

# SERTEL ELECTRONICS



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# Introduction

- Designers and Manufacturers of GPS based Time Synchronization System, Alarm Annunciators, Time Code Displays, Converters, Wireless, IoT Solutions for Smart Grids

## Our Products



# Our Clients



## Industries:

- Oil & gas
- Power & Utility
- Nuclear
- Automation
- Banks
- Airport
- Networking
- Medicine
- Energy

# Objectives

- Creating innovative Business Units Revenue Streams catering to different sectors/segments of the market.
- Creating Sustainable innovative home-grown solutions for manufacturing scenario with less dependency on imports from foreign sources.
- Better balance of trade policies with absolutely less imports and aim of exporting our Products
- Creating a Research oriented work-force across globe who can create, innovate & offer international solutions catering to various market geographies.

These driving factors have forced us to be an R&D oriented organization.

# VISION & MISSION

- To achieve & provide value added solutions to customer to reduce cost in high end technology.
- Enable Applied Research & Innovation to propel competencies & adaptation of Sertel in a competitive market landscape.

Our main strengths & sustainability mantra

- Design & manufacture Quality product of high end technology, Make it available to market geographies on low market oriented cost basis.
- Start to End solution. Enable customers & manage suppliers to produce high quality products/solutions.
- High Quality product manufacturing objective. All our products are real time applications with need to work continuously 24x7 basis throughout the year.
- Take up Contract Jobs & collaborations from Universities, Governmental organization & provide complete tech-support enabling expansion for the future technology growth in organic way.

## Brief Profile

- Aimed at being a manufacturing company with focus on building a healthy R&D set-up & creating Skill-set in field of Embedded Electronics.
- SERTEL started with indigenisation of products/solutions - in the year 1990 - with ambition of our objectives in mind
- Started with low Key products handheld
- Now manufacturing/designing State of art Technology intensive products catering to various industry verticals
  - Time Synchronisation system
  - Time and frequency products satellite based Indian satellite & Global position satellite (GPS).
  - C37.118 Synchrophasor Measurement Units
  - Alarm Annunciators with DNP3 protocols

## Brief Profile

- Successfully developed products for lower end mass manufacturing and high end technology oriented products.
- Perseverance of R&D on high end products competing with international products on maintaining a cost basis & high quality manufacturing gave us recognition, brand Name & sustainability in business. Now we are proud to announce ourselves as company recognised as R&D lab by Department of Science & Technology, India & won recognitions from GE,USA Labs & Labs across UK.
- Customer satisfaction was our key achievement on all our products. Sertel brand is well recognised & accepted by all power sector & process industry segments across India, South East Asia & Europe.
- Achieved approvals of leading power sector corporations NTPC/Power grid /OEMs BHEL, Alstom, Siemens, ABB & all leading consultancy groups in power sector.
- Acceptance of products & solutions/service in nuclear/Defence /power hydro/space-organizations.

Sertel is proud of close to 1500 installations of its Time Synch systems in almost all Power Generation plants & T&D across India which are working 24\*7 & installed periods ranging from 23 years(oldest).

Sertel UK is proud of 1200 installations of our Annunciators in Power Substation Environment across North America through PSEG Authorities.

## Sertel's R&D Vision

- We believe in investment of R&D for growth of business on manufacturing and sustainability in the market. Sertel's R&D focus has enabled to train and improve skill-sets of our employees and improve our national assets.
- Average 10%-15% of turn over is invested in R&D since 1990.
- Currently having State-of-Art facility and wonderful R&D environment from niche developments at our premises.
- Invested on plant and machinery over the years for R&D activity
- Skill Sets - range from Embedded ARM processors , Wi-Fi Wireless technology, Microcontroller technologies , Protocol Stack development . Hardware & software development, prototyping to production design & testing.
- Also enable Extended Services such as Production automation & Research for Cost-cutting of existing product prototype designs & enable low cost production.



