

JOHN W. RAYNES

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www.re-solar.com

Raynes Engineering, Inc. / RE Solar(1996 - Present)

President and Principal Engineer – Consulting Engineering

Founded, and continue to manage, an engineering consulting business specializing in automated instrumentation and control systems. Projects undertaken have included:

Development of measurement and control systems for manufacturing:

- Network of supervisory Windows PCs, programmed in Visual Basic, for database-driven control and management of a fully automated stamping, milling, and engraving fabrication line
- Windows PC interface for running a network of individually operated laser engraving stations, driven from a central manufacturing database
- Integrated 7-oven controller/monitoring station run from a single low-cost PLC
- Real time Windows PC graphical interface for monitoring motion control systems
- Instrumentation stations, for collection of high speed profile data from PLCs and data acquisition boards, to store in Microsoft Access and SQL Server databases
- PLC ladder-logic serial interfaces for coordination of intelligent motion control
- PLC ladder-logic programming for automated catheter manufacturing machines

Datalogger-based data collection and display systems, for tracking power generation from commercial solar photovoltaic arrays (Hardware and sensor assembly, datalogger programming, on-site installation)

Windows PC real time graphical interface software for a commercial data logger product line

Design and production of automated test consoles for medical pressure transducers, incorporating relational databases for full lot traceability

Electronic compensation circuit and process design, for microsensor pressure catheter products

Design, construction and programming of 500 cell battery test/data collection console

Development and presentation of Visual Basic/database programming courses for shop floor applications

Solar Design, Sales, and Installation (RE Solar)

In 2000, created a side business (doing business as RE Solar), specializing in the design and installation of solar photovoltaic, wind, and micro hydro electric power systems for residences and small businesses.

Established an Internet presence and began selling and installing systems in the South Central Utah area from an office in Torrey, Utah. Responsibilities include:

- Telephone and email sales support, field site surveys, custom quotations based on full engineering system design
- Design, documentation, sub-assembly and verification of solar/wind/hydro inverter power panels
- Performance and site supervision of all installation work
- On-site troubleshooting and upgrading of numerous RE systems installed by other companies

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Becton Dickinson, Sandy, Utah (1988 - 1996)

Process and Automation Engineer - Medical Products

Developed process measurement and feedback control for high volume catheter manufacturing

Programmed automated catheter manufacturing machines

Developed applications for acquiring critical experimental and production data, to determine the effects of machine performance on product quality

Product Design Engineer - Transducer Systems

Lead engineer on an R&D team working to develop a catheter tip pressure transducer for invasive arterial blood pressure measurement:

- Developed a micropowered transducer interface with simulated Wheatstone bridge response.
- Designed transducer test systems, including and integrated database/report generation system
- Managed external microsensor development. Developed lot acceptance test regimens

Catalyst Research Div. of Mine Safety Appliances, Owings Mills, MD (1983 - 1988)

Project manager for the development of a CO₂ analyzer and a pulse oximeter. Other design projects:

- Automated battery test consoles, miscellaneous instrumentation for production and process control
- Electrochemical gas sensor cell QC test system, for testing O₂, CO, EtO and H₂S sensors
- Automated PC board functional test systems

EMC Controls, Inc., Hunt Valley, MD (1981 - 1983)

Specified and configured system hardware for large distributed control systems (DCS)

Coordinated manufacturing, hardware integration and acceptance testing

EIL Instruments, Incorporated, Sparks, MD (1977 - 1981)

Designed and evaluated circuit breaker test equipment to 60,000 amps, and protective relays

Field tested protective equipment on power distribution systems up to 34KV

Customized and repaired analog and digital panel board meters

EDUCATION

Virginia Tech, Blacksburg, Virginia - Bachelor of Science, Electrical Engineering, December, 1979

LICENSES AND CERTIFICATIONS

North American Board of Certified Energy Practitioners (NABCEP) Certified Solar PV Installer™

PAST PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronic Engineers (IEEE)

Association for the Advancement of Medical Instrumentation (AAMI)

PATENTS/PUBLICATIONS

U.S. Patent 5,146,788 and 5,866,821, "Apparatus and Method for a Temperature Compensation of a Catheter Tip Pressure Transducer"

U.S. Patent 5,460,183, "Switchable Filter for Rezeroing an in vivo Pressure Transducer"

U.S. Patent 5,568,815, "Self-Powered Interface Circuit for Use with a Transducer Sensor"