



52<sup>nd</sup>

AiCARR  
INTERNATIONAL  
CONFERENCE



HVAC AND  
HEALTH,  
COMFORT,  
ENVIRONMENT.

Equipments and  
design for IEQ  
and sustainability

SEPTEMBER 3-4, 2021  
VICENZA, ITALY

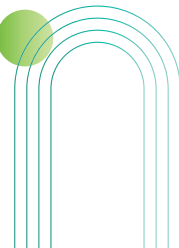


AiCARR

Cultura e Tecnica per Energia Uomo e Ambiente



6 anni di cultura



# INDUSTRY MEMBERS





## SCIENTIFIC COMMITTEE

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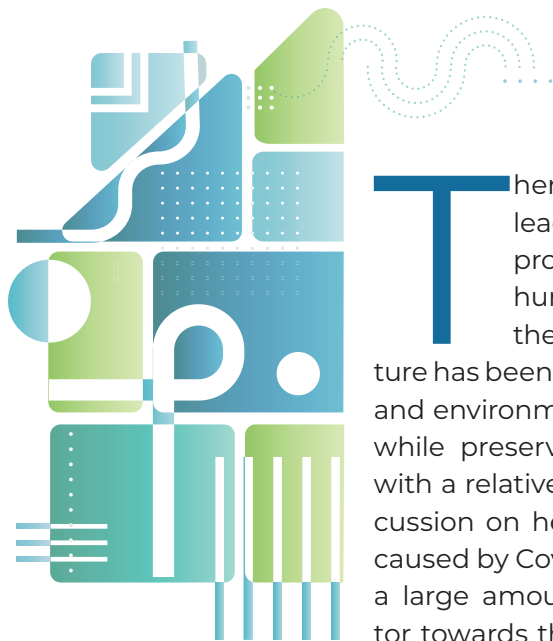
## ORGANIZING COMMITTEE

### COORDINATOR

*Luca A. Piterà* AiCARR General Secretary

*Marcello Tezze* AiCARR Territorial Delegate • *Claudio Zilio* Università di Padova • *AiCARR Secretary*

# WELCOME TO THE 52<sup>ND</sup> AiCARR INTERNATIONAL CONFERENCE



There is a general awareness of the leading role played by HVAC in improving the health and quality of humans' life. In the past, most of the attention in the scientific literature has been devoted to energy consumption and environmental impact of air conditioning while preserving the comfort of occupants with a relatively lower attention for the repercussion on health. Nowadays, the pandemic caused by Covid-2019 has dramatically shifted a large amount of efforts of the HVAC sector towards the key role of HVAC in reducing the risk of virus infection. The consequence of this perspective change is twofold. First, it represents a unique opportunity to properly address the potential benefits of HVAC also on other relevant pathologies (cardiac, respiratory, infection by other pathogens, among others) while improving the comfort and the person productivity, with the consequent social and economic advantages. Second, it may play a key role to accelerate the transition towards new environmentally friendly technologies in compliance with the 2030 agenda. In general, there is a clear need of new integrated approach for the equipment, systems





and building design under the paradigm of a healthy built environment. Starting from this consideration, the 52nd AiCARR International Conference will present contributions in the HVAC sector dealing with new components and systems, new design approaches, studies about the related impact on comfort and health of occupants and operators, new monitoring and control systems, insights about the relation between HVAC and pathologies or pathogens diffusion, environmental impact of the new technologies, economic and social consequences.

***English is the official language  
of the Conference.***

***Simultaneous translation (only ENG > ITA)  
is provided only in Auditorium***

*Professional credits  
required for the  
continuum training  
of Engineers and  
Industrial Specialist.  
The actual allocation  
of professional  
Credits are subject to  
approval by the CNI  
and CNPI*

# HOW TO REACH THE CONFERENCE VENUE



## VENUE

Vicenza is a town (population 115,000) 30 km West of Padua. From Vicenza it is possible to reach Venice in less than 30 min by train; the conference will be held at the Vicenza Campus of the Padua University School of Engineering. Vicenza is a thriving and cosmopolitan city, with a rich history and culture, and

many museums, art galleries, piazzas, villas, churches and elegant Renaissance palazzi. The considerable cultural interest of Vicenza is linked mainly to the name of the architect Andrea Palladio, responsible for numerous famous historical buildings in Vicenza, inspired by the classical art of the Greeks and Romans, revisited to suit the Veneto culture. Palladian architecture is considered a universal value that had an enormous influence all over the world and that is why Vicenza is included in UNESCO's World Heritage List.

<http://www.vicenzae.org/en/>

Vicenza is both an ancient city, already important in the Roman times, and a modern city, fully open to tourism and commercial exchanges. Vicenza is well known for the good weather especially in summer, the friendly people, the excellent cuisine, and its artistic relevance.