# Achievement of Design & Development Since 1990

- Applied R&D is our Forte. Our R&D is based on appropriate technology for appropriate application.
- Designed products with discrete components & to latest State-of-Art SMD components upto 1206 & 0805 packages. Controllers to FPGAs.
- Right from 1991 we have experienced changing dynamics of Electronics industry manufacturing process. We have skill-sets who can cope with entire horizon of product development keeping in mind the market oriented cost implications of the design.
- Sertel India Is Government of India Approved R&D Lab facility. [Department of Science and Industrial Research]
- Our mass produced product Includes
  - Alarm Annunciators for North American Market
  - GPS Based Time Synchronization Devices. - All protocols Time Sync
  - Hand-Held GPS
  - Digital Displays -25mm,50mm,100mm

# Technology Intensive Product development Skill-Sets

- ✦ GPS Based Time & Frequency System
- ✦ Master Clock/Slave Clock
- ✦ Time Code Generator
- ✦ Alarm Annunciation System -Protocol based
- ✦ Large Display Controllers for Time/Process/Power
- ✦ Signal Isolators Equivalent of P&F, MTL
- ✦ UTC/IST Time Display
- ✦ IRIG Time Code Generator - Supports all Formats maintaining 1micro-sec accuracy.
- ✦ IRIGB Based Display & Automation Monitoring Solutions.
- ✦ Up/Down Counter with high stability And high accuracy.
- ✦ UTC/IST-Time- Displays Various Format
- ✦ Large Video LCD/MatrixLED Display of plant variables across different locations of plant.
- ✦ Signal Conditioners - Isolators, Amplifiers, Protocol Converters.
- ✦ TCP/IP-NTP-Protocol
- ✦ Data / Time Video Inserter for CCTV Application
- ✦ Power Supply/Battery Charges
- ✦ Line Drivers/ Line Receivers

# Technology Intensive Product development Skill-Sets

- ✦ Embedded Skill sets on development on Microcontroller (Atmel, PIC)
- ✦ Manufacturers of our own ARM based boards
- ✦ We have our Own Customisable Operating System catering to High Precision Real Time Applications
- ✦ Development of protocol Stacks over L1,L2,L3 layers such as Ethernet, RS485, RS232 etc.. Sertel has our own Ethernet & Wireless Solutions based on ARM processor chipsets.
- ✦ Pioneers in long distance data collection & transmission. Our experience includes all Thermal Power plants through out India for these solutions
- ✦ IoT Devices & Solutions
- ✦ Web Based Application development for Embedded Configuring & data management from Across LAN.
- ✦ Time & Position / Speed Tracking
- ✦ GSM / GPRS-Network SMS Connectivity
- ✦ Mapping Solutions
- ✦ Mapping & Report Generation

## Brief Profile

- Successfully developed products for lower end mass manufacturing and high end technology oriented products.
- Sertel India is proud of close to 1500 installations of its Time Synch systems in almost all Power Generation plants & T&D across India which are working 24\*7 & installed periods ranging from 3-15 years.
- Sertel UK is proud of Supplying close to 1200 units of Alarm Annunciator Systems for Power Substation T&D Markets, which are working 24\*7 in plant conditions across North America for past 4 years.
- Perseverance of R&D on high end products competing with international products on maintaining a cost basis & high quality manufacturing gave us recognition, brand Name & sustainability in business.
- Customer satisfaction is key achievement on all our products. We are accepted by all power sector segments.
- Achieved approvals of leading power sector corporations  
NTPC/Power grid /OEMs BHEL, Alstom, Siemens, ABB & all leading consultancy groups in power sector.
- Acceptance of our products & solutions/service in nuclear/Defence /power hydro/space-organizations.

# Brief History of our Development capabilities

## Satellite Based Time and Frequency Transfer Applied to various Verticals/ Sectors

- Power Sector Generation, T&D

Uniform Time Synchronization of various recipient equipment's in Industry of Electrical/instrumentation and Computers maintaining same time throughout with accuracy levels less 1MicroSec levels.

Use of Global position satellite/ NASA - U.S.A. Widely used in all major power sector specifications, power distribution specifications & process industries throughout the world.

- Space Up/Down counter with accuracy using reference time of atomic clock to monitor the events. This is used to monitor fast exothermic reactions and identify time base for their parameters.

- Defense

Time video inserter from TV cameras/TV monitors are computer monitoring of Time display to record the time of event with respect to frames grabbed with uniform time of events. This technology is used for Missile testing & harsh environments video coverages.

