Entiv Data Systems Inc.

The design center where ideas are turned into products

Entiv Data Systems, Inc.
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Entiv Data Systems, Inc.

Our Mission

Leading edge technology Research and Development for our clients.

To develop advanced custom ICs, circuits and systems for clients in the areas of:

- Mobile/Wireless Communications Optical Fiber Circuits
- Hi Speed Data Communications XDSL products
- Advanced Signal processing Base-band A/D D/A
- VLSI – ASIC Multi-media
- Broadband Access Networks Smart cards

We are highly committed to quality R&D and product development and transfer the full know-how to our clients by clear and careful documentation of our work.

Company Profile

While ***Entiv*** was established in 1991. The company was setup to provide high technology consulting services to clients worldwide in the field of mobile, RF communications and electronics. At a growth rate of almost doubling every year, our design groups have been very successful in completing their projects. These projects have ranged from analog RF communications IC design in the field of mobile telephony to GPS IC's and from mobile handset, and cordless phone design to WLL and XDSL solutions.

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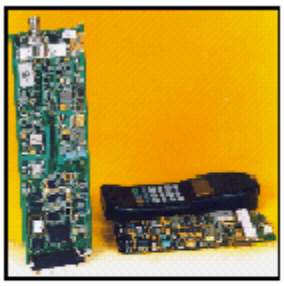
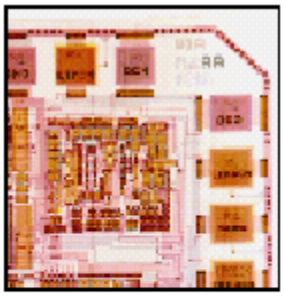
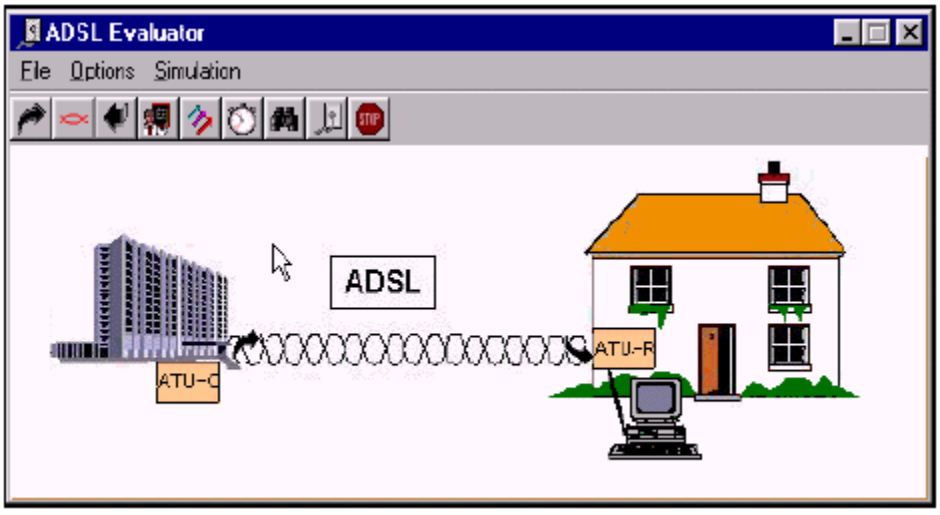
Design Services

Entiv is an R&D center specialized in the fields of:

- **High Speed/Wireless IC Design**
- **Data Communications and Signal processing**
- **Mobile Communications Systems**







Strengths and Achievements

• Proven IC design capability of the most advanced integrated circuits with many innovations.
• Eleven years of solid growth based purely on R&D in the fields of Mobile telephony, DSL and Data Communications.
• Solid record for excellent performance in doing complex designs working simultaneously with 4 teams in 3 continents.
• Extremely motivated and well trained engineers.
• Providing excellent documentation of all our work.
• Working in close partnership with our clients and encouraging customer interaction throughout the entire design process.
• Having our own manufacturing site with SMD machines and testing facilities.

