

# Eric Douglas Tischer

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## Electric Car experience:

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### Designed and built my own 3 phase inverter to run a 90hp Siemens AC motor

June 08 to June 09

- My homebuilt water-cooled 3 phase inverter runs vector torque control; 280A @ 320v.
- Designed and fabricated an EV conversion kit for my 2001 VW Passat.  
About 10k miles traveled so far. 100mph 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:

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### Solyndra, Fremont California. [www.solyndra.com](http://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.

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### Drivex, Livermore California. [www.drivex.com](http://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.

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### FormFactor, Livermore California. [www.formfactor.com](http://www.formfactor.com)

Summer 00, 01

FormFactor produces beds of microspring 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](http://www.etischer.com)

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- 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**

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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:

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- 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.