# Brief Outlook of our Development capabilities

## ▪ GPS Disciplined Oscillators:

Sertel's GPSDO have accuracy of 0.01ppm level for our oscillators. Such oscillators are usually available only from Europe or America. Sertel In-house R&D we have achieved completely indigenous design of this high precision oscillator which can be a part of any real time embedded System, which requires a time-critical execution.

## ▪ UP/DOWN CONVERTOR:

With reference to standard time format generated increment/decrement of time in millisecond for the event to take place in various application. Also we can transfer this time over long distance say 1 to 2Kms for monitoring parameters from harsh environment Zone, sitting in a control room. Used in various applications of space, nuclear, oil rigs and other applications.

# Brief Outlook of our Development capabilities

## ▪ POWER GRID: Energy Trading & Smart Grid applications

### TIME AND FREQUENCY FOR DISTRIBUTION:

For event monitoring the status to have standard time stamp for the occurrence of event monitoring

Developed & Supplied product for PGCIL India & PSEG USA with various outputs for Time Synchronization. Approved Supplier for various power OEMs.

Sertel has State-of-Art Time Sync Devices which are compatible for Next Generation grids - Smart Grid technology which requires high precision outputs of order of 200ns accuracy & less than 14ns jitter.

Sertel is rightly equipped with our R&D facility & test facility for testing/ implementing next generation C37.118 Synchrophasor Measurement Products for T&D requirements in Smart Cities, Smart grid Applications. Right Collaborations can help us achieve right market access & product positioning.

## •POWER GENERATION

- Pioneers in Time Sync for generation plants. Have a installation base of close to 1000 systems across India.

- Manufacture and Supply of Advanced Annunciators (equivalent of MTL, Alan, Ronan, RTK systems)/ Alarm management System. Over Ethernet.

- Large Online Displays - LCD/Matrix LEDs to display Plant operation parameters. These systems interface with DCS/Control equipment's to gather information and Display vital parameters for immediate attention of the Operator.

# Other Development capabilities & Skill Sets

- Along with our Expertise to develop products with micro controller and flash based processor technologies we have gained a wide experience on EMI/RFI conformity to develop products. To meet the international standards & stress levels. All our products are EMI/EMC tested in [SAMEER as per IEC Standards](#)(IEC61 series)
- Also our products are tested for IEC61vibration in accordance with international standard tested in [ETDC as per IEC std](#) (IEC611,IEC602 series).
- All our products are CE marked & comply with Industrial environment acceptance to cater to Indian conditions of tropicalized country.
- All our products are Real Time & work for 24\*7 conditions in harsh field conditions such as Power plants, Process Industries.
- Our products have very large MTBFs and we have many installation sites in India & Abroad where our systems are working for more than 15 years without any issues/ engineer support.



# Ongoing Developments

## □ ISOLATORS - Field Bus Signal ISolators

### Analog/Digital Isolation products:

- a) Analog isolated sensor and driver
- b) Analog isolated signal conditioner
- c) Analog isolated signal processor
- d) Field Bus Protocol Isolators
- e) Analyzer Systems.

## □ GPS Based Analog Time Display

## □ IoT Compatible Devices

### a) **Wireless Technologies for Smart Grid applications**

- b) Sensor Readers Analog 4-20mA, digital
- c) Web based Cloud computing & Smart phone application development
- d) Data Management and warehousing