Vicenza counts with a large and diverse offering for lodgment. The city is completely flat. Walking, cycling along the city is very comfortable. Moreover, the city has a good public transport network which will allow the delegates to come to the university from any point in the city.



# TRANSPORTATION



## By Fly

The airports nearest to Vicenza are Venice Marco Polo (60 km from Vicenza) and Verona Catullo (50 km from Vicenza); both airports are served by many frequent international flights. From both Venice Marco Polo and Verona airport, it's about an hour's transfer (by bus then train) to Vicenza.

**Information on:** [www.atvo.it](http://www.atvo.it)  
[www.trenitalia.com](http://www.trenitalia.com)



## By Car

Vicenza is on the A4 (Milan-Venice) motorway, which is linked to the European motorway network.

**Motorway:** [Brescia/Verona/Vicenza/Padova spa](#)  
**Motorway:** BS-VR-VI-PD  
[www.muoversiavicenza.it](http://www.muoversiavicenza.it)



## By Train

Vicenza station is on the main Milan-Venice railway link, served by numerous international trains. Trenitalia Le Frece and Eurostar trains stop at Vicenza.

**Information on:** [www.trenitalia.com](http://www.trenitalia.com)



## Taxi Service

Vicenza Radio Taxi T. 0444 920600



# REGISTRATION ON LINE FEES

## IMPORTANT UPDATE

The 52<sup>nd</sup> AiCARR International Conference takes place in hybrid mode: **online** for all participants and in **presence** at the Vicenza headquarters of the University of Padua for those who request it.

## HOW TO REGISTER

You can register by paying the fee corresponding to online participation: if you intend to participate in presence in Vicenza please report it to the Organizing Secretariat by sending an email to [gabriellalichinchi@aicarr.org](mailto:gabriellalichinchi@aicarr.org).

The difference for the live participation can be paid by bank transfer after August 23<sup>rd</sup>; the Secretariat will communicate the modalities of participation in presence.

*The advance payment will make it possible to streamline the registration procedures at the desk during the Conference, avoiding queues and gatherings.*

ON LINE FEES	Early Bird by June 15, 2021	Standard Fees from June 16, 2021	On site after August 31, 2021
AiCARR, ASHRAE, IIR, REHVA Members and Speaker Members	€ 100,00	€ 150,00	€ 200,00
Non Member and Speaker non Members	€ 150,00	€ 200,00	€ 250,00
AiCARR, ASHRAE, IIR, REHVA Student Members	€ 50,00	€ 70,00	€ 70,00
Student non Members	€ 80,00	€ 100,00	€ 120,00

# REGISTRATION LIVE FEES

LIVE FEES	Early Bird by June 15, 2021	Standard Fees from June 16, 2021	On site after August 31, 2021
AiCARR, ASHRAE, IIR, REHVA Members	€ 400,00	€ 450,00	€ 500,00
Non Member	€ 550,00	€ 600,00	€ 650,00
AiCARR, ASHRAE, IIR, REHVA Speaker Members	€ 350,00	€ 400,00	€ 450,00
Non Members Speaker	€ 500,00	€ 550,00	€ 600,00
AiCARR, ASHRAE, IIR, REHVA Student Members	€ 80,00	€ 100,00	€ 120,00
Students non Memeber	€ 100,00	€ 120,00	€ 140,00
Accompanying person (in addition to a participant)	€ 100,00	€ 100,00	€ 100,00

## Professional training Credits for Engineers and Industrial Specialist ONLY FOR ON-LINE ATTENDEES

Please note that for the purpose of issuing professional training credits for participation in online events, all Engineers, Industrial Specialist who have applied for it during registration will have to follow the event for its entire duration (100% attention) as the platform used keeps track of the participant's attention. When using a double screen, switching from one screen to another is considered as lack of attention as well as displaying other pages or programs during the event.

The final report generated automatically by the platform at the end of the event gives evidence of the percentage of attention for each participant, and is the only valid attestation in case of control by the CNI and CNPI.



# GENERAL INFORMATION

## COVID PROTECTIVE MEASURES

We remind you that from August 6, 2021 **access is allowed** under the provisions outlined in art. 3 D.L. July 23, 2021 n. 105 on the subject of “COVID-19 Green Certifications”, **exclusively to those holding a COVID-19 green certification, upon its verification by the conference staff.** It is not planned to detect the temperature by thermo-scanner, however, **with the registration at the conference, the participant ipso facto accepts the general conditions of access to the University of Padua, as define by “Protocol contrast and containment virus SARS-Cov-2”** (downloadable from the QR CODE), which provides for the prohibition of access in the presence of flu symptoms such as fever above 37,5 °C.

