



CUSTOM DEVICE DEVELOPMENT - For ALTERNATE ENERGY APPLICATIONS

You can leverage our years of electronics and software design expertise to hand off parts or entire product designs involving custom electronics and embedded software in the alternate energy arena.

Scope

Alternate energy applications use technologies that span the range from embedded systems and power electronics to re-configurable logic, to communication interfaces to web based interactions.

Typical alternate energy applications range from physical components such as solar panels, turbines, batteries, inverters, transformers, etc to software components such as system design tools, modeling and simulations.

These (and other) devices in general need development expertise in embedded systems, custom electronics design, and high level software development extending all the way from a 8-bit microcontroller in a vehicle to web based interfaces. The platforms could be different PDA devices, cell phones with browser capabilities, or fixed devices.

Given the breadth of the expertise required to bring such applications to market, Pathway is uniquely positioned to offer its expertise in various fields outlined below to help with your alternate energy application development and deployment.

Embedded Systems Expertise

Embedded Controllers

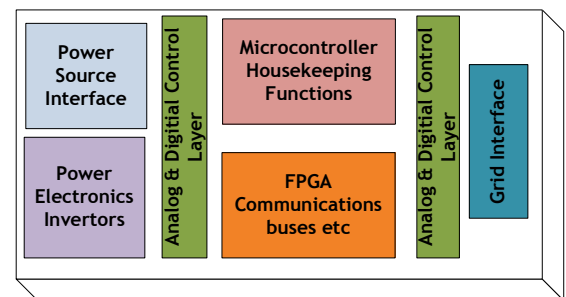
- 8/16/32 bit controller development expertise
- Any level of project development is available to suit your needs:
 - Multilayer boards that can be used in your designs
 - Complete product level design involving boards, harnesses, enclosure and testing for a turnkey solution

Platforms and Technologies

- 8/16/32 bit firmware.
- Embedded Java, Windows CE, Windows XP Embedded, PalmOS
- Embedded applications for cell phones
- Applications for PDAs

Programmable Logic

- We support development for Xilinx FPGAs.
- Solutions from IP blocks to complete turnkey projects are available.
- Embedded DSP using Simulink Xilinx Blockset.



FPGA based alternate power to grid gateway solution in development at Pathway Technologies



Custom Electronics Design Expertise

Wireless

- *Design services for implementing short and long haul wireless serial communication links.*
- *ISM band expertise.*
- *ZigBee Protocols along with protocol customization.*
- *Custom protocol conversion (CAN to ZigBee etc.)*

Sensors & Transducers

- *Custom designs for signal conditioning for off-the-shelf sensors and transducers.*
- *Multi level design services: use our expertise to simply select the right sensor or transducer for the job or have us manufacture the entire solution including the board, the enclosure and lab testing.*

Power Electronics

- *Brush and brushless motor control design expertise up to 1.2KW.*
- *We offer solutions involving just the power electronics end or complete turnkey solution for both motor control and power conversion.*
- *Expertise in inverter designs using MOSFETS as well as IGBTs using either discrete elements or pre-packaged modules*
- *Expertise in use of DC-DC converter modules - selection as well as design into existing power architectures*

Digital Design

- *We offer digital design expertise to complement our products. You can leverage this service for development of custom digital hardware including but not limited to embedded storage solutions, communication interfaces and DSP based signal processing applications.*

Analog Design

- *We can provide design expertise in the areas of instrumentation and analog signal conditioning; from schematic level projects to turnkey solutions with boards, enclosures, harnessing and testing.*

Modeling and Simulation Expertise

Battery Systems

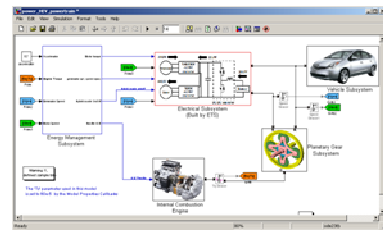
- *Lead acid, NimH, Lithium ion*
 - *Physics based modeling*
 - *Empirical modeling*
 - *System identification*
- *Any level of model development is available to suit your needs:*
 - *HiFidelity models for design work*
 - *Real-Time models for Control System design and Hardware-in-the-loop testing work*

Inverters and Transformers

- *Behavioral models for calculation of power losses in conversion*
- *Balance of system computation to compute the energy delivered to the GRID*
- *Time of Delivery based calculations to compute the cost of energy*

Platforms and Technologies

- *ADVISOR based models for component sizing*
- *Matlab/Simulink based models for analysis and control design*
- *AMESim based HiFidelity models for design work*
- *Design of experiments for model validation*
- *Model validation with experimental data*
- *Complete component level, sub-system level, system level custom models*



Modeling of vehicle and electrical power systems

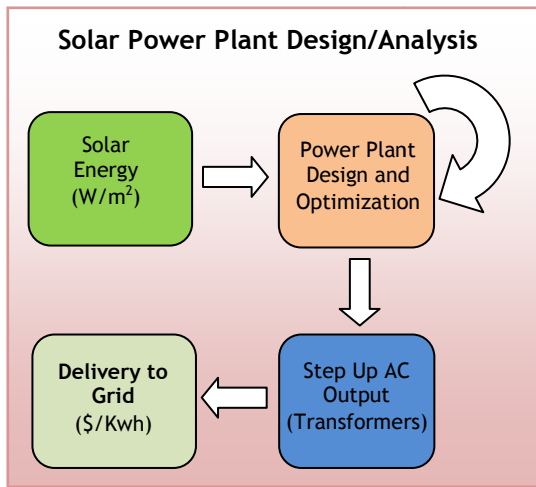




Renewable Energy Expertise

Solar Power

- *Modeling and simulation of solar power plants using industry standard tools*
- *Model validation based upon experimental data*
- *Development of custom algorithms*
- *Analysis of stand-alone as well as grid connected solar power systems*
- *Iterative analysis and system optimization to realize maximum benefits*
- *IDE/Framework development for design optimization and cost-benefit analysis*



Software Development Expertise

In addition to software development for embedded devices, Pathway also develops Web or desktop based software applications.

Technologies

- *Platform: Windows OS, Solaris, Linux*
- *Languages: Java, .Net, C#, C++, ASP .Net, AspectJ*
- *Database: SQL Server, Oracle*
- *Web Servers: Weblogic, Websphere*
- *Open Source: Eclipse, Spring*
- *COM, .Net, LDAP, ASAP, CAN, J1939, Server design, Cryptography, Sockets, EJB, Servlet*
- *Modeling: UML, Rational Rose*
- *Engineering: Matlab, Simulink*
- *Service Oriented Architecture*

Schematic level projects to turnkey solutions, Pathway offers years of design expertise to bring in your projects on time and within budget.

Please visit us on line at www.pathwaytechnologies.net or call us to discuss your needs with our application engineers.