## □ Control Relay Panel

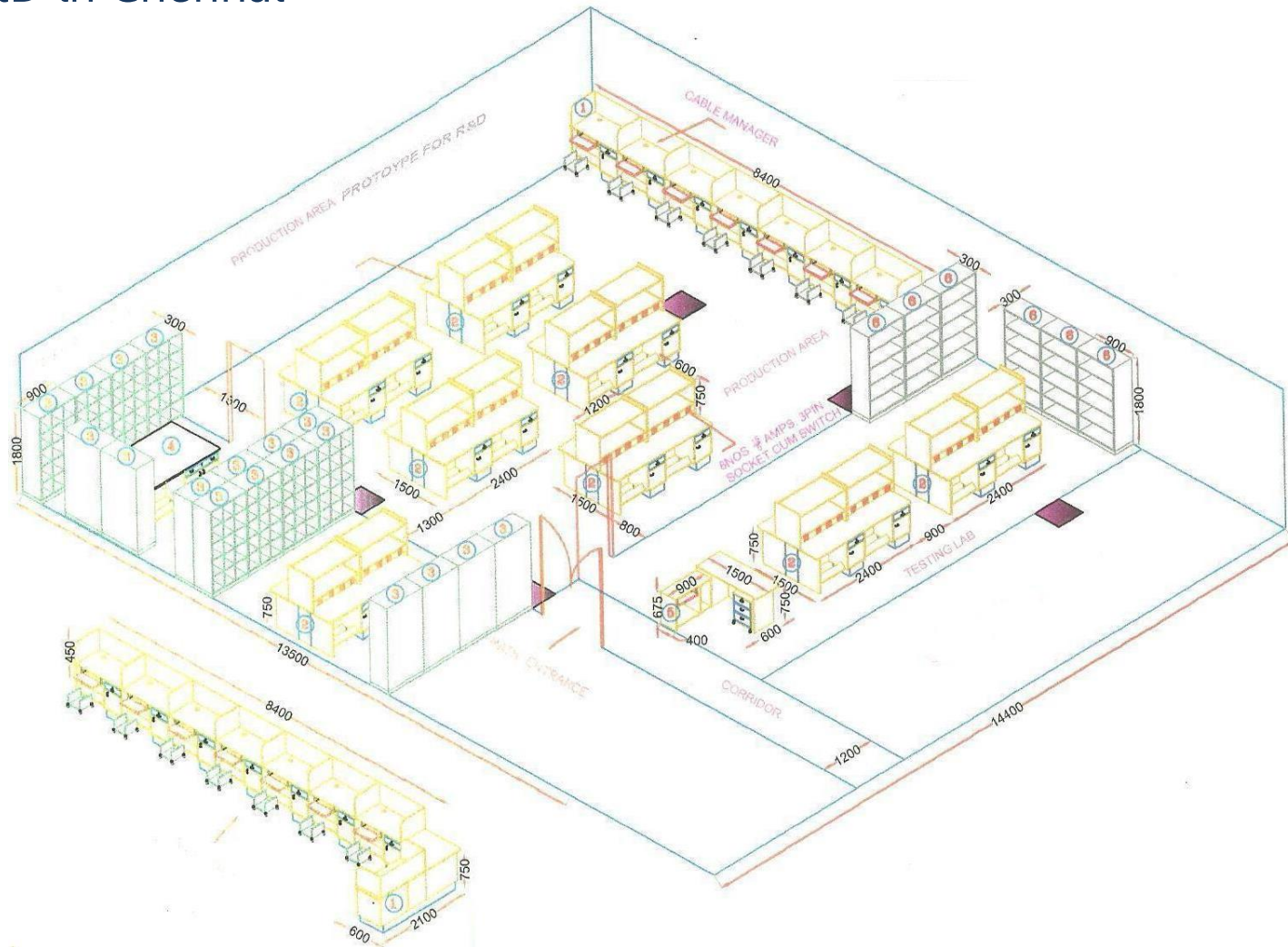
- a) Control Relay Panel Electronics. -Meters(4-20mA), CRP controllers.
- b) Mosaic Mimic Panels & Display Controllers for processes.

# Organisational achievements aiding our R&D activities

- [IS:ISO:9001:2008](#) Quality System
- ISO14001:2004 Health & Safety
- ISO18000:2004 Environmental
- Recognition by Department of Science & industrial Research as R&D lab.
- We have done well even in times of financial economic instability in Europe & Asia.
- Absolutely NIL liability to any organization either financially or IP/Patents technologies.
- Associations with organizations such as NPL, IGCAR for technical Know-how and bring such technologies to usage in Industrial environments.
- **APPROVAL OF CONSULTANT AND POWER SECTORS**
  - NTPC - Power Grid- EIL-TCS-Variou Consultant- ISRO-Nuclear-Hydropower
  - PSEG USA, SEC Saudi Arabia, ESKOM South Africa.