It's mandatory to **hand over at registration desk the “selfcertification for access”** (downloadable from the QR CODE) duly compiled and signed together with a copy of an identification document or company badge with photo. (It will not be possible to make photocopies on site)

**Finally, we remind you of the respect of other measures to contain the contagion, including the obligation to always wear the mask during the conference, to maintain the safety distances, to provide frequent hand sanitization, and avoid handshakes and hugs.**

## CONFERENCE VENUE

The 52<sup>nd</sup> AiCARR International Conference will be hosted in Padua University Vicenza Campus. Viale Margherita 87, Vicenza Italy.

## LANGUAGE



**Official Language is English. All papers will be presented in English. Simultaneous translation ENG > ITA is provided only in Auditorium.**

## BADGE

The identification badge delivered by e-mail to participants and their registrated companions must be printed and shown at the accreditation desk and exhibited during conference days o get admittance ti the conference rooms and all other events.



# GENERAL INFORMATION

## REGISTRATION

Ground Floor c/o Auditorium Padua University Vicenza Campus.  
Viale Margherita 87, Vicenza Italy.

### **FRIDAY SEPTEMBER 3**

**12.00 a.m. - 5.30 p.m.**

### **SATURDAY SEPTEMBER 4**

**8.00 a.m. - 12.30 p.m.**

## ACCOMODATIONS

### **HOTELS 4 STARS**

Glam Boutique Hotel (about 300 m far) 17 rooms 120-150 €  
Campo Marzio (about 1 km far) 35 rooms 100-120 €  
NH Jolly Tiepolo (about 3 km far) 113 rooms 80-100 €  
AC Hotel Vicenza, Marriott (about 4.5 km far) 125 rooms 80-100 €  
Palazzo Scamozzi (about 1.3 km far) 28 rooms 100-160 €

### **HOTELS 3 STARS**

Key Hotel (about 500 m far) 53 rooms 70-90 €  
Hotel Cristina (1.2 km far) 33 rooms 70-90 €  
Hotel Doge (about 2 km far) 30 rooms 70-90 €  
Hotel Verdi (about 3 km far) 51 rooms 60-80 €

### **HOTELS 2 STARS**

Hotel Due Mori (450 m far) 30 rooms 60-80 €  
Albergo San Raffaele (about 1 km far) 29 rooms 60-80 €  
Hotel La Terrazza (about 1.5 km far) 18 rooms 60-80 €  
Albergo Acampora (about 2 km far) 10 rooms 50-70 €

### **YOUTH HOSTEL**

Ostello Olimpico (300 m) 21 rooms 40-50 €

## AUDITORIUM

**2.00 p.m. PARTICIPANTS REGISTRATION****2.30 p.m. WELCOME ADDRESSES AND OPEN CEREMONY***Filippo Busato*, AiCARR President*Mario Roberto Carraro*, Foundation for University Studies President*Ginger Scoggins*, ASHRAE Treasurer**3.00 p.m. VENTILATION AND ENERGY EFFICIENCIES IN AIR SYSTEMS FOR FUTURE BUILDINGS: A FOUR DIMENSIONS APPROACH***Filippo Busato*, AiCARR President*Federico Pedranzini*, Energy Department, Politecnico di Milano, MI**3.55 p.m. Public Health: Issues and strategies to be applied in the COVID era***Fabrizio Pregliasco*, Università degli Studi di Milano IRCCS Galeazzi Milano**SESSION 1: RESEARCH, ENERGY EFFICIENCY AND SUSTAINABILITY***Chair: Claudio Zilio, President of AiCARR Conference Commission***4.45 p.m. Fifteen years of research in innovative HVAC plants at DTG***Giacomo Bagarella*, Aermec S.p.A. - Bevilacqua, VR*Filippo Busato*, Università Mercatorum - Roma, RM*Francesco. Castellotti, Fabio Minchio*, 3F Engineering, Verona, VR*Andrea D'Ascanio*, Sinergia S.C., Vicenza, VI*Renato Lazzarin*, Retired at DTG, VI*Daniele Nardotto*, E-skin S.r.l., Vicenza, VI*Marco Noro*, Department of Management and Engineering (DTG), Università di Padova - Vicenza, VI*L. Zamboni*, Stefani S.p.A., Castegnero, VI



## AUDITORIUM

5.00 p.m.

**Fifteen years of research in sustainable energy systems at DTG***Giacomo Bagarella*, Aermec S.p.A. - Bevilacqua, VR*Filippo Busato*, Università Mercatorum - Roma, RM*Francesco Castellotti*, Fabio Minchio, 3F Engineering, Verona, VR*Andrea D'Ascanio*, Sinergia S.C., Vicenza, VI*Renato Lazzarin*, Retired at DTG, VI*Daniele Nardotto*, E-skin S.r.l., Vicenza, VI*Marco Noro*, Department of Management and Engineering (DTG), Università di Padova - Vicenza, VI*L. Zamboni*, Stefani S.p.A., Castegnero, VI

5.15 p.m.

