

## General Skills

Electronic Design Engineer

Design, Development, and Manufacturing for the Scale-up of New Products

Project Management of Technically Complex Projects

Hardware, Firmware, Software, Analog, Digital, Microprocessors, Microcontrollers

## Education

BSEE 3.5 / 4.0 - U of North Dakota, Grand Forks, ND - Dec 1971

## Experience

- Retired (Aug 2014)
- Emerson, Marshalltown, Iowa (Jul 2001 - Aug 2014)  
Industrial Controls
- Carrier Electronics, Huntington, Indiana (Jun 2001 to Jun 2001)  
HVAC
- Turtle Mountain Corporation / Pemstar, Dunseith, North Dakota (Mar 1996 to May 2001)  
Manufacturing Engineering
- University of North Dakota, Grand Forks (May 1991 to Mar 1996)  
Distance Engineering Degree Program, accredited by ABET
- 3M, St Paul, Minnesota (Jul 1974 to May 1991)  
Electronic Article Surveillance / Security Systems  
Otologic Products / Surgical Products  
Data Recording Products
- Texas Instruments, Dallas, Texas (Feb 1972 to Jun 1974)  
Radar Systems for Navy

## Characteristics

Quick learner, turn ideas into action, problem solver, lateral thinker, positive attitude, flexible to change, enthusiastic, high integrity.

## Skills / Experience / Interests

- Electronic Hardware Design: Analog, Digital, Embedded, DSP, Intel 8051, 80286, Texas Instruments MSP430, Atmel ARM, Micro-Cap (SPICE) electronic design modeling, Wireless
- Firmware and Software: Assembler, C, C++, C#, WPF, Visual Studio, Windows, Database (SQL, C-Tree, Firebird), HTML, Webmaster, WordPress.
- Project Management of technically complex projects.
- Extensive knowledge of electronic labs / equipment ... electronic documentation including technical specs, schematics, BOMs, design verification, manufacturing docs ... contract manufacturing.
- Product Design, Development, Manufacturing Scale-up, System Integration.
- Wireless Communication, Magnetic Recording, Biomedical Implantable Electronics, Anti-Shoplifting Systems, Industrial Controls.
- Communication protocols, RS-232, RS-485, Ethernet, TCP/IP, Foundation Fieldbus, HART, WirelessHART.
- Agency approvals: EMC, UL, CSA, TUV, FM, Intrinsic safety.
- Manufacturing Engineering.
- Math Modeling, Multiple Patents.
- Public Speaking, Written Communication, Creating Video Clips

- Languages (Two dialects of German, limited Spanish).

### Detailed Work Experience

Emerson / Fisher, Marshalltown, Iowa (Jul 2001 to Aug 2014)

- Design and development of electric valve positioners (hardware, firmware, and software) used in oil fields.
  - First generation of electric valve positioners (new to company).
  - Created an electronics lab and associated equipment / procedures / docs (new to this division).
- Design and development of wireless position monitors (hardware and firmware).
  - Resulted in a generation of low power devices that broadcasts information via a mesh network using TDM and frequency multiplexing technologies (new to the company).
  - Key features: implements the new Wireless HART communication, non-contact position monitoring, low-power / long battery life (two D-cell batteries that last 5 to 10 years).
- Design and development of Fieldbus digital "level" controllers.
  - Used embedded ARM ASIC's and Texas Instruments MSP430 micros.
  - Implemented differential in / out gain op amps along with differential delta-sigma ADC's to greatly reduce noise. The same technology is used by the wireless products.
- Design and development of Fieldbus digital "valve" controllers (pneumatic)
  - Used embedded Atmel ARM and Texas Instruments MSP430 micros.
  - Key features: Eliminated non-volatile memory burnout by using FRAM, provided ability to upgrade firmware while maintaining control, allowed for sensor tolerance variations in manufacturing by incorporating automatic electronic gain and offset.
  - This ARM technology and FRAM were used later by other Emerson companies for their design and development. The end result was a new product with increased performance.

Carrier Electronics / UTC, Huntington, Indiana (Jun 2001 to Jun 2001)

- Started in the design and development of electronic hardware / firmware high volume electronic controls for HVAC. Position terminated after working only two weeks (massive layoffs).

Turtle Mountain Corporation, Dunseith, North Dakota (Mar 1996 to May 2001)

- Design of specialized, high-speed, reliable test equipment.
- Manufacturing scale-up of electronic assemblies for IBM AS400 / RS6000 computers.
- DFM (design for manufacturability) and DFT (design for testability) analysis for TMC customers.
- Windows 95/98/NT database code for production performance, documentation tracking, and profitability analysis.

University of North Dakota, School of Engineering, Grand Forks, North Dakota (May 1991 to Mar 1996)

- Director of the Corporate Engineering Degree Program → allows individuals (throughout the country) to obtain an accredited engineering degree from UND via video lectures and compressed on-campus labs.
  - Increased the number of courses from one course per semester to fifteen courses per semester.
  - Created a BS degree curriculum sequence that lead to an Electrical Engineer, Mechanical Engineer, and Chemical Engineer degree in three to six years (following two years of pre-requisite courses). Three years can be accomplished with two courses per semester.
  - Grew the business from \$20,000 per year to \$280,000 per year.
  - Led to the first nationally ABET accredited "distance" engineering education degree in the country (Electrical Engineer, Mechanical Engineer, and Chemical Engineer).