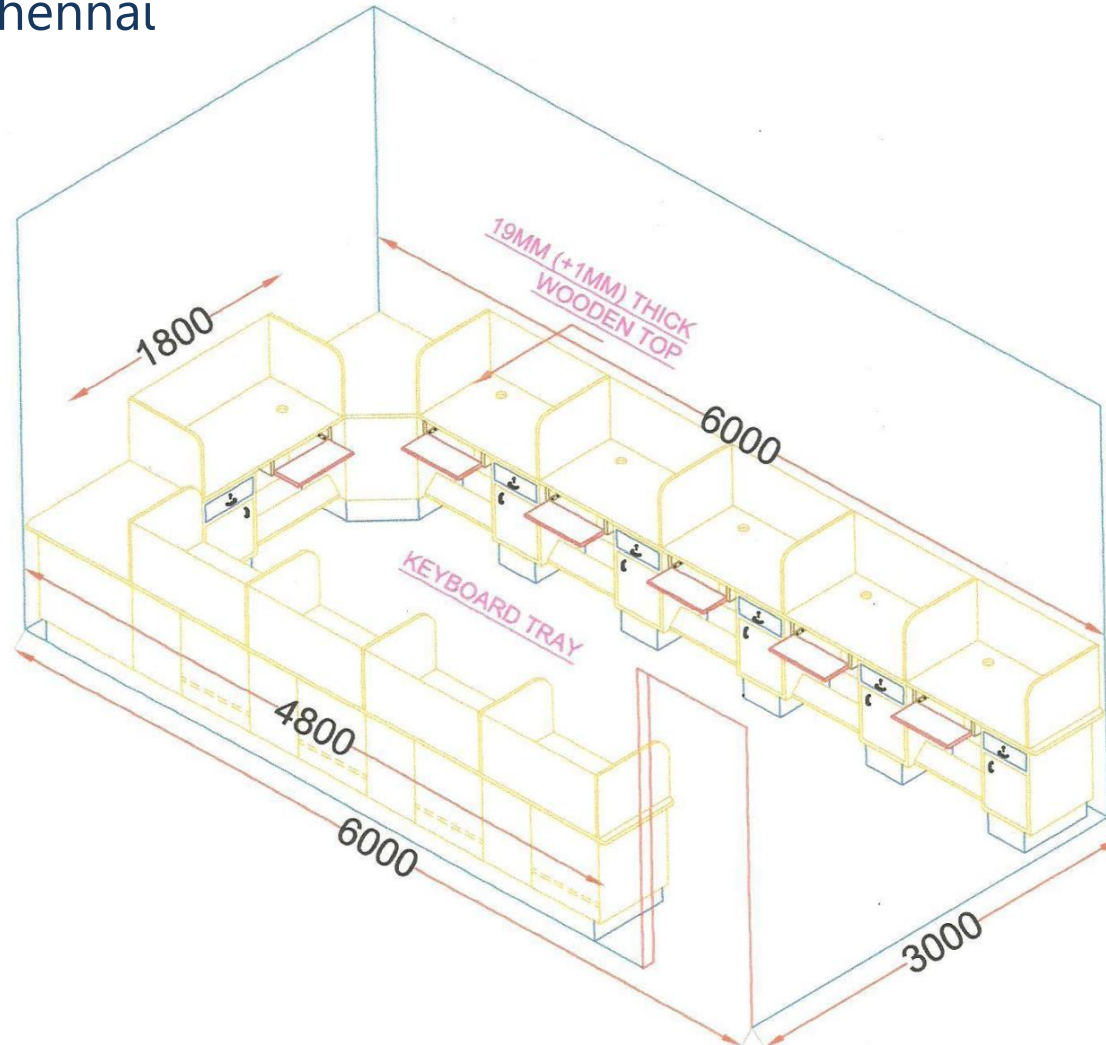
# Location Layout

- R&D in Chennai



# Location Layout

- R&D in Chennai





# Testing Area

- Test Environment Simulating Field Conditions



# Power Generation Panels & Displays



# Manufacturing Location - Annunciators





# Installations in North America & Europe Annunciators & Furnace Cameras



## Future Expansions & Interests

- Need for collaborations with Universities and Standard Bodies to gain access to Research and Design
- Interested to expand to Canada to develop products and solutions for North American market.
- Communication Protocols - for Power Substation & Power Generation markets as market focus is shifting towards IEEE C37.118 standards
- Association with Research & Innovation oriented establishments, universities and applying our skill-sets, assets for project requirements.
- Contract manufacturing, Value added services such as Design, Product integration, manufacturing.
- Smart Grid, Smart City Solutions development and Innovative IoT Designs.
- Market expansion into North America.