**The CORE-CARE laboratory to investigate the indoor environmental quality in buildings***Marco Marigo*, *Giulia Alessio*, *Sara Bordinon*, *Enrico**Prataviaiera*, *Laura Carnieletto* *Beatrice Biasia*, *Antonino**Di Bella*, *Michele De Carli*, *Angelo Zarrella*, Department of Industrial Engineering, Università degli Studi di Padova, PD

5.30 p.m.

**Efficiency of hybrid ventilation on cooling energy savings in NZEBs***Roberto Stasi*, *Francesco Ruggiero*, Department of Civil Engineering and Architecture, Polytechnic University of Bari, DICAR*Umberto Berardi*, Department of Architectural Science, Ryerson University, Toronto, Canada

5.45 p.m.

**Energy and economic sustainability in the renewal of centralized heating systems using hybrid heat pump systems***Federico Tomas*, Product Manager Junior, Baxi S.p.A. Bassano del Grappa, VI*Alberto Dal Cason*, Head of Commercial Product Management, Baxi S.p.A.; Bassano del Grappa, VI

6.00 p.m.

**The public energy living lab for hospitals: a new standardized solution for the digitalization of strategic infrastructures (Short Presentation)**

*Matteo Caldera, Laura Biaso, Giuseppina Giuliani, Nicoletta Gozo, Laboratorio Smart Cities and Communities, ENEA, Roma*

6.05 p.m.

**Air cleaners technology & IAQ benefits (Short Presentation)**

*Juan Josè Francisco Diez, Carrier HVAC EU  
Antonio Maria Ragni, Carrier Italy*

6.10 p.m.

**Q&A**

6.30 p.m.

**END OF THE SESSION**

### AUDITORIUM

**8.00 a.m.** PARTICIPANTS REGISTRATION

**8.15 a.m.** **WELCOME ADDRESSES**  
*Filippo Busato*, AiCARR President

**8.30 a.m.** **IAQ and Ventilation in buildings: why to change?**

*Cesare Maria Joppolo*, Energy Department,  
Politecnico di Milano

### SESSION 2: NEW MONITORING AND CONTROL SYSTEMS

*Chair: Marco Noro, Department of Management and Engineering (DTG), Università di Padova - Vicenza, VI*

**9.15 a.m.** **How IoT and Artificial Intelligence can improve energy efficiency in hospitals - a North Italian case study**

*Riccardo Frassanito, Tiziana Buso, Stephanie Aumann*,  
Enerbrain S.r.l. - Torino

*Jacopo Toniolo*, Dipartimento Interateneo di Scienze,  
Progetto e Politiche del Territorio, Politecnico di Torino, TO

*Paolo Albrici, Pietro Canevari, Matteo Iemmi, Francesca Mapelli*, Edison S.p.A. Divisione Servizi Energetici ed Ambientali, MI

**9.30 a.m.** **Uffizi Gallery monitoring for IAQ assessment**  
**Cristina Carletti, Gianfranco Cellai, Fabio Sciarpi, DIDA**  
**University of Florence**

*Cristina Piselli*, CIRIAF - Università di Perugia, PG

*Giuseppe Russo*, Eike D. Schmidt, Uffizi Gallery, Florence, FI

9.45 a.m.

**Implementation of an AI ready BACS system in Treviso school with DCV/Demand Control Ventilation**

*Massimiliano Magri*, CosterGroup s.r.l.

*Fabio Fabris*, Province of Treviso, TV

*Sandro Michielin*, Province of Treviso,  
former Studio DBA Progetti, TV

10.00 a.m.

**Sustainable buildings with indoor high quality: the role of building automation (Short Presentation)**

*Massimo Valerii*, KNX Italia, Milano, MI

10.05 a.m.

**Q&A**

10.15 a.m.

**COFFEE BREAK**

## AUDITORIUM

### SESSION 3 - HVAC IMPACT ON COMFORT AND HEALTH OF OCCUPANTS AND OPERATORS

*Chair: Cesare Maria Joppolo - Politecnico di Milano*

10.45 a.m.

**A zonal model for assessing the infection risk distribution of COVID-19 in indoor environments**

*Marco Marigo, Giacomo Tognon, Michele De Carli, Angelo Zarrella, Department of Industrial Engineering, Università degli Studi di Padova, PD*

11.00 a.m.

**The importance of recirculation air filtration in containment of SARS-CoV-2 contagion: the role of photocatalytic filters installed in the fan coils**

*Michele Vio, Consultant - Venezia, Italy  
Alessio Gattone, AERMEC - Bevilacqua, VR*

11.15 a.m.

**Application of Mobile Air Cleaning Devices in daily school routines**

*Ralph Krause, Christian Friebe, Ralf Heidenreich, Institut für Luft- und Kältetechnik gGmbH, Dresden, Germany*

11.30 a.m.

