

Electric Car experience:

Designed and built my own 90kw 3 phase inverter to run a Siemens AC motor June 08 to June 09

- My homebuilt water-cooled 3 phase inverter runs vector torque control; 290A @ 320v.
- Designed and fabricated an EV conversion kit for my 2001 VW Passat.
About 13k miles traveled so far. 105mph top speed. Electric power steering and regenerative braking.
- Developed current/torque/regen control algorithms for a motor with no nameplate data.
- Developed electronic synchro mesh algorithm for clutchless shifting. <http://etischer.com/awdev/>

Recent Work Experience:

Solyndra, Fremont California. www.solyndra.com Feb. 08 to present

Solyndra manufactures cylindrical shaped photovoltaic solar panels.

- **Sr. Controls Engineer.**
Building and programming control systems for production equipment in a fast paced startup environment.
ANSI/RIA15.06 (Robot safety), NFPA79, UL508A, OSHA 3170-02R compliance.
- Tube Transfer system. 8 of these machines feed every sputtering tool in Solyndras factory. 8 axis servo system transfers tubes from trays to ceramic carriers. I was the sole controls engineer, electrical engineer, programmer and GUI developer on this project.
- Cell controller for Robot enclosures. 10 of these systems control and safeguard all of Solyndra's Back End production robot work cells. I was the lead electrical designer and safety PLC programmer.
- Other projects include: Helium leak checker, Gas mix analyzer, Flash test chamber, Kuka End Effector, Laser glass cutter, ASRS interface, AGV interface, Automated test cell, Portable PLC pop station, Kuka axis monitor.

Drivex, Livermore California. www.drivex.com (A company of 3 employees) Feb. 02 to Feb. 08

Drivex engineers custom control systems for industrial machinery.

- **SCADA Developer**, Generating **Touch Screen Graphics and Data Acquisition systems** for Prototype, Production and OEM Machine manufacturers. "Supervisory Control And Data Acquisition". For examples of my GUI development please visit <http://www.drivex.com/2008/program/hmi/>
- Advanced PLC programming using object oriented methods, and data structures.
- Advanced programming of Motor controllers, specializing in **precise torque and speed control** for high speed material handling, tension control, and winder applications.
- Here are some controls projects for which I have been: manager, lead engineer, programmer, and fabricator.
 - PLC and HMI programmer for 5 layer **blown film** line with **flying shears**, used for making printed potato chip bags.
 - PLC and HMI prog. for 7 chamber vacuum system with flying shear, used for **sheet metal solar cell** manufacturing.
 - Programmed 8 racks of I/O and an HMI for a machine manufacturing "**warm superconductors**".
The control system for this project was featured in Siemens & Control Engineering Magazine, and I was a guest speaker at Siemens Automation summit, 2007. HMI featured user modifiable state machine logic.
 - Drive programming for a machine that perforates, cuts, creases and winds 500' rolls of drywall tape every 30 seconds.
 - Implementer of SQL Server data acquisition system for a Military spec **Carbon fiber** manufacturer.
 - PLC and HMI programming for an Optical Coater which interfaces an IC/5 Deposition controller.

FormFactor, Livermore California. www.formfactor.com/ Summer 00, 01

FormFactor produces beds of microsprings contacts (probe cards) used for testing wafers.

- Design and fabrication of a tip replacement tool used to weld a blade to the end of an eyelash sized spring.
- Completed fabrication of a wafer processing station, and controlled temperature bath.
- Design and fabrication of FormFactor's "replacement springs" for C4 and T2 product line which involved:
Finite Element Analysis, Generating wafer masks, Photolithography of "elephant shaped" springs on silicon wafers.
- Operation of a laser cutting tool, plastic welder, and milling machines. Class 100 clean room experience.

Programming Skills:

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- **HMI (Human Machine Interface):** Expert user of the following GUI development software: **Siemens WinCC, Allen Bradley RSView32 & Studio, WonderWare** (Intouch, InSQL, & Active Factory), **LabView** "Advanced Certified"
 - **PLC (Programmable Logic Controller):** Expert user of: **Siemens Step 7, Allen Bradley RsLogix 5000**, 500 and 5; National instruments compact field point.
 - **Networks:** DeviceNet, ControlNet, Modbus, Ethernet, Data Highway, Eurotherm FiberLink, Profibus. RS232
 - **Motion:** **Allen Bradley** Sercos Servo, Kinetix 2000 Systems; **Eurotherm/Parker/SSD** "Drive system designer"

Personal Projects: for pictures and details please visit www.etischer.com

- Conversion of a '72 MG Midget (British convertible) to Mazda 12a **Rotary Engine** and 5-speed gearbox. ('98)
- Conversion of an air-cooled Porsche 914 to Subaru six cylinder water-cooled engine. ('01)
- Design and fabrication of a "Porsche 901 transaxle cable shifter system" to replace the original crude shift linkage. ('02)

Education: **California State University Chico**

Graduated: Dec. 2001

Major: **Mechatronic Engineering**, a combination of Mechanical Engineering and Computer control systems.

- Mechanical course work: Machine Design, Strength of materials, Finite Element, Statics, Dynamics, Failure Analysis.
- Electrical course work: Design of a single wire data transmission protocol and hardware. Fabrication and programming of a working computer motherboard. Programming programmable gate arrays.
- Mechatronic course work: Designed and built proof of concept CNC type projects. My senior project was a computer controlled saw which feeds, measures, clamps and cuts metal tubing.
- First place in 1999 and 2000 National **Steel Bridge Design Competition**.
Design and fabrication of a steel bridge with considerations to weight, cost, deflection, and construction speed.

Hobbies:

- Building **custom molded fiberglass** camera cases, laptop cases, and car parts.
- International travel, the most unusual place I've been is Chernobyl, Ukraine.
- Applied to be on TLC's Junkyard wars.
 - Self taught Aluminum Mig Welder
- Lastnightphoto.com is my photography business.
 - Building underwater camera enclosures.