

Itzhak Maor, Ph.D., P.E., C.E.M.

Profile	Experienced HVAC & R and Energy engineer with strong design and construction experience in state of the art HVAC & R systems and equipment, combined with strong understanding of the theoretical aspects of design, indoor air quality and energy conservation.		
	<ul style="list-style-type: none">◆ Highly skilled with Building Energy Simulation methodologies and software such as DOE-2.1 E and TRACE.◆ Strong knowledge of Ventilation, Energy Recovery and Active Desiccant systems, applications, and equipment design.◆ Highly competent with humidity control techniques and applications of specialized humidity control equipment.◆ Experienced with development of software for analysis and selection of HVAC and energy systems.◆ Experienced engineering manager with the ability to lead engineering teams performing engineering tasks on time and on budget.		
Professional Experience	2000 - Present	PWI Energy, Inc.	Philadelphia, PA
	Principal / Director of Engineering		
	1998 - 2000	Fresh Air Solutions (Formerly Engelhard/ICC Technologies)	Hatboro, PA
	Vice President of Engineering		
	<ul style="list-style-type: none">➤ Responsible for all engineering activities, such as product development, product engineering, and sales engineering support for specialized and custom Air Handling equipment for the commercial, industrial, and constitutional sectors.➤ Developed and designed new product lines, such as large custom self-contained packaged air handling units, refrigeration systems, direct and indirect fired desiccant systems, air-to-air energy recovery, special filtration, and DDC control systems.➤ Developed and designed state-of-the-art make-up air (100 % Outside Air) units utilizing enthalpy wheels, desiccants and sensible heat recovery with emphasis on Indoor Air Quality and Energy Conservation.➤ Provided engineering support and training to inside and outside sales personnel.		
	1993 – 1998	Engelhard / ICC Technologies	Philadelphia, PA
	Manager, Application Engineering (1994-1998)		
	<ul style="list-style-type: none">➤ Domestic and international technical support applying active desiccant based HVAC systems.➤ Preparation of technical proposals, mechanical designs, submittals, feasibility studies, energy analyses, and software for HVAC applications.➤ Designs for humidity treatment of outside air for virtually every type of commercial buildings, industrial facilities, hospitals, and schools.➤ Evaluation and design of systems for varied industrial humidity controlled environments and clean rooms.		
	Application Engineer (1993-1994)		
	<ul style="list-style-type: none">➤ Preparation of technical proposals, mechanical designs, submittals, feasibility studies, energy analyses, and software for HVAC applications.		
	1991 – 1993	Gershon Meckler & Associates, Consulting Engineers	Herndon, VA
	Design Engineer		
	<ul style="list-style-type: none">➤ Designed state-of-the-art HVAC & R systems with emphasis on Indoor Air Quality and Energy Conservation utilizing ice storage systems, cold air distribution, air-to-air heat recovery and DDC systems for government facilities, such as the Social Security Administration buildings in Philadelphia PA, Chicago, IL, and Richmond, CA.		
	1988 - 1991	Itzhak Maor, Consulting Engineers	Haifa, Israel
	Principal		
	<ul style="list-style-type: none">➤ Provided consulting engineering services.➤ Designed HVAC & R systems for hotels, office buildings, retail establishments, places of assembly, and residential buildings from concept to final design.		

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	1980 – 1987	Herouth Ltd., Electro-Mechanical Contractors	Haifa, Israel
	Manager, Design Department (1984 – 1987)		
	➤ Responsible for all the design/build engineering activities, including design of HVAC & R systems, design and selection of equipment such as chillers, boilers, pumps, air handling equipment, refrigeration systems, etc. Generation of submittal documents and O & M manuals.		
	Design Engineer, Design Department (1982 – 1984)		
	➤ Design of HVAC & R systems, design and selection of equipment such as chillers, boilers, pumps, air handling equipment, refrigeration systems, etc.		
	Project Engineer (1980 – 1982)		
	➤ Responsible for construction, balancing and commissioning of large scale HVAC&R systems.		
Education	2002	Drexel University	Philadelphia, PA
	Ph.D. Civil Engineering		
	1991	Technion – Israel Institute of Technology	Haifa, Israel
	M. Sc. Civil Engineering		
	1980	Technion – Israel Institute of Technology	Haifa, Israel
	B.Sc. Mechanical Engineering		
Research Experience	2000 - 2002	Drexel University	Philadelphia, PA
	Ph.D. Research		
	➤ Conceptual design and selection of HVAC & R systems by combining knowledge based expert system with a building energy simulation program.		
Academic Activity	2003 - Present	Drexel University	Philadelphia, PA
	Ph.D. Committee Member		
	➤ Committee member of a Ph.D. candidate for the Ph.D. research dissertation.		
	1989 - 1991	Technion – Israel Institute of Technology	Haifa, Israel
	Adjunct Teacher of Mechanical Engineering		
	➤ Instructed senior students in their HVAC & R senior design projects.		
Registrations / Certifications	◆ Professional Engineer- State of Maryland, Commonwealth of Massachusetts		
	◆ Certified Energy Manager (CEM) – Association of Energy Engineers		
Memberships	◆ American Society of Heating, Refrigeration, & Air Conditioning Engineers (ASHRAE)		
	- ASHRAE /IESNA Standard Project Committee 90.1 – Voting Member		
	- ASHRAE /IESNA Standard Project Committee 90.1, ECB subcommittee – Voting Member		
	- Technical Committee 9.8, Large Buildings HVAC Applications –Voting Member		
	- Technical Committee 9.7, Educational Facilities – Vice Chair & Handbook Chair		
	- Technical Committee 5.5, Air to Air Energy Recovery - Corresponding Member		
	◆ Association of Energy Engineers (AEE)		
	◆ International Building Performance Simulation Association (IBPSA)		
Publications	◆ Literature Review of Artificial Intelligence and Knowledge Based Expert Systems in Buildings and HVAC & R Systems Design. ASHRAE Transactions 2003 (4599).		
	◆ Development and Implementation of HVAC-KBCD: A Knowledge Based Expert System for Conceptual Design of HVAC & R Systems-Part 1: General Framework - ASHRAE Transactions 2004 (4691)		
	◆ Development and Implementation of HVAC-KBCD: A Knowledge Based Expert System for Conceptual Design of HVAC & R Systems- Part 2: Case Study Application to Office buildings - ASHRAE Transactions 2004 (4692).		