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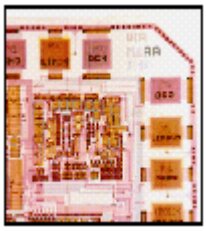
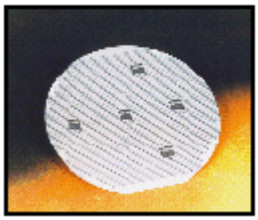
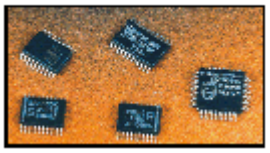


High Speed/Wireless IC Design

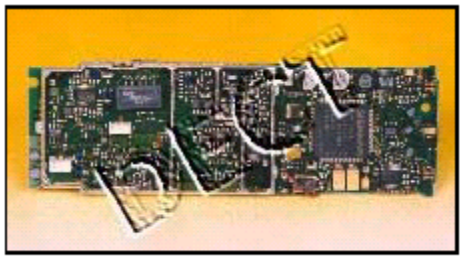
We have a unique blend of systems know-how as well as IC design capability. We focus on the system design aspect of every mobile communications system, and an in-depth competitive analysis, before defining new chip-sets, and embarking on the IC design task. That has been the key reason for the success of our integrated circuits. Our IC design ability has also allowed us be very smart users of existing chips in our system design.



We specialize in RF IC design with proven ability to design innovative circuits resulting in numerous patents. Our expertise covers areas from DECT, GSM and DAMPS to 3G Mobile, Spread-spectrum, Wireless LAN Transceiver ICs. Many manufacturers of mobile handsets, and personal communications products have used the RF ICs designed by ***Entiv***.



For digital IC design, we prove your system concept and implement a circuit on an FPGA before doing a full ASIC.



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Capabilities:

• Full IC design capability.
• Very powerful in-house developed CAD automation software.
• Advanced BiCMOS layout capability.
• Initial characterization.
• Dedicated client links for electronic transfer of circuits, IC layout, PCB layout and document
• Communications systems architecture and protocol analysis.
• Design and analysis of RF, base band mixed-mode, and other DSP integrated circuits.

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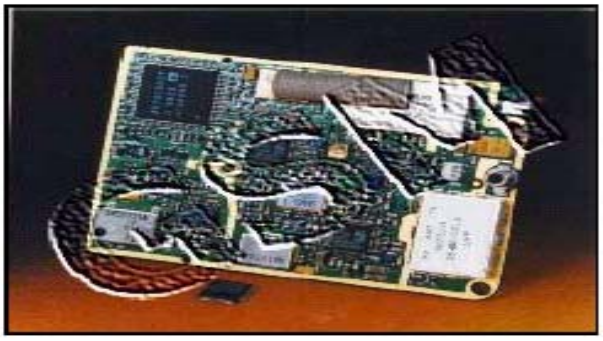
The type of ICs we can design:

Our biggest strength is in low power, low voltage Transmitter, Receiver, Modulator/Demod, and Synthesizer circuits. Carrier/clock recovery circuits and continuous time filters are also areas in which we have experience and expertise. We can analyze the full architecture of your existing solutions, and help you in design and definition of new solutions for reduced cost and higher performance.

We can design Analog CMOS A/D, D/A, switched-capacitors and digital filters for advanced CODEC applications. We can prove your digital design concepts with FPGA's then proceed with a full VLSI ASIC design.



IC's designed by *Entiv* have been used in mobile handsets by leading manufacturers.

