

Case study #4: COVID19 + swimming pool ventilation

Air Handling Units for Pool Dehumidification: What should I pay attention to?

Remember



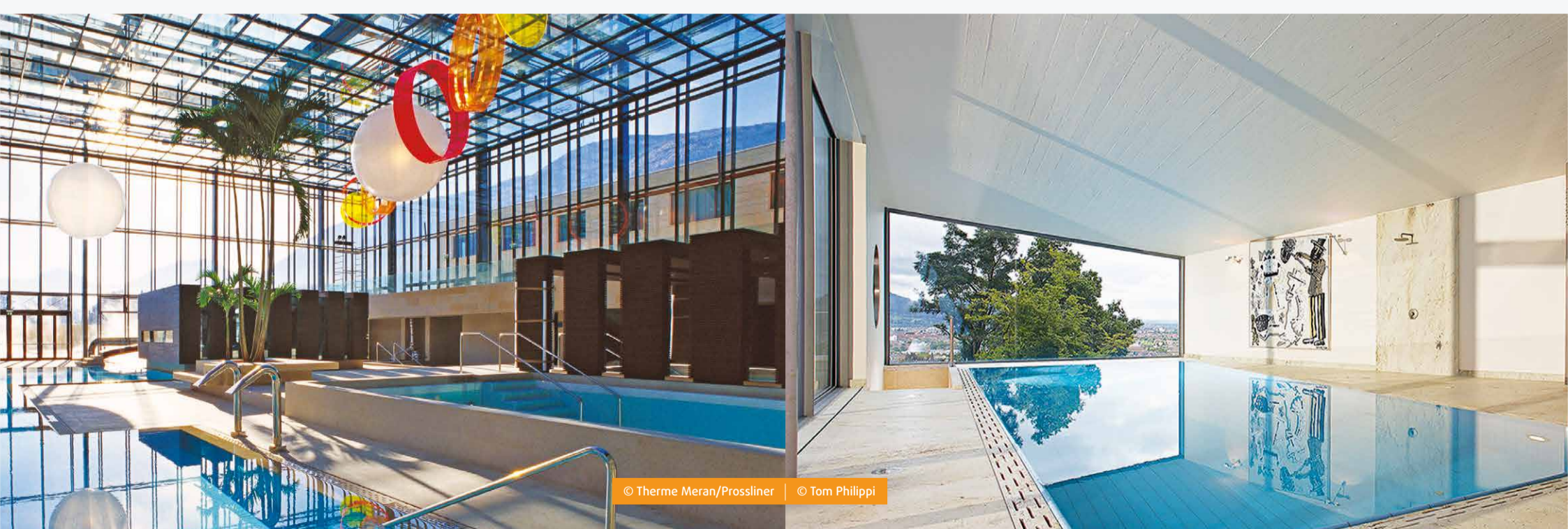
Good/healthy indoor air quality
More essential than ever

Correctly maintained/operated HVAC solutions → Key – not least because of COVID19

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Good to know

- Compared to “conventional” public buildings (e.g. schools, offices or administration buildings), difference = presence of bathing water → Leads to special requirements for operation of such buildings
- Indoor pool halls are tiled in almost all areas accessible to bathers → They are regularly cleaned mechanically and disinfected
- If water is treated correctly, including the disinfection system → Viruses are reliably killed by chlorine according to current knowledge
- If all applicable distance rules are adhered to + personal hygiene rules are followed → Risk of getting an infection in swimming pools is not higher than in other facilities



Hands-on recommendations

Recommendations apply to:

Operators of public swimming pools + operation of privately used swimming pools

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Maintain minimum humidity levels

- Continuous pool water evaporation ensures enough moisture to achieve relative humidity of supply air between 40-60%
- In this moisture range → Risk of transmission is reduced
- If pool covers are available, they should not be used for the time being → Allows for sufficient humidification potential to be available also during idle operating mode
- If room temperature control based on the pool water temperature is available → Set setpoint $\geq 2\text{K}$ above pool water temperature

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Adjust air volume

- Amount of recirculation air shall be reduced in general to support higher share of outdoor air
- Avoid operation of recirculation dehumidification, which is available in various AHUs for pool applications
- Unit shall be permanently operated in bath mode (24/7) → In this way, dehumidification is primarily carried out with outdoor air all day long



Expert advice

Check AHU's control parameter

- If AHU control system contains humidity shift, it is advisable to deactivate this function for time being → Prevents excessive humidity in swimming pool hall
- Check target values for room temperature & humidity, adjust them if necessary
- Maintain regular maintenance intervals
- Additional filter changes have no discernible effect on virus containment in case technicians consider recommendation VDI 6022 and VDI 3810-4

Measures for long-term closure of public swimming pools halls

- Usually: Pool water heating system is reduced during medium to long-term closure for energy saving reasons + to reduce risk of germs
- Room air temperature setpoint can be lowered considering above-mentioned dependency on pool water temperature
- AHU can be operated in idle mode
- Deactivate humidity shift function in control system, if available
- To protect building envelope, it is recommended to activate bathing mode for min. two hours/day

References

Date accessed:
2020-04-23

- (1) https://www.baederportal.com/fileadmin/user_upload/DGfdB_Fachbericht_Pandemieplan_Baeder.pdf
- (2) https://www.umweltbundesamt.de/sites/default/files/medien/374/dokumente/stellungnahme_uba_sars-co2_badebecken.pdf
- (3) https://downloads.fgk.de/139_SR8_Fragen_u_Antworten_Raumluftfeuchte_V9_190923.pdf
- (4) <https://www.vdi.de/news/detail/die-keimkonzentration-reduzieren>

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