



CURRICULUM VITAE
Bruce Ian Nelson, P.E.

Work Address: Bruce V. Nelson Engineering, LLC
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Education: B.S. Agricultural Engineering, Cum Laude, Washington State University, 1980

Professional Experience:

- 2021 – Present **Owner and CEO**, Bruce V. Nelson Engineering, LLC
- Engineering consultancy providing design, analysis, and training services to companies in the commercial and industrial HVAC&R industry.
- 1997 – 2021 **President and C.O.O.**, Colmac Coil Manufacturing, Inc.
- Overall executive management responsibilities for Company operations.
- Company achieved record growth in sales and income during this period.
- Implementation of Lean Manufacturing techniques and practices.
- In-house development of parametric product configuration software.
- Obtained a number of patents related to the field of refrigeration.
- Pioneered the development of low charge DX ammonia systems.
- 1981 - 1997 *Various Engineering Positions*, Colmac Coil Manufacturing, Inc.
- Unique heat exchanger performance model developed in-house to effectively handle new Zeotropic refrigerant mixtures (CFC replacement refrigerants).
- Introduction of stainless steel tube/aluminum fin heat exchangers for industrial ammonia refrigeration systems.
- Introduction of aluminum tube and fin heat exchangers for industrial ammonia refrigeration systems (1985).

Professional Engineer (Mechanical) Licenses:

Wash State:	22890
Oregon:	103196PE
Idaho:	P-22166
Utah:	13417033-2202
Colorado:	0062667
Texas:	149791
Arizona:	79935

Society Activities/Honors:

- Past Chairman IIAR (International Institute of Ammonia Refrigeration)
- Past Chair Research Committee
 - Member of the Year Award
 - Honorary Life Member
 - Past Chair Ammonia Refrigeration Foundation (ARF)
- Life Member ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers)
- Member Technical Committee TC1.3 "Heat Transfer and Fluid Flow"
 - Distinguished Service Award (2013)
 - Past President Inland Empire Chapter
- Member IIR (Paris)
Fellow IoR (UK)
Member AIRAH (Australia)



Selected Bibliography:

Nelson, B. 1990. "Design of Evaporators for Liquid Overfeed Systems" ASHRAE Transactions, 1990, vol. 96. Part 1, paper no. AT-90-21-1. pgs 1309-1315.

Nelson, B. 1998. "Designing Air Coolers for Direct Expansion (DX) with Ammonia". IIAR Annual Meeting Proceedings, 1998, pgs 137-155.

2000. ASHRAE Standard 33-2000. "Method of Testing Forced Circulation Air Cooling and Air Heating Coils", American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), Atlanta, GA.

Nelson, B. 2010. "Thermodynamic Effects of Water in Ammonia on Evaporator Performance". IIAR Annual Meeting Proceedings, 2010, pgs 201-236.

Nelson, B. 2010, "Refrigeration Air Cooler Rating Methods", ASHRAE Journal, August 2010, pgs 24-28.

Nelson, B. 2015. "Selecting Evaporators for CO2 Refrigeration". RETA Annual Meeting Proceedings, 2015.

Nelson, B. 2015. "Optimizing Evaporator Runtime and Defrost Frequency". IIAR Annual Meeting Proceedings, 2015, TP#4

Nelson, B. 2016. "DX Ammonia Piping Handbook, 4th Edition". Colmac Coil Manufacturing, Inc. Colville, WA

Nelson, B., Struder, G. 2019. "Ammonia Refrigeration Piping Handbook Chapter 1 Pipe Sizing". IIAR. Alexandria, VA

Nelson, B. 2023. "Hygienic Air Handler Engineering Manual, 1st Edition". Colmac Coil Manufacturing, Inc. Colville, WA

Patents:

USA Patent No. 6,843,509, "Coupler For Use with Metal Conduits"

USA Patent No. 7,597,137, "Heat Exchanger System"

USA Patent No. 7,712,327, "Method for Defrosting Heat Exchangers"

USA Patent No. 7,958,738, "Direct Expansion Ammonia System"

Australian Patent No. 2013202295 "Heat Exchanger"

Canadian Patent No. 2,617,566 "Heat Exchanger System"

USA Patent No. 8,474,276 "Direct Expansion Ammonia Refrigeration System and a Method of Direct Expansion Ammonia Refrigeration"

USA Patent No. 8,783,057 "Refrigerant Distributor"

USA Patent No. 8,966,935 "Heat Exchanger"

USA Patent No. 9,689,621 "Heat Exchanger"

USA Patent No. 10,077,933 "Defrost Hoods"

USA Patent No. 10,378,826 "Cascade Heat Exchanger"