**Test Procedures of Mobile Air Cleaning Devices - First Experiences and Results**

*Christian Friebe, Ralph Krause, Ralf Heidenreich, Stefan Holfeld, Hannes Rosenbaum, Karsten Hackeschmidt – Rebekka Grüttner, Institut für Luft- und Kältetechnik gGmbH – Dresden, Germany*

11.45 a.m.

**Comparative study of purifications technologies and their application to HVAC systems**

*Davide Truffo*, Airzone Italia - Cormano, Italy  
*José Miguel Peña Suárez, Juan Bandera Cantalejo, María del Carmen González Muriano*, Corporación Empresarial Altra S.L. – Málaga, Spain  
*Francisco García Vacas*, Mechanical Engineering Group of the University of Malaga – Málaga, Spain  
*Francisco Hernández Fernández*, Energy Group of the University of Malaga – Málaga, Spain

12.00 p.m.

**Analysis of the obligations for the assessment of the health risks related to the hygiene of air conditioning systems in indoor workplaces, with reference to the Risk Assessment Document (DVR) and to the microclimate conditions.**

*Jacques Gandini*, Managing Director of GANDINI S.R.L. - Renewable Energies in HVAC & nearly Zero Energy Buildings Consulting – Legnago, VR

12.15 p.m.

**Electronic active polarized-media technology: reduction of airborne contaminants, energy efficiency and maintenance of HVAC (Short Presentation)**

*Gianni Busso*, Aerpura S.r.l. – Bra, CN

12.20 p.m.

**Q&A**

12.30 p.m.

**LIGHT LUNCH**

AUDITORIUM

**1.30 a.m. The future of HVAC in a season of plagues**

*William Bahnfleth*, ASHRAE - Pennsylvania State University  
USA

**SESSION 4 - NEW HVAC COMPONENTS AND SYSTEMS**

*Chair: Filippo Busato, AiCARR President*

**2.15 p.m.**

**Solutions for full-outdoor-air operation of air rooftop units with direct expansion circuit and integrated recirculation**

*Federico Pedranzini*, Energy Department - Politecnico di Milano, MI

*Lorenzo Cavina*, Hera S.p.A – Bologna, BO

*Andrea De Piccoli, Damiano Rossi*, Clivet S.p.A. – Feltre, BL

**2.30 p.m.**

**A2L low GWP HFO based refrigerant solutions in Heat Pump Applications to drive Energy Efficiency, Safety and Sustainability even in Building Restoration**

*Hans-Dieter Küpper*, Chemours Deutschland GmbH, Neu-Isenburg, Germany

*Alessandro Pianetti*, Chemours Italy S.r.l., Agrate Brianza, MB

*Samer Saab*, Chemours France SAS, Villers Saint Paul, Rieux, France

**2.45 p.m.**

**Systems layouts with additional heat storages for low-temperature PVT collectors assisting Heat Pumps for DHW production**

*Francesca Martorana, Marina Bonomolo, Giuliana Leone, Marco Beccali*, Department of Engineering, University of Palermo, PA

*Biagio Di Pietra*, ENEA - Dipartimento Unità per l'Efficienza Energetica (DUEE), Roma, Italy

**3.00 p.m.**

**Benefits of a hygienic, efficient and smart solution for ventilation systems in the era of the "New Normal"**

*Andrea Pagan, Raul Simonetti*, Carel Industries .Sp.A. – Brugine, PD

3.15 p.m.

**Modelling of heat generators: technical standards vs detailed dynamic simulation tools**

*Franz Bianco, Mauthe Degerfeld, Giovanna De Luca, Ilaria Ballarini, Vincenzo Corrado*, Department of Energy, Politecnico di Torino, TO

3.30 p.m.

**Manufacture and installation problems in modular heat generators**

*Fabio Badolato, Roberto Longo*, INAIL – Unità Operativa Territoriale of Catanzaro, CZ

*Maria Oss*, INAIL - Unità Operativa Territoriale of Bolzano, BZ

3.45 p.m.

**White light photocatalysis for sanitization h24 HVAC systems (Short Presentation)**

*Giovanni Balli*, Free-lance Professional, Bruxelles (Belgio)

3.50 p.m.

**Q&A**

4.15 p.m.

**COFFEE BREAK**





## SEMINAR AiCARR/ASHRAE GROUP

### ROOM VM1

2.30 p.m. **ZEB AND DECARBONISATION: STRATEGIES AND PATHWAYS**

*Chair: Cesare Maria Joppolo, AAGroup Executive Committee member - AiCARR Ex-President - Politecnico di Milano*

2.15 p.m. **WELCOME ADDRESSES AND OPEN SEMINAR**

*Filippo Busato, AiCARR President*

*Cesare Maria Joppolo, AAGroup Executive Committee member - AiCARR Ex-President - Politecnico di Milano*

*Ginger Scoggins, ASHRAE Treasurer and Chair of the ASHRAE Building Ad-Hoc Committee PE, CxA, CEM, LEED AP is the President of Engineered Designs, Inc.*

