Sufficiently Advanced Technology

Donald E. Strayer

2322 Old Post Road
Beavercreek, OH 45434

937-654-SADT (7238)
dstrayer@sadt.com
www.sadt.com

I offer electronic design services on a consulting or contract basis, with emphasis on analog and high-speed digital circuitry.

I have broad experience in electronic circuit design. In addition to straight circuit design, I can help you with system design, circuit design, regulatory approvals, component selection, production testing, and documentation. If needed, I can arrange or suggest contractors for PCB layout, PCB fabrication, and manufacturing. I can work with your layout person or mine to optimize the board for high speed and low EMI.

Capabilities:

Analog circuit design. Signal conditioning, ADC and DAC, analog computation. On-board switching regulators. Phase-locked loops. Professional audio.

Simulation, primarily in SPICE.

Digital design. High-speed serial communications and fiber-optic interface. Control and interface logic.

FPGAs and VHDL programming.

Embedded processors.

Programming in C, Python, and Forth.

System design.

Board and system testers.

Familiarity with DxDesigner and gEDA/Gschem.

Familiarity with Linux and open-source software.

Recent Projects:

Therapeutic product involving multiple microcontrollers, a variable-color LED driver, and a wireless link with custom protocol.

Programming in C of embedded PIC, AVR, and AVR32 microcontrollers.

Programmable pulse generator, high-speed power switch, and high-voltage switch (1500 V) for use in automated product testers.

Benchtop board testers, including a bed-of-nails tester. Mechanical design and construction.

Small board to replace an out-of-production analog IC in a legacy product.

Design and test for compliance with CE and FCC EMC limits.

Special-purpose portable audio mixer.

Selected Earlier Accomplishments:

Multi-speed (4.25 Gbit/second max) 288x288 crosspoint switch system for Fibre Channel and related protocols. System design, including mechanical concept. Designed circuitry for crosspoint backplane and several 48-port cards including Fibre Channel, 1394B/Firewire, and 1 Gbps Ethernet. VHDL for multiple FPGAs for control logic. Embedded controller using off-the-shelf single-board computer. Redundant power and redundant, speed-controlled fans.

144x144 and 32x32 crosspoint switches.

Copper cable drivers at 1 and 2 Gbit/second.

A simple, inexpensive meter to measure skew in fiber-optic cable pairs with sub-nanosecond resolution.

Technical leader of team that designed phase-locked loop function blocks for use in CMOS ASICs. (Please note that IC accomplishments are included to show circuit design experience. I do not claim current IC expertise.)

Fiber-optic transmitter and receiver ICs at 200 Mbit/s and 1 Gbit/s.

Fiber-optic laser drivers and control IC.

General-purpose programmable phase-locked loop clock synthesizer chips (to 1 GHz).

Print hammer driver with controlled time of flight, used in high-speed band printer.

Technical paper on simulating phase-locked loops.

High-speed automatic test system. Designed special-purpose ALU, programmable timing generator, and controller board with embedded microprocessor. Led team that programmed embedded controller.

Patents and Publications:

Co-inventor, U. S. Patent #5,513,225: “Resistorless phase locked loop circuit employing direct current injection,” April 30, 1996.

Co-inventor, U. S. Patent #5,546,052: “Phase locked loop circuit with phase/frequency detector which eliminates dead zones,” August 13, 1996.

Co-author, “Fully integrated CMOS Phase-Locked Loop with 15 to 240 MHz Locking Range and ±50 ps Jitter”, *IEEE J. Solid-State Circuits*, vol. 30, pp. 1259-1266, Nov. 1995.

Past Employment: Senior Engineer, Systran Corporation / Curtiss-Wright Embedded Controls, Dayton, OH
Advisory Engineer, IBM, Endicott, NY

Education: B.S.E.E., Ohio State University
M. Eng. (EE), Cornell University