Previous projects:

• Design of GSM IF ICs (Low distortion transmitters, Advanced quadrature signal generation)
• Design of several of the best known FM/IF ICs
• 1-volt RF CMOS building blocks for pagers
• Advanced RF transceiver IC for 802.11a.
• Chip-set design feasibility for 10Gb/Sec fiber optics IC's.
• GPS RF and base band IC in CMOS technology
• GPS Base-band digital IC design (100k gates) for human scale movements
• Smart card CPU and dedicated co-processor design
o 400 MHz GSM IF chip. The design of transmitter, LO buffers, Level-locked-loop, on chip reference, and logic interface in BiCMOS technology resulted in 6 patents.
o 110MHz/9.8MHz IF chip with an integrated switch for DECT which resulted in 2 patents.
o 240MHz/10.7MHz receiver chip for DECT
o 90MHz/500kHz IF chip for digital cellular telephony.
o 240MHz/10.7MHz FM IF. The first low voltage high frequency FM IF with extended RSSI, and fully internal filter matching.

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More than 20 patents filed on:

Extended RSSI
New mixer
Positive feedback IF limiters
High-Speed High-slew rate
Buffer/switch
Level locked loop
Oscillation-free prescaler
Symmetric phase detector
Loop back testing
High speed DC shifter
High frequency current source

What is a typical IC design cycle for us?

• we work on the spec and feasibility, and finalize them with you. For major projects we can come to your site.
• if your IC process is not well characterized we will assist you in testing and key parameter extraction.
• we design circuit blocks and report updates of the work in progress to you.
• we will then come up with a full design review (faxed in full and also sent by Internet in encrypted format)
• The design review package includes numerous simulations vs. Vcc, Temp and process, and full layout package (matching, floor plan and critical paths). The simulations always include package parasitic in full.
• Layout can be done at our site if full process information is available. We will upload the GDS-II file to your system.
• if you decide to do the layout, we can provide a Spice net list for LVS.
• during the layout we continue with process variation simulations if needed.
• we also provide test PCB (Protel software with Gerber output) before the wafer is back, so you will have a chance to have the evaluation PC board ready when the packaged die is available.
• we also provide automatic tester documentation to help the test engineer write the test software.
• our reports are all dated with clear page numbers, clearly written, well documented and organized for future reference.
• After the IC is processed, initial characterization can be done at our site for certain circuits. If the circuit requires highly specialized testers we will provide assistance remotely, or just show up locally to do the job

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Data Communications & Signal processing

Broadband access is the next logical step in the evolution of the telephone network. Until recently, the last mile of the network has remained dedicated to plain old telephone service (POTS), thereby making it impossible to deliver high data rates. The maximum data rate of current voice-band modems is 56 kbps, which is far from adequate to carry the multiple megabit-per-second data rates required by today's demanding information services. The most common method of access to any home or office environment is copper. However, it hasn't been until recently that the development of low cost and powerful DSP chips and the advancement of VLSI Technology has turned such copper-based Digital Subscriber Loops into a reality.

DSL Systems:

Different types of DSL systems (collectively known as xDSL systems) use the most advanced modulation and coding techniques to achieve data rates of 1.5 Mbps to 52 Mbps, ranging from basic G.Lite to very High-speed DSL (VDSL) systems. In 1999, we finished a full simulator for ADSL and G.Lite environments. We believe that our expertise in the area of xDSL, our strength in DSP architectures, and our strong background in communication theory and signal processing, uniquely positions us as a provider of advanced broadband data communication algorithms, techniques, and designs. As we enter into the new millennium, access networks will increasingly become the main focus of the data communication development and therefore, we are committed to and ready for providing world-class services in this area.

