

Donald F. Hanson, PhD, PE

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EDUCATION (B.S., M.S., and Ph.D. in Electrical Engineering)

Ph.D. in Electrical Engineering (Electromagnetic Field Theory, Mathematics minor)
University of Illinois, Urbana-Champaign, IL, 1976.

M.S. in Electrical Engineering (Video, Analog and Digital Electronics)
University of Illinois, Urbana-Champaign, IL, 1972.

B.S. in Electrical Engineering (Compiler Development, Computer Language Design)
University of Illinois, Urbana-Champaign, IL, 1969.

PROFESSIONAL ENGINEER: Licensed Professional Engineer (PE) in Minnesota, License Number 43083.

MASTER ELECTRICIAN: Licensed Class A Master Electrician in Minnesota, License Number AM08718.

ENERGY CERTIFICATIONS

- * NABCEP Certified Solar PV Installation Professional (NABCEP is the North American Board of Certified Energy Practitioners).
- * AEE: Energy Manager In Training (EMIT), (Passed CEM Exam, AEE is Association of Energy Engineers).



ELECTRICAL ENGINEER (PE): DESIGNER, RESEARCHER, INSTRUCTOR, AND CONSULTANT.

1. Solar Design Engineer and Master Electrician (NABCEP Certified PV Installer)
2. Radio Frequency, Microwave, and Communications Engineer
3. Research and Development Engineer
4. Video, Display, and Television Engineer
5. Digital and Microprocessor Systems Engineer

WORK HISTORY

- * Innovative Power Systems, Inc., St. Paul, MN 55108 2011-2013
Master Electrician/Electrical Engineer. Design concept for low temperature solar trailer. Chose batteries, charge controller, and solar panels. Modified DC generator engine and designed GenSet control system.
- * Sebesta-Blomberg, St. Paul, MN 55108 Spring 2013
Instructor in solar energy for group of engineers at this sustainable technical service engineering design firm. Created new curriculum in solar thermal and solar electric energy design.
- * Professor at the following Universities:
 - University of Mississippi
 - Iowa State University
 - University of Minnesota
 - Syracuse University
 - Norwegian University of Science and Technology (NTNU)

ENERGY EDUCATION EXPERIENCE

- * CREED, Board of Directors, 2010-2013 (CREED is the Center for Renewable Energy Education and Demonstration).
- * Co-Instructor for CREED courses EREPT 2 at Minnesota West-Granite Falls, MN, and DSRFE 6, at Laurentian Environmental Center for Hamline University, Summer 2010.
- * Co-led 14 site visits to Renewable Energy Facilities as part of DSRFE 6 and EREPT 2.

SKILLS AND PROFICIENCIES:

- * Design/Install of intelligent and green building components, including solar PV systems
- * Electrical/Electronic Design, Interfacing, and System Integration.
- * Instructor and speaker
- * Troubleshooter
- * Modeling, data analysis, and computer simulation

COLLEGE PROFESSOR/MENTOR:

- * Taught graduate and undergraduate courses in Electrical Engineering and Computer Engineering at Iowa State, Mississippi, Minnesota, Syracuse, and Illinois. Guest Professor at NTNU (Norwegian University of Science and Technology), 1997-1998.
- * Created new electronics and microprocessor Laboratories at Mississippi
- * Short course lecturer in Electromagnetics as applied to cylinders, slots and resonators.
- * Managed students for Senior Design projects in Electronics, microprocessors, microcontrollers and antennas
- * Supervisor for graduate students in Electromagnetic Fields, Microwave Circuits, and Numerical Methods
- * Taught and Supervised students in the Radio Frequency Laboratory
- * Taught Supercomputer programming and architecture

DESIGN ENGINEER:

- * Certified CEDIA designer (CEDIA is Custom Electronics Design and Installation Association).
- * Designed original equipment for new microcomputer laboratory
- * Designed microprocessor control of Parabolic Dish Antenna for Client Company
- * Designed video/modulation and digital circuits for color graphics workstation (MS Thesis)
- * RF and Microwave Engineer specializing in Network Analyzer Measurements from DC to 50 GHz
- * Designed, Simulated, Fabricated and Measured Slot Antennas fed by Coplanar Waveguide
- * Designed portions of pMOS digital integrated circuit for General Electric's Electronics Laboratory



RESEARCH & DEVELOPMENT ENGINEER:

- * Received grants from US Air Force, US Army, and University.
- * Mathematical Research in Electromagnetics using Singularities and Distribution Theory (PhD Thesis)
- * Development of Numerical Analysis for slot antennas, Singularities, and Coplanar Waveguide
- * Analyzed and Programmed Mathematical Functions using Chebyshev Polynomials.
- * Wrote Moment Method Numerical Methods for Numerical Solution of Electromagnetics, Microwave, and Antenna Problems
- * Reverse Engineered the 6502 Microprocessor and Auxiliary Chips directly from the Blueprints
- * Research Fellow in Numerical Methods in Electromagnetics for US Air Force
- * Research Fellow in VHDL (VHSIC Hardware Description Language) for US Army where VHSIC is Very High Speed Integrated Circuits
- * US Army Technical Staff on Government/Industry team developing MHDL (MIMIC Hardware Description Language) where MIMIC is MICrowave/Millimeter-wave Integrated Circuits.
- * Developed Original Hardware Description Language for nMOS/pMOS digital integrated circuits
- * Developed VHDL model for Dynamic Latches used in Microprocessor Design