TC5.5 Standards S/C Meeting Agenda

2021/07/16 10:00 – 11:00 CT (UTC -5)

Chair: Matthew Friedlander

1. Call to Order (Chair)
2. Appointment of Secretary
3. Approve Agenda
4. Errata to Standard 84:2020 (for information)
5. Review of standards recommendations from TC5.5 Annual Meeting 2021/06/22
6. Develop a workplan: work product is a set of recommendations to be presented to the TC at or before the 2022 Winter Meeting in Las Vegas (likely date 2022/2/1)
7. Discuss membership
8. New Business
9. Adjourn

Attached:

Standards Recommendations from TC5.5 Annual Meeting 2021/06/22

Errata Standard 84:2020

From presentation to TC5.5 Annual Meeting 2021/06/22

Standards Recommendations

- Standard 84, immediate:
  - Issue the erratum, coordinate process with AHRI 1060 revision
  - Looking for a few members of the old SPC to review and correct the corrections.
- Standard 84: future.
  - Evaluate whether Standard 84 fully supports pumped run-around loop exchangers, determine whether additional qualification of capacity rate in the pumped fluid is needed, consider whether such exchangers can be tested as components or must instead be evaluated as systems, etc.
  - Consider development of a pressure withstand metric.
  - Consider whether the current informative annex on Field Testing can be developed to the point that it can be made normative.
- Consider development of a test and rating method related to frosting
  - Formation: the conditions at which steady-state operation of the exchanger cannot be maintained due to formation of frost.
  - Prevention: the capacity of specific defrost systems to prevent or recover from frosting.
- Monitor changing conditions and emerging technologies requiring new or modified Standards:
  - Research Project 1780 “Test method to evaluate cross-contamination of gaseous contaminant within total energy recovery wheels” (for laboratory ventilation) to see whether this brings to light new information that might be relevant to a Standard.
  - Global standards relating to ERV.
- When justified, recommend re-opening Standard 84 and/or developing a new Standard as appropriate.
- → Strategic Decision: When should an SPC be formed?

ERRATA SHEET FOR
ANSI/ASHRAE STANDARD 84-2020
Method of Testing Air-to-Air Heat/Energy Exchangers

July 1, 2021

The corrections listed in this errata sheet apply to the first printing of ANSI/ASHRAE Standard 84-2020. The outside back cover marking identifying the first printing is "Product code: 86220 4/20".

Page	Erratum
6	**Equations (8) and (9).** Add the terms for flow rates for Equations 8 and 9 as shown below. *(Note: Additions are shown in underline.)*

where

h_n = enthalpy at Station *n*, kJ/kg

Δp_s and Δp_e = pressure drops across the supply and exhaust sides of the exchanger, respectively, Pa

Q_2 and Q_3 = supply and exhaust side volume flow rates, respectively, m^3/s where $Q_2 = \dot{m}_2/\rho_2$ and $Q_3 = \dot{m}_3/\rho_3$, respectively.

$\dot{m}_2$ = mass flow rate at station 2, kg/s

$\dot{m}_3$ = mass flow rate at station 3, kg/s

η_{fs} and η_{fe} = supply and exhaust air fan and drive total efficiencies, respectively, ratio

q_{aux} = auxiliary total power input to the exchanger, kW [***Informative Note:*** The power used to rotate a regenerative wheel is one example of q_{aux}.]

ρ_2 and ρ_3 = supply and exhaust air dry-air density, respectively, kg/m^3

Page	Erratum
6, 7	**Equations (10) and (11).** Add the terms for flow rates for Equations 10 and 11 as shown below. *(Note: Additions are shown in underline.)*

where

h_n = enthalpy at Station *n*, Btu/lb_m

Δp_s and Δp_e = air friction pressure drops across the supply and exhaust sides of the exchanger, respectively, in. of water

Q_2 and Q_3 = supply and exhaust side volume flow rates, respectively, ft^3/min where $Q_2 = \dot{m}_2/\rho_2$ and $Q_3 = \dot{m}_3/\rho_3$, respectively.

$\dot{m}_2$ = mass flow rate at station 2, ft^3/min

$\dot{m}_3$ = mass flow rate at station 3, ft^3/min

η_{fs} and η_{fe} = supply and exhaust air fan and drive total efficiencies, ratio

q_{aux} = auxiliary total power input to the exchanger, kW [*Informative Note:* The power used to rotate a regenerative wheel is one example of q_{aux}.]

ρ_2 and ρ_3 = supply and exhaust air dry-air density, respectively, lb_m/ft^3

10 **Equation (23).** Add the missing term "< 0.20" to Equation 23 so it reads as shown below.

$$\frac{|\dot{m}_1 c_{p,1} t_1 - \dot{m}_2 c_{p,2} t_2 + \dot{m}_3 c_{p,3} t_3 - \dot{m}_4 c_{p,4} t_4|}{(\dot{m} \cdot c_p)_{minimum} \, |t_1 - t_3|} < 0.20$$

10 **Equation (25).** Revise the terms for Equation 25 as shown below.
(Note: Additions are shown in underline and deletions are shown in ~~strikethrough~~.)

where

~~$Q_{condensate} = \dot{m}_{condensate}[c_p t_{condensate}]$~~

$Q_{condensate} = \dot{m}_{condensate}[c_{p,condensate} \cdot t_{condensate}]$

$c_{p,condensate}$ = specific heat of liquid water, kJ/(kg·K) [BTU/(lb_m·°F)]

$\dot{m}_{condensate}$ = measured condensate flow rate at steady-state conditions during the test, kg/s [lb/hr]

$\dot{m}_{1,2,3,4}$ = mass flow rate at stations 1 through 4, kg/s [lb/hr]

$t_{condensate}$ = measured temperature of the condensate °C [°F]

19 **11.1 Symbols (SI [I-P]).** Add $c_{p,\,condensate}$ to Section 11.1 symbols as shown below.
(Note: Additions are shown in underline.)

$c_{p,condensate}$ = specific heat of liquid water, kJ/(kg·K) [BTU/(lb_m·°F)]