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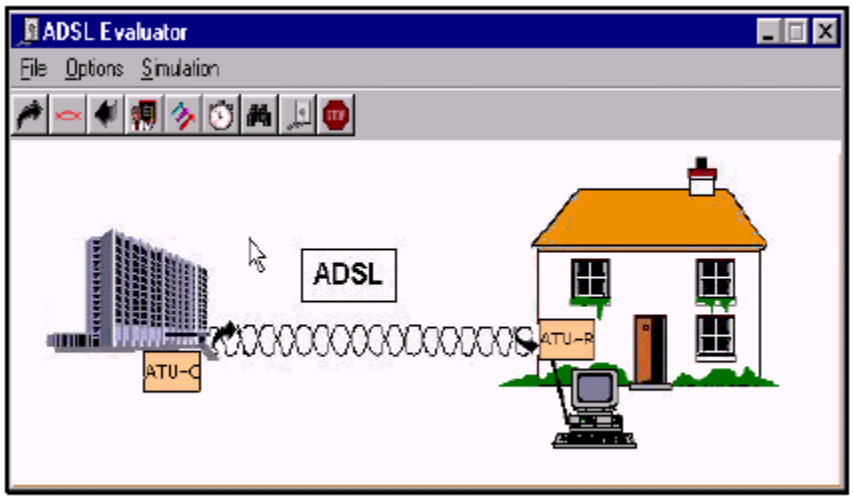
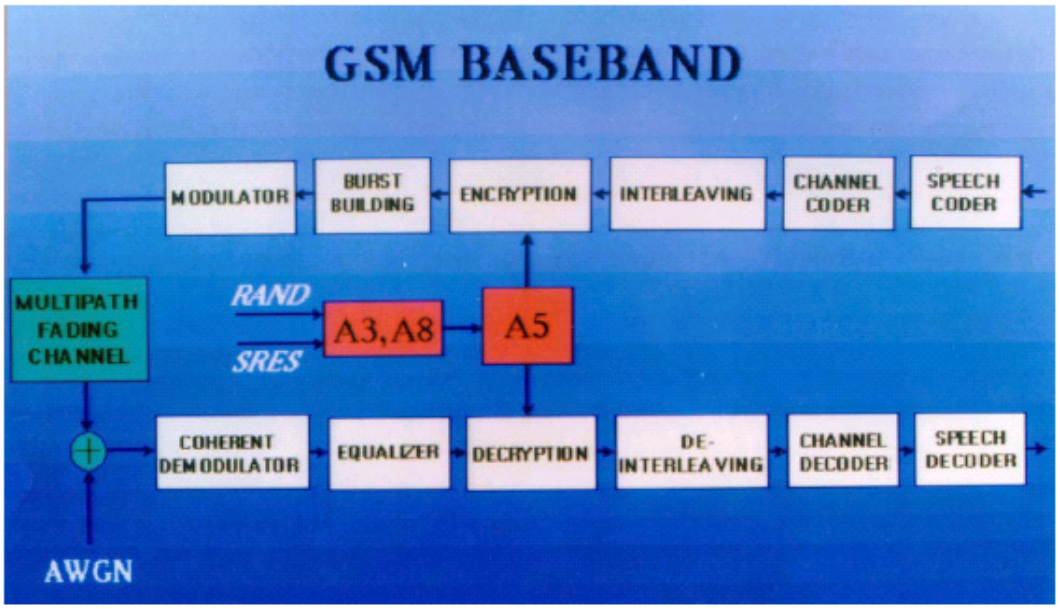
Previous Projects:

• Complete software for modeling ADSL and G.Lite CO, line and RT configurations with different noise and interface models.



ADSL simulation software

- GSM transmit/receive and channel modeling



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Mobile Communications

While staying at the forefront of the mobile technology, we support our clients with meticulous attention to detail, friendly service and quality. We have a proven ability to develop RF modules and advanced baseband digital signal processing algorithms. We have the ability to analyze existing protocol standards and debug existing signaling software in detail. We are able to develop very efficient production test set-ups for complex RF systems.

GRS-3

Public Phone

GR2001

Capabilities:

- Communications systems architecture and protocol analysis.
- Personal Communications, RF, baseband DSP, and protocol software design and development.
- Design of RF boards including PCB layout.
- Custom test software and hardware setups for production.
- Protocol analysis of communication systems from standards such as GSM, DECT, DAMPS, ETACS and the evolving 3G systems. (GPRS, EDGE, UMTS)

Previous projects:

- Design of an ETACS phone as a Radio Telephone Interface.
- Design of GSM Handsets.
- Development of GSM baseband DSP.
- Design of a family of cordless telephones for various standards including software and test setups.

