

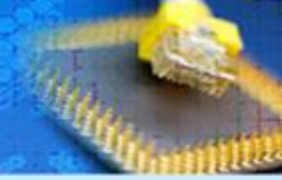
The logo for ChipTest, featuring the word "ChipTest" in a blue, italicized, sans-serif font. The "i" in "Chip" has a dot. The text is positioned over a circular background with a light blue grid pattern.

**ChipTest**

**an IC Test & Automation Company**

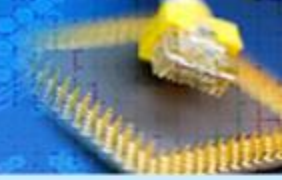
**Corporate Presentation**





1. Introduction
2. Business Units
3. Customers
4. Quality
5. Team
6. Logistics
7. USP





## About Valingro Group

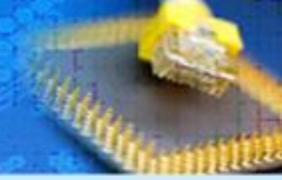
- Valingro Group facilitates, develops & build Enterprises girded by Values
- Creating Companies concentrating on Global Competitiveness, Leveraging global Opportunities, Acquiring global capabilities
- Philosophy: Business Beyond Profit

## About ChipTest Engineering

- An associate of Valingro, ChipTest is an IC Test & Automation Company
- Established in 2005, ChipTest has 2 Core BUs : Test Engineering and Wisteria
- Over 30+ Years of Test Engineering Business Experience
- Operations in India, Singapore & Malaysia
- Long-Term Value-Added Partnership Business Model

## About Wisteria

- Wisteria is the Hardware Products & Automation Business Unit of ChipTest
- Solutions in Semiconductor, Automotive, Electronics & Process Applications
- Integrated team of wide expertise under one roof



## Vision

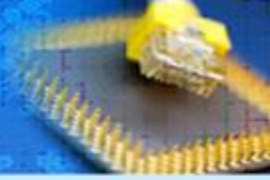
*Consistently excel in Semiconductor IC Test Engineering & Hardware Products with associated Embedded Solutions for global Customers*



## Mission

*Exceed the fast-emerging needs of our Customers by :*

- *Accelerating time-to-market thru continuous Innovation & high Quality*
- *Providing unparalleled Service that is Versatile & Cost-effective*



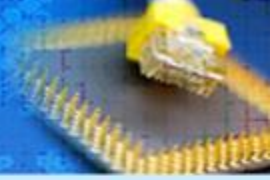
1. Business Ethics - defines us as a Company
2. Professionalism - defines us as Individuals
3. Citizenship - defines our Contribution to Society



## Corporate Objectives

1. Profit - earnings that enable achieving our other 4 Objectives
2. Client Satisfaction
3. Competence
4. Employee Satisfaction
5. Growth





## 1. Test Services

- a. Products
- b. Tester Platforms
- c. Capabilities
- d. Key Highlights

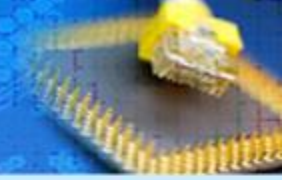


## 2. Hardware Products & Automation Solutions - Wisteria

## 3. Allied Services

- a. Wafer Sort & Final Package Level Production Testing
- b. Reliability & ESD/Latch-up Qualification
- c. Proto-Type Samples Packaging & Small Volume production
- d. ATE Equipment Installation & Maintenance Support

# 1. Test Services

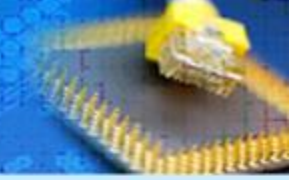


## Products:

- ✓ SoC devices
- ✓ Mixed Signal ASIC Products
- ✓ High Speed Digital devices
- ✓ Automotive products
- ✓ Power Management PMIC devices
- ✓ Clock Drivers, Buffers, PLL & VCO
- ✓ Industrial Analog Devices & Audio, Video & Telecom Ics
- ✓ Integrated Passive Devices (R, RC & RCD Networks)

## Services:

- Test Plan Derivation
- Test program generation
- Test program debugging & correlation
- Product characterization
- Test time optimization
- Wafer Sort Verification & Testing
- Final Device Testing
- Hardware load board design & fabrication



## Road Map:

| Product / Year        | Existing | 2024 |
|-----------------------|----------|------|
| High-End RF           |          | *    |
| High-End Mixed Signal |          | *    |
| High-End Digital      | *        |      |
| Power                 | *        |      |
| Low-End Mixed Signal  | *        |      |



## Existing Platforms:

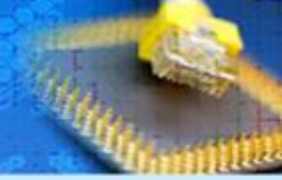
- ✓ Advantest 93K Test System
- ✓ Teradyne ETS 364 / 800 / 88 Mixed Signal System
- ✓ Teradyne J750, iFlex & uFlex Test System
- ✓ Advantest T2000 - IPSE & IPS Test System
- ✓ Advantest T6573 SoC Test System
- ✓ ASL 1K Mixed Signal Test System





# 1. Test Services

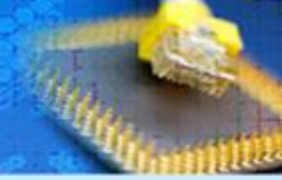
## Key Highlights - 93K



- 93K SW version from 5.X to 8.X
- Extent knowledge in handling resources PS5000, PS1600, DPS128-HV/HC and AVI64
- Test method development for Digital and Analog Resources
- Vector conversion from evcd, wgl, stil to V93k binaries
- DC Profiling to capturing Voltage or Current during pattern run.
- DC Event to force/measure V/I during pattern run.
- Experience in Handling the X mode vector & TP development in A93K UTM & RDI structure.
- Knowledge in tester channels calibration technique for accurate measurements path.
- Measurement of mOhms low resistance for various automotive products.
- Handled low current and low reference voltage trimming blocks.
- Handled 14V DC without AVI64 using Onboard Circuitry
- Expertise in testing of DAC & ADC's for various resolution (8,10,12,16 bits)

# 1. Test Services

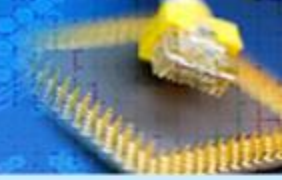
## Key Highlights - ETS



- Worked on various ETS platforms ETS88,ETS200,ETS364, ETS500 and ETS800
- Extent knowledge in handling HPU, MPU, SPU500, SPU100, APU12, QMS, DPU16, APU32, UPU,SPU112, HSD32 and SPMB.
- Expertise execution of AWG, DGT and time measurement using pattern sequencer
- Expertise communicating external equipment's like VI meter, Network analyzer,
- Hands on in Handling pico-