



This is to certify that

Samuel Ruf

has successfully completed

ASHRAE Standard 15-2022 (2023)

APP-CMC090-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

ASHRAE Standard 15-2019 (2021)

APP-CMC079-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Acoustics for the Indoor Environment (2025)

APP-CMC094-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Air Cleaning Technologies for Indoor Air Quality

(2021) APP-CMC078-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Delivering Performance from Airside Economizers

(2016) APP-CMC058-EN

April 18, 2025

1 PDH, LEED general



This is to certify that

Samuel Ruf

has successfully completed

Air to Air Recovery Course (2012) APP-CMC046-EN

April 18, 2025

1.5 PDH, LEED general



This is to certify that

Samuel Ruf

has successfully completed

State-of-the-Art Air-to-Air Energy Recovery (2023)

APP-CMC087-EN

June 2, 2024

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Air-to-Water Heat Pump System Design (2022)

APP-CMC082-EN

April 20, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

System Controls for Applying ASHRAE Guideline 36

(2024) APP-CMC089-EN

April 19, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Controls Communication Technology (2018)

APP-CMC066-EN

April 18, 2025

1 PDH, LEED general



This is to certify that

Samuel Ruf

has successfully completed

Building Pressure Control (2023) - APP-CMC085-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Chilled?Water System Design Trends (2015)

APP-CMC056-EN

April 19, 2025

1.5 PDH, LEED general



This is to certify that

Samuel Ruf

has successfully completed

Chilled Water System Decisions (2018)

APP-CMC065-E

April 18, 2025

1.5 PDH, LEED general



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Samuel Ruf

has successfully completed

DIY Chiller Plant Performance Modeling: Easy and

Easier (2016) APP-CMC057-EN

April 19, 2025

1.5 PDH



This is to certify that

Samuel Ruf

has successfully completed

Variable-Speed Compressors on Chillers (2015)

APP-CMC053-EN

June 2, 2024

1.5 PDH



This is to certify that

Samuel Ruf

has successfully completed

Coil Selection and Optimization (2015)

APP-CMC054-EN

April 19, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Demand Response in Commercial Buildings (2017)

APP-CMC064-EN

April 18, 2025

1.5 PDH



This is to certify that

Samuel Ruf

has successfully completed

Cooling Towers and Condenser-Water Systems

(2005) APP-CMC020-EN

April 18, 2025

1.5 PDH, LEED General



This is to certify that

Samuel Ruf

has successfully completed

Decarbonization/Electrification of HVAC Systems

(2020) APP-CMC074-EN:

April 26, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Decarbonization of HVAC Systems-Part II (2022)

APP-CMC081-EN

April 26, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Building Decarbonization (Electrification) for Hydronic
Systems (2023) APP-CMC086-EN

April 19, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Impact of DOAS Dew Point on Space Humidity

(2020) APP-CMC072-EN

April 26, 2025

1 PDH

Certificate of Merit

Awarded to

Samuel Ruf

For the successful completion of

Tracer Ensemble for Operators eLearning Course

Course Description

Date of Completion

April 18, 2025



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6200 Troup Highway
Tyler, Texas 75707



This is to certify that

Samuel Ruf

has successfully completed

ENL: Decarbonization of HVAC Systems - Part II

April 27, 2025



This is to certify that

Samuel Ruf

has successfully completed

Evaluating Sound Data (2015) APP-CMC055-EN

April 20, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Fans in Air-Handling Systems (2010)

APP-CMC038-EN

April 19, 2025

1.5 PDH, LEED General



This is to certify that

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has successfully completed

New Fan Efficiency Regulations and Fan Technology

Advances (2016) APP-CMC059-EN

April 19, 2025

1 PDH



This is to certify that

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has successfully completed

Modern Unitary Heat Pump Applications (2024)

APP-CMC092-EN

April 18, 2025

1 PDH



This is to certify that

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has successfully completed

HVAC Myths and Realities (2017) APP-CMC062-EN

April 18, 2025

1.5 PDH



This is to certify that

Samuel Ruf

has successfully completed

Retrofitting Hydronic Heating Systems 2024

(APP-CMC091-EN)

April 19, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Indoor Agriculture-HVAC System Design

Considerations (2020) APP-CMC073-EN

April 26, 2025

1 PDH, LEED general



This is to certify that

Samuel Ruf

has successfully completed

Modular Chiller Plant Design (2023)

APP-CMC084-EN

April 19, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Acoustics in Outdoor HVAC Applications (2016)

APP-CMC060-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Controls for Small Rooftop Systems (2019)

APP-CMC068-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Trends in Small Rooftop Systems (2017)

APP-CMC061-EN

April 18, 2025

1 PDH

CERTIFICATE OF COMPLETION

This certificate is awarded to

634078885

in recognition of successful completion of

April 21, 2025

Presented on **Sam**

TRANE
TECHNOLOGIES



This is to certify that

Samuel Ruf

has successfully completed

Single-Zone VAV Systems (2013) APP-CMC048-EN

April 18, 2025

1.5 PDH, LEED General



This is to certify that

Samuel Ruf

has successfully completed

State-of-the-Art Chilled-Water Systems (2021)