ETACS modules

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- Spread spectrum cordless telephone architecture.
- Analysis of the protocol for the DAMPS base station.
- Design of a DAMPS WLL RF unit.
- Modeling and analysis of efficient RF amplifiers for mobile base stations.
- Wireless Local Loop user terminal for the GSM standard.
- Design of a 3V GSM codec chip, using oversampling delta-sigma converters.
- DECT WLL signaling software development.

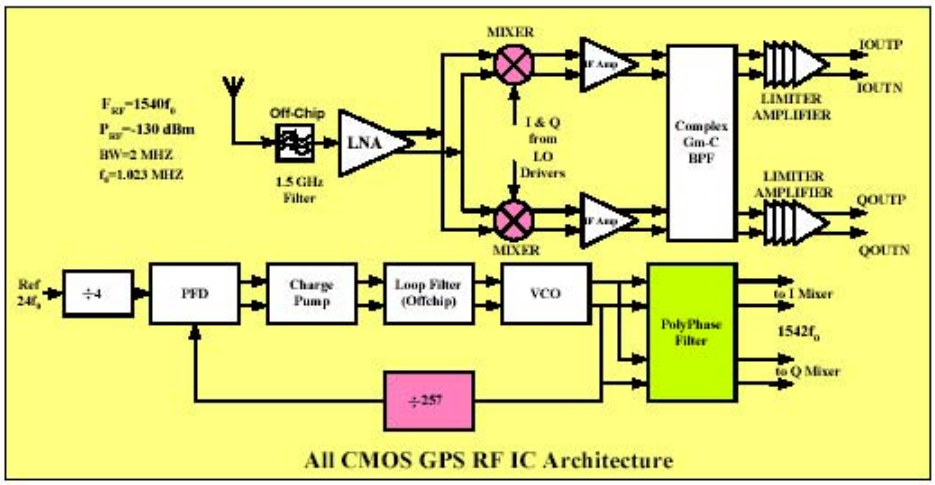
Cordless

DECT

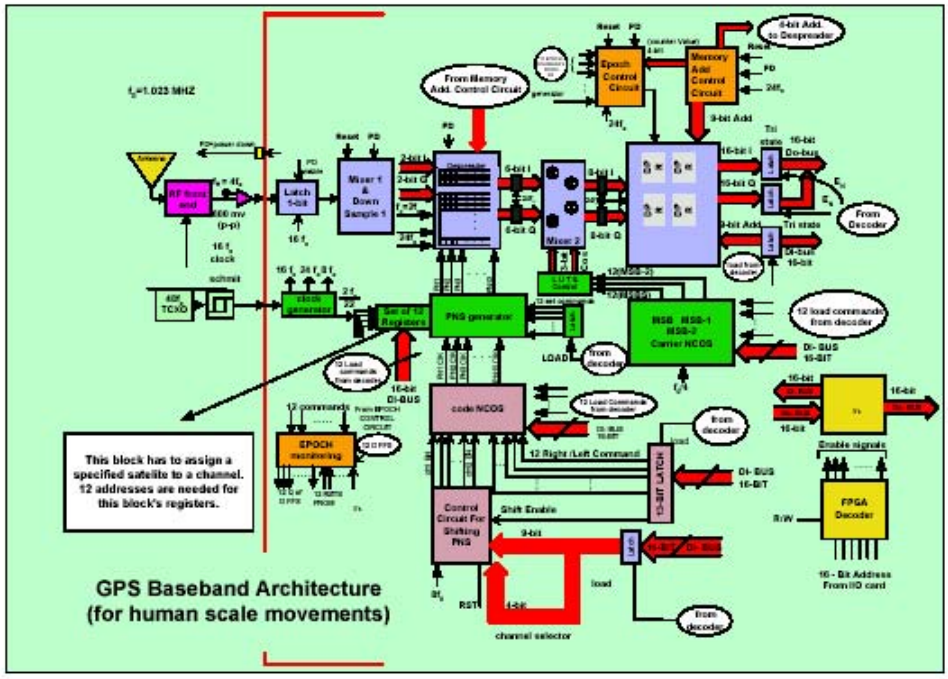
Digital Enhanced Cordless Telecommunication (DECT): the technology originated as a European initiative is now rapidly conquering the telecommunications world. More and more users, regulators, standardization bodies, network operators, and equipment manufacturers recognize the benefits offered by this high quality access technology. DECT has proven multiple applicability as a network access in residential, business and public environments showing easy mobility, speech quality comparable to wireline telephony, a high level of security through advanced digital technology and encryption, allowing for high subscriber densities, flexible bandwidth allocation, multiple service support, cost competitiveness, flexible deployment and simple installation.