2.30 p.m. **A Case Study - The renovation of ASHRAE's new net-zero Headquarters**

*Ginger Scoggins, ASHRAE Treasurer and Chair of the ASHRAE Building Ad-Hoc Committee PE, CxA, CEM, LEED AP is the President of Engineered Designs, Inc.*

3.00 p.m. **European Nearly Zero Energy Building toward decarbonization**

*Livio Mazzarella, REHVA COP Group Chair, Politecnico di Milano*

3.30 p.m. **ZEB and Decarbonisation: strategies, political and economic perspective**

*Livio de Santoli, AiCARR Ex-President, Università di Roma, La Sapienza*

4.00 p.m. **Q&A**

4.15 p.m. **Closing of the Seminar**

AUDITORIUM

SESSION 5 - NEW HVAC COMPONENTS AND BUILDINGS SYSTEMS

*Chair: Ilaria Ballarini, Department of Energy - Politecnico di Torino*

4.30 p.m.

**Human behaviours: new paradigms of energy efficiency. Communication tools to deliver a technical message to non-experts**

*Benedetta Gaglioppa*, Free-lance Professional, Trambileno, TN

*Federica Tabone*, Free-lance Professional, Nove, VI

4.45 p.m.

**The impact of mechanical ventilation systems on acoustic quality in school environments**

*Fabio Serpilli, Costanzo Di Perna, Samantha Di Loreto, Valter Lori*, Department DIISM Università Politecnica delle Marche, Ancona, AN

5.00 p.m.

**Energy-saving potential deriving from the use of a manifold with flow rate dynamic balancing**

*Roberto Torreggiani*, Chief Engineer, Engineering Dept. Giacomini S.p.A. San Maurizio D'Opaglio, Novara, NO

*Stefano Paolo Corgnati*, Full Professor of Building Physics Energy Dept., Politecnico di Torino, TO

5.15 p.m.

**Model and simulation of multi-functional variable refrigerant flow systems in Energy Plus**

*Maria Muñoz de la Peña, Luca Molinaroli*, Energy Department, Politecnico di Milano, MI

*Barbara Torregrosa, Gaspar Paya*, CYPE Ingenieros S.A. Alicante, Spain

5.30 p.m.

**Tiled roofs air permeability: experimental and numerical investigation**

*Eleonora Baccega, Michele Bottarelli, Giovanni Zannoni*, Department of Architecture, Università di Ferrara, FE

5.45 p.m.

**Q&A**

6.10 p.m.

**CONFERENCE CLOSING**

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Adatto per uffici, hotel, assistenza sanitaria e industria





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[www.swegon.com](http://www.swegon.com)



Swegon Group AB is a market leading supplier in the field of indoor environment, offering solutions for ventilation, heating, cooling and climate optimisation, as well as connected services and expert technical support. Swegon has subsidiaries in and distributors all over the world, 16 production plants and employs 2.600 people.

### **Our purpose in the world**

We enable healthy and comfortable indoor environments for people to be at their best, today and tomorrow.

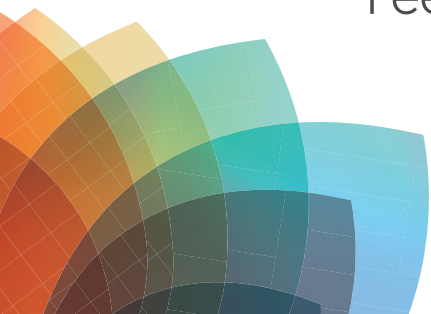
### **Our promise to our customers**

We are partners for indoor environment solutions that work exactly as desired, adding value from project start to finish, and beyond.

### **Beautiful, inside and out**



Feel good **inside**





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# Use of PPE for containment and management of the SARS-CoV-2 epidemiological emergency

ed. April 1, 2020

## Purpose and scope

The following procedures are aimed at providing instructions for the use of Personal Protection Equipment (PPE) made available to University employees to prevent the spread of the SARS-CoV-2 epidemiological emergency.

In particular, the use of disposable mask and disposable gloves is described.

## References

The Law Decree of March 17, 2020 no.18, Art. 16 -Further protective measures for workers and the community, paragraph 1.

President of the Council of Ministers Decree of April 26, 2020, “further implements the provisions of the Law Decree of February 23, 2020, no. 6, includes the urgent measures on the matter for the containment and management of the COVID-19 epidemiological emergency as it is applicable to the entire national territory”, Attachment no. 6 “Shared protocols regulating the measures to combat and contain the spread of the COVID-19 virus in the workplace between the Government and the social partners” of April 24, 2020, point 6 -Personal Protective Equipment (PPE).

