe](#), Italy - Specialists in heat transfer products & services



[Fläkt Group](#), Sweden - European market leader for energy efficient Indoor Air Technology Solutions, providing the highest quality standards for improved Air Comfort and well-being



[FRITERM](#) Teknik Cihazlar Sanayi ve Ticaret, Turkey - Manufacturer of finned type heat exchangers and focused on the production of Air Cooled Condensers, Air Coolers, Dry Coolers, Water/Steam Air Heaters and Coolers, Oil Coolers and Heat Recovery Coils



[Grandlund](#), Finland - A building services consulting firm



[Halton](#), Finland - Products for ventilation and air handling systems, commercial kitchen ventilation, marine air conditioning



[LG Electronics](#), Germany - Improvement of customer's life and business with leading products and world-class technology



[Lindab](#), Denmark - Developer, manufacturer and distributor of products and system solutions primarily in steel for simplified construction and improved indoor climate



[Purmo Group](#), Finland - Sustainable indoor climate comfort solutions, specialised in heating and cooling solutions



[RHOSS](#), Italy - Specialised in the design and production of air conditioning and air handling products and systems



[Royal Haskoning DHV](#), The Netherlands - Independent international engineering and project management consultancy



[Smay](#), Poland - Consulting and production company who provides the solutions and devices in the range of ventilation



[Swegon](#), Sweden - Indoor climate for people and environment specialising in ventilation and air handling equipment



[Systemair](#), Sweden - Manufacturer of air handling and ventilation products and fans



[Uponor Corporation](#), Finland - Heating systems for all building types



[Velux](#), Denmark - Producers of installation technology for the sanitation and heating sector



[Viega](#), Germany - Internationally operating market leader of products covering the entire installation technology sector.

ANNEX 3: REHVA ASSOCIATE ORGANISATIONS



[Enerbrain](#), Italy - Improvement of financial performance, indoor comfort and environmental sustainability of buildings.



[Enviromech](#), UK - Mechanical and Electrical solutions across projects in the United Kingdom



[ISIB](#), Turkey - Turkish HVAC&R Exporters



[OAER](#), Romania - Create the organisational framework to promote measures, concepts and actions that lead to the support of professional interests as well as to increase and improve the activity of long-term higher education graduates and research specialists, project execution and operation, for the realization of energy efficient buildings

REHVA

Federation of European Heating, Ventilation
and Air Conditioning Associations

REHVA Office

Rue Washington 40, 1050 Brussels - Belgium

Tel: +32-2-5141171 • Fax: +32-2-5129062

www.rehva.eu • info@rehva.eu

REHVA is The Federation of European Heating, Ventilation and Air Conditioning associations founded in 1963. We are an umbrella organisation that represent over 120 000 HVAC designers, building services engineers, technicians and experts across 26 European countries.

REHVA provides its members with a strong platform for international professional networking and knowledge exchange, pursuing the vision of improving health, comfort, safety and energy efficiency in all buildings and communities. REHVA contributes to technical and professional development, follows EU policy developments and represents the interest of its members at EU level and globally.

REHVA is committed to advancing its programs and services for young engineers, through helping them build their professional foundations.

www.rehva.eu

REHVA

3E Federation of
European Heating,
Ventilation and
Air Conditioning
Associations