Entiv's related projects have been in the area of handset design for GSM, D-AMPS and ETACS systems. In addition, ***Entiv's*** has already evaluated existing DECT handsets and base systems for manufacturing techniques and components used.

The full DECT system signaling software has already been developed. In this project, the focus has been on developing generic software for DECT layers 2 and 3 for WLL systems. In order to prove the viability of the developed software, a traffic simulator has been used, which generates the signaling requirements in a small city or an industrial town.



All CMOS GPS RF IC Architecture



GPS Baseband Architecture
(for human scale movements)

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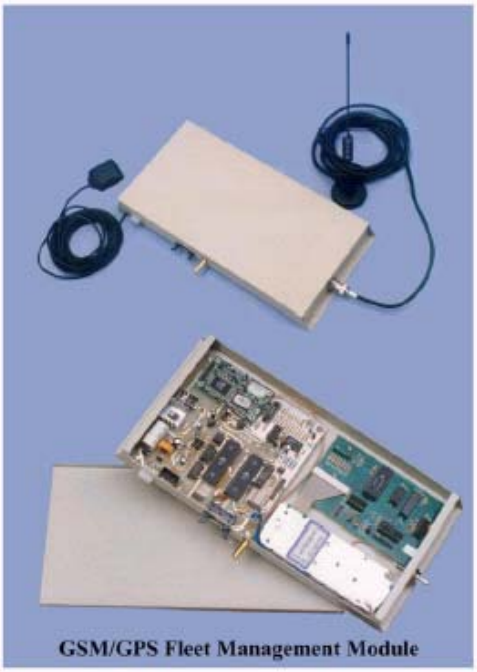
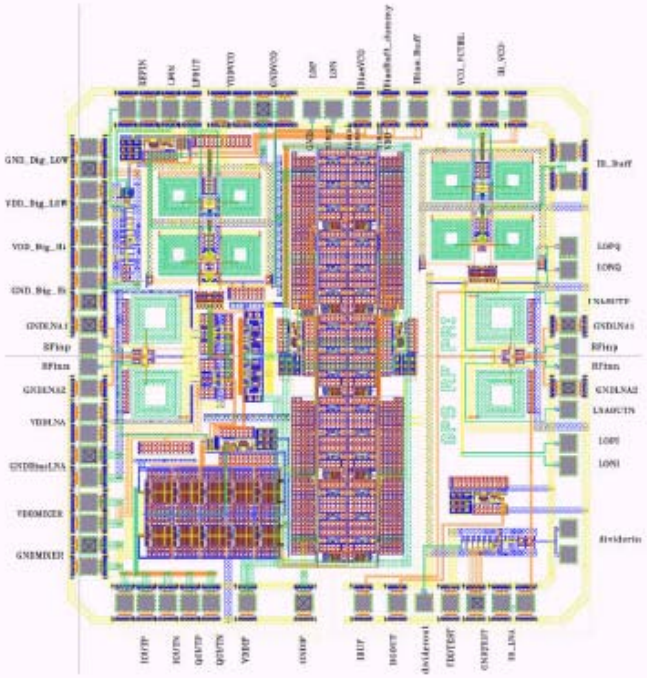