## Instruction for the use of PPE

The available PPE kits, in relation to what is indicated for the management of the COVID-19 epidemiological emergency, is composed of:

- disposable mask
- disposable gloves

### PPE must be applied in the following sequence:

1. disposable mask
2. disposable gloves

### PPE must be removed in the following sequence:

1. disposable gloves
2. disposable mask



# Protective Hygienic Measures Against the Spread of **CORONAVIRUS**



WASH YOUR HANDS FREQUENTLY  
WITH SOAP & WATER OR USE AN  
ALCOHOL-BASED GEL HAND SANITIZER



WEAR A FACE MASK



AVOID TOUCHING YOUR EYES,  
NOSE, AND MOUTH WITH YOUR HANDS



COVER NOSE AND MOUTH WITH  
A TISSUE WHEN YOU SNEEZE OR COUGH



SOCIAL DISTANCING, MAINTAIN  
AT LEAST 1-METER DISTANCE  
BETWEEN OTHERS



IT IS NOT ADVISED  
TO USE ELEVATORS



AVOID SHAKING  
HANDS OR HUGGING



WASH SURFACES WITH ALCOHOL  
OR CHLORINE BASED DISINFECTANT



AVOID SHARING  
CUPS OR BOTTLES



DO NOT TAKE ANTIVIRAL  
OR ANTIBIOTIC MEDICINES  
IF NOT PRESCRIBED BY YOUR DOCTOR

AVOID CLOSE CONTACT WITH PEOPLE WHO SUFFER FROM ACUTE RESPIRATORY INFECTIONS

Stay home if you have any flu-like symptoms, do not go to the emergency room, rather contact your doctor or call the toll-free Veneto Region medical emergency number **800 462 340**, or the public number **1500**.

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**800**  
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[UNIPD.IT/COVID19](https://unipd.it/covid19)

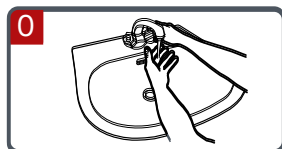
[UNIPD.IT/CIRCOLARI-CORONAVIRUS](https://unipd.it/circolari-coronavirus)

# HOW TO HANDWASH?

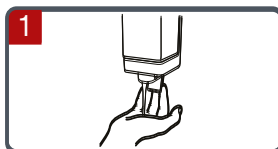
Wash hands when visibly soiled  
Otherwise, use handrub



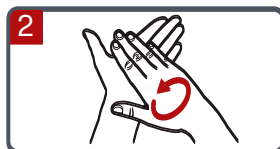
**DURATION OF THE ENTIRE PROCEDURE:**  
40-60 SECONDS



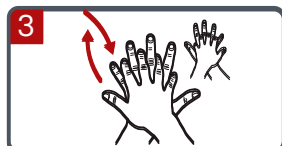
**WET HANDS WITH WATER**



**APPLY ENOUGH SOAP TO COVER  
ALL HAND SURFACES**



**RUB HANDS PALM TO PALM**



**RIGHT PALM OVER LEFT DORSUM WITH  
INTERLACED FINGERS AND VICE VERSA**



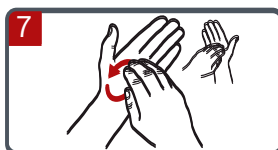
**PALM TO PALM WITH FINGERS  
INTERLACED**



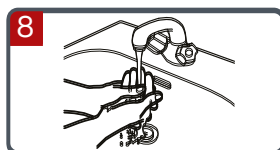
**BACKS OF FINGERS TO OPPOSING  
PALMS WITH FINGERS INTERLOCKED**



**ROTATIONAL RUBBING OF LEFT THUMB  
CLASPED IN RIGHT PALM  
AND VICE VERSA**



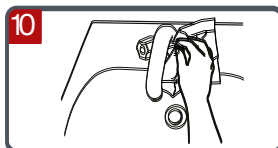
**ROTATIONAL RUBBING, BACKWARDS  
AND FORWARDS WITH CLASPED FINGERS  
OF RIGHT HAND IN LEFT PALM  
AND VICE VERSA**



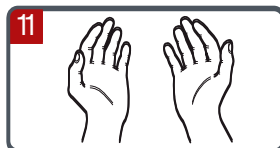
**RINSE HANDS WITH WATER**



**DRY HANDS THOROUGHLY WITH  
A SINGLE USE TOWEL**



**USE TOWEL TO TURN OFF FAUCET**



**YOUR HANDS ARE NOW SAFE**

Source: World Health Organization

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[UNIPD.IT/COVID19](https://unipd.it/covid19)

[UNIPD.IT/CIRCOLARI-CORONAVIRUS](https://unipd.it/circolari-coronavirus)



# HOW TO HANDRUB?

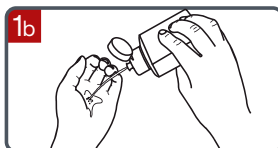
Rub hands for hand hygiene!  
Wash hands when visibly soiled!