APP-CMC076-EN

April 18, 2025

1 PDH, LEED general

Certificate of Merit

Awarded to

Samuel Ruf

For the successful completion of

FTH: Symbio 700 Modbus Addressing Procedure

Date of Completion

April 21, 2025



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Certificate of Merit

Awarded to

Samuel Ruf

For the successful completion of

Tracer Synchrony for Operators eLearning Course

Course Description

Date of Completion

April 18, 2025



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6200 Troup Highway
Tyler, Texas 75707



This is to certify that

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has successfully completed

Electrification of Cooling and Heating with Thermal

Energy Storage (2022) APP-CMC083-EN

April 26, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

High-Performance VAV Systems (2011)

APP-CMC042-EN

April 18, 2025

1.5 PDH



This is to certify that

Samuel Ruf

has successfully completed

Applying VRF for a Complete Building Solution

(2020) APP-CMC075-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Applying VRF for a Complete Building Solution-Part

II (2022) APP-CMC080-EN

April 18, 2025

1 PDH



This is to certify that

Samuel Ruf

has successfully completed

Energy-Saving Strategies for Water-Source and
Ground-Source Heat Pump Systems (2012)

April 20, 2025

1.5 PDH

CERTIFICATE OF COMPLETION

Awarded to:

Sam Ruf

April 27, 2025

For successful completion of the

Distech Controls EC-Net Course Completion

CERTIFICATE OF CONTINUING PROFESSIONAL DEVELOPMENT

The CPD Certification Service
certifies that

Samuel Ruf

the above named has participated
in the following CPD activity

Smart Buildings Protocols

CPD Provider Organisation



An initiative to increase standards of CPD
provision to professionals in relevant market
sectors.



Date of CPD Activity: 17/04/2025

No. CPD Hours: 1

CERTIFICATE OF CONTINUING PROFESSIONAL DEVELOPMENT

The CPD Certification Service
certifies that

Samuel Ruf

the above named has participated
in the following CPD activity

BACnet Introduction

CPD Provider Organisation



An initiative to increase standards of CPD
provision to professionals in relevant market
sectors



Date of CPD Activity: 17/04/2025

No. CPD Hours: 1

The Coach House, Ealing Green, London W5 5ER
Email: info@cpduk.co.uk Web: www.cpduk.co.uk
Tel: 020 8840 4383

CERTIFICATE OF CONTINUING PROFESSIONAL DEVELOPMENT

The CPD Certification Service
certifies that

Samuel Ruf

the above named has participated
in the following CPD activity

BACnet Introduction

CPD Provider Organisation



An initiative to increase standards of CPD
provision to professionals in relevant market
sectors



Date of CPD Activity: 17/04/2025

No. CPD Hours: 1

The Coach House, Ealing Green, London WS SER
Email: info@cpduk.co.uk Web: www.cpduk.co.uk
Tel: 020 8840 4383

CERTIFICATE OF CONTINUING PROFESSIONAL DEVELOPMENT

The CPD Certification Service
certifies that

Samuel Ruf

the above named has participated
in the following CPD activity

Operational Technology meets Information Technology

CPD Provider Organisation



An initiative to increase standards of CPD
provision to professionals in relevant market
sectors.

Date of CPD Activity: 18/04/2025

No. CPD Hours: 1



Certificate of Completion

Is hereby granted to:

Sam Ruf
— of —
Carolina Chillers

To Certify That They Have Successfully Completed

VLT HVAC Commissioning

David Boyer

Danfoss Instructor

10/14-15/2025

Date

Professional Development Hours (PDH) Eligible: 14

CERTIFICATE OF COMPLETION

ABB Cylon® Smart Building Solutions

Training modules

Samuel Ruf

Has successfully completed the following training:



Duration: 3 days

Date: 18.10.2025 – 20.10.2025

Course Instructor:

Cormac Murphy
Product Marketing Specialist
ABB Cylon Smart Building Solutions
Electrification
ABB United States

Address

ABB Corporate Headquarters
305 Gregson Drive
Cary, North Carolina 27511
United States

Phone: + 353 1 245 0500
Fax: + 353 1 245 0501
www.cylon.com

Reg. No.:
USA 110195
VAT. No.:
IE4803564K

Reg. Office
Cary, NC



TRANE

This is to certify that

Samuel Ruf

has successfully completed

TRACER TU - ADVANCED OPERATOR COURSE

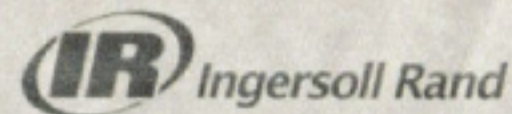
November 19, 2024



Trane is authorized by IACET to offer
3.5 CEU's for this program

195867561

Trane College of Building Automation



CHILLER KNOWLEDGE ASSESSMENT CERTIFICATION

PRESENTED TO

SAM RUF

for passing the Introduction to Chillers Knowledge Assessment

Holden Shamburger

Holden Shamburger

Director

HVAC  **IME**
CHILLER ACADEMY