GSM/GPS Fleet Management Module



All CMOS GPS RF IC

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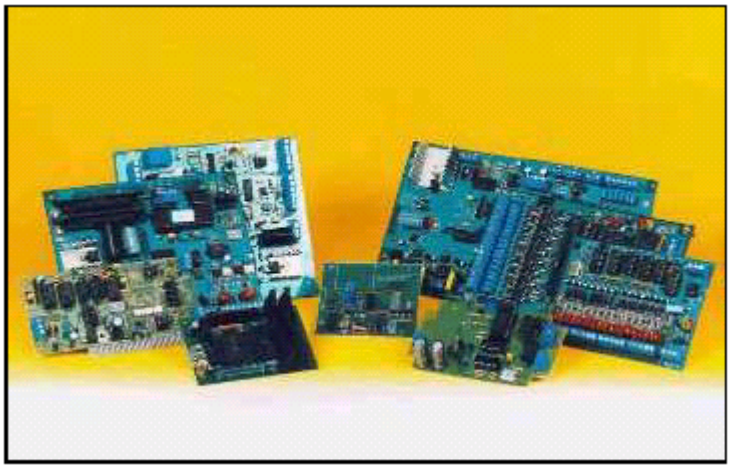
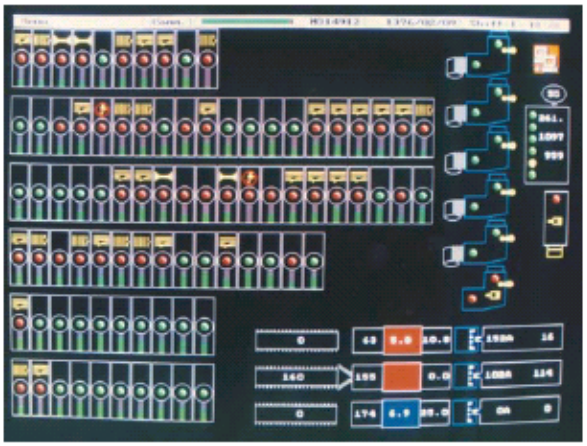
Industrial Automation Division

Entiv's industrial automation division since 1994 has been involved with the development of a low cost factory monitoring system called ***Entiv's*** FMS allowing a graphical view of factory floor, instant reports of the production data and statistics with remote access to this information.



Taking 150 engineering-month to develop, great effort has gone in designing this system with proprietary hierarchical noise immunity architecture in order for the system and circuits to operate reliably under the most severe industrial noise. A backup computer serves both as an extra terminal for data viewing and as an added security to prevent data loss due to computer component failure. Extra information such as the workers' database, permanent machine settings, spare parts and results of tests in laboratory are entered manually via another computer terminal.



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High Efficiency Lighting

The technology is available for licensing to various international manufacturers.

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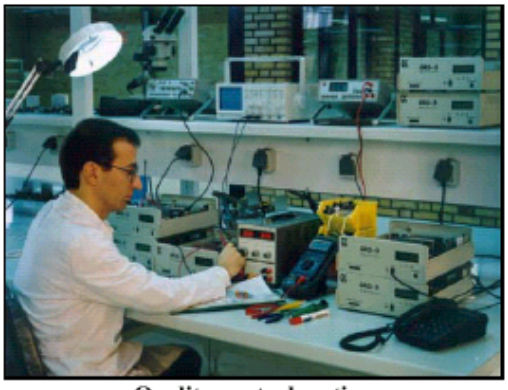
Factory

With 19000 sq. ft. production area, an educated work force, SMD machinery, testing facilities and strict quality control, we can be your partner not only in designing your product, but also in manufacturing.


Production line in factory



Quality control section


Production site