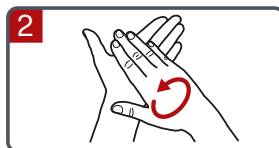
DURATION OF THE ENTIRE PROCEDURE: 20-30 SECONDS



1a  
APPLY A PALMFUL OF THE PRODUCT IN A CUPPED HAND, COVERING ALL SURFACES

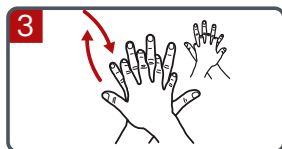


1b



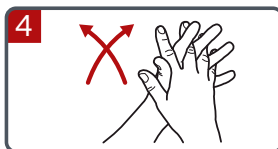
2

RUB HANDS  
PALM TO PALM



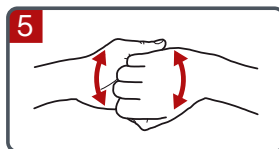
3

RIGHT PALM OVER LEFT DORSUM WITH  
INTERLACED FINGERS AND VICE VERSA



4

PALM TO PALM WITH FINGERS  
INTERLACED



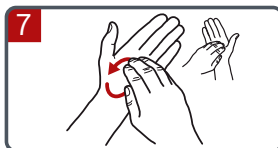
5

BACKS OF FINGERS TO OPPOSING  
PALMS WITH FINGERS INTERLOCKED



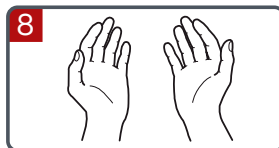
6

ROTATIONAL RUBBING OF LEFT THUMB  
CLASPED IN RIGHT PALM  
AND VICE VERSA



7

ROTATIONAL RUBBING, BACKWARDS  
AND FORWARDS WITH CLASPED FINGERS  
OF RIGHT HAND IN LEFT PALM  
AND VICE VERSA



8

ONCE DRY,  
YOUR HANDS ARE SAFE

Source: World Health Organization

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[illegible]

# GENERATING IDEAS FOR SUSTAINABLE ENERGY

AiCARR, the cultural network for energy efficiency in HVAC, creates and promotes the culture and technology for sustainable well-being, and contributes to the advancement of HVAC technology and to the definition of regulations for the production, distribution and use of energy for heating, cooling and air conditioning in buildings.

Founded in 1960 by Italian ASHRAE Members, AiCARR has near 2000 Members including designers, professors, installers and maintainers, manufacturing companies, government agencies, local, national and international institutions, students and researchers.

The authoritative presence in all academic and institutional bodies where the Country's energy future is designed makes AiCARR an essential reference point for the development of energy strategies and policies and an indispensable interlocutor for all those who deal with energy efficiency, environmental quality, renewable sources, conscious use of energy.

## SHARED COMPETENCES ARE BEHIND EVERY PROGRESS

Increasing the technical culture of the industry and the professionalism of Members, sharing the technological and scientific knowledge, preparing and spreading guidelines that help Members in their professional practice, giving solid support to the business world that deals with energy issues are the main commitments that AiCARR carries out through:

- National and International conferences, webinars, seminars, workshops and round tables
- Technical meetings and visits to facilities and cutting-edge plants
- Study commissions and coordination of technical, cultural and regulatory activities
- Technical committees active on specific issues
- Joint activities with Italian and international Associations, Universities, Italian and European authorities, both public and private

- Work groups created to give operational support to Institutions
- Participation in the definition of regulations, laws, guidelines and collaboration in the drafting of technical standards with the most important organizations for standardization.

## UPDATING AND TRAINING: A MUST

Keeping pace with technological development and the evolution of regulations it is today a condition of survival for professionals and companies in the industry. AiCARR offers high standard theory and practical courses through AiCARR Formazione, business unit of AiCARR Educational srl, a ISO 9001: 2015 certified company.

AiCARR Formazione is a provider of CNII and of CNPI (national councils for engineers and technical experts) for continuing professional education credits. The courses are aimed at designers, maintenance technicians, technical and sales staff of organizations and industries, students and researchers. Teachers are academics and professionals selected among the best experts in the field of HVAC&R.

## WHEN IDEAS GO AROUND, THEY BECOME MORE POWERFUL

AiCARR publishes the records of all conferences and the AiCARR technical book series which includes Volumes, Guides, Manuals and Vademecums, sends the fortnightly newsletter on associative, editorial, regulatory, legislative and training news and is the exclusive distributors for Italy of ASHRAE publications and standards, applying to Members favorable conditions for the purchase of the CEI (Italian electro-technical committee) regulations and discounts on publications by important technical publishers. The Association's library offers a wide selection of technical and scientific texts in free consultation. Moreover, on website [www.aicarr.org](http://www.aicarr.org), and through the App downloadable from Google Play, it is possible to find technical articles and news.

Members also receive AiCARR Journal, official magazine of the Association, for free.

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