3M, St Paul, Minnesota (Jul 1974 to May 1991)

- Anti-shoplifting
  - Designed and developed embedded software / hardware for anti-shoplifting systems (magnetic and RF).
  - Generated computer math models for simulating performance in anti-shoplifting detection units.
  - Championed a successful remote communications system.
  - Project manager for multi-disciplinary teams (Design and Development, Quality Assurance, Manufacturing, Sales and Marketing, Technical Service)
  - Successfully scaled up anti-shoplifting detection systems.
- Cochlear Implants (a device that restores a sense of hearing to the deaf)
  - Designed and developed electronic hardware for some of the world's first 3M Cochlear Implant Systems.
  - Worked with internationally renowned physicians in Los Angeles, San Francisco, Austria, and Switzerland.
  - Worked with patients / improved the designs to enhance speech comprehension.
  - Project manager that led to the manufacture of devices used in clinics throughout the world on a Custom basis and under an Investigational Device Exemption from the FDA.
- Digital Magnetic Recording (floppy disks, computer disks, computer tape, magnetic stripes on credit cards)
  - Designed magnetic recording electronics / software for the R&D lab.
  - Created a computer model for calculating magnetic peak shift (still being used today).
  - Served as a consultant to magnetic media manufacturers (Burroughs, Texas Instruments) to help improve the design of their magnetic media equipment.
  - Designed instrumentation and control systems for manufacturing in the US and Europe.
  - Master architect that led the effort in the design and development of a sophisticated computer / embedded microcontroller based system for the analysis and testing of a multi-million dollar floppy disk business.

Texas Instruments, Search and Undersea Warfare, Dallas, Texas (Feb 1972 to Jun 1974)

- Designed radar systems for the Navy (under a security clearance).

### Present Organizations

•United Tribes Technical College Science Advisory Council, •University of Mary Engineering Advisory Council, •IEEE Institute of Electrical and Electronics Engineers, •Toastmasters (founder / sponsor / mentor for multiple clubs).

### Present Activities

•Creating video clips for ElectronicsIsEasy.com/, •woodworking, •reading (fiction and non-fiction), •genealogy (website and book publishing), •International Eisenbeis Family Reunions (1982 to present --- includes folks from Europe), •board games / cards, •logic puzzles, •music arrangements, •computer code writing, •landscaping, •volunteering, •creating websites.

### Past Organizations

•ABET Accreditation Board for Engineering and Technology (accredits engineering colleges in the US and internationally), •National Society of Professional Engineers (NSPE), •Emerson Engineers Week, •South Sudan Wells Project (in Africa), •Keystone Endowment Fund (founder and trustee), •Marshalltown Community Concert Association (board), •House of Compassion (board finance chair), •Marshalltown Caring Connection Mentor Program / Big Brothers (mentor), •Hispanic Heritage Festival (founder), •Bread of Life (band, founder, leader), •Bergman & Eisenbeis (music duo), •Habitat for Humanity (board) , •First Lego

League (steering committee), ●Marshall County Thrivent Chapter Board (president), ●Boy Scouts (District Commissioner, Family Friends of Scouting Chair, District Program Chair, Unit Commissioner, Webmaster), ●Marshalltown Education Partnership (mentor), ●North Dakota State Steering Committee for Gifted & Talented Education, ●Minnesota School District Chemical Health Advisory Committee, ●U of North Dakota School of Engineering Executive Advisory Council, ●U of North Dakota EE Advisory Council (chair), ●U of North Dakota "Meet the Challenge" Steering Committee, ●U of North Dakota Engineering Dean Search Committee, ●Ragbrai Public Safety Committee (chair), ●American Historical Society of Germans from Russia, and Germans from Russia Heritage Society, ●Lutheran Brotherhood Chapter Board of Directors, ●American Society of Engineering Education, ●North Dakota Enthusiasts (founder), ●Minnesota Entrepreneurs Club, ●Junior Achievement, ●SPEBSQSA barbershop singing (Vocal Majority charter member), ●Lutheran Church of Peace Endowment Fund Trustee (founder), ●Ramsey County Workhouse Ministry, ●St Paul Area Council of Churches, ●Church Council (president), ●Church Call Committee (chair), ●Loaves & Fishes, ●Youth Ministry Team, ●3M Academic Relations Committee (chair), ●3M Academic / Industrial Relations Electrical Engineering Subcommittee (founder and chair), ●3M Electronics Chapter (chair), ●3M Bio-Engineering Committee (founder and chair), ●3M Tech Forum Senator, ●3M Electronics Newsletter Subcommittee, ●3M Micro Event (chair), ●3M Science Encouragement Committee (chair), ●3M Science Student Recognition Day Subcommittee (chair), ●Good News Folk (college folk singing group), ●UND college: President of Dorm, Treasurer of Inter-Dorm Council, Wilkerson Board of Directors, Varsity Bards (male chorus), Eta Kappa Nu, Sigma Tau, Society of Physics Students.

#### Past Activities

●Published book, "Electronics is Easy?", ●Robert's Rules of Order video clip and workshops, ●Basketball (zero angle hook shots), racquetball, football, tennis, softball, volleyball, ●fishing, camping, ●designing houses, house construction, ●music recording, ●contemporary worship music leader / singing / guitar (40 yrs), ●saxophone, accordion, pump organ, piano (Scott Joplin Rags), barbershop singing, ●piano tuning, ●dancing, ●bicycling, ●string art, ●gong show organizer, ●working with church youth, coach for youth / baseball / basketball / soccer, ●created, mixed, and released music CD's, ●funded the first microprocessor kits for the University of North Dakota Electrical Engineering Department in early 1970's, ●founded the Harry Nyquist Award at the U of North Dakota (late 1980's), ●farming (grain and cattle), team of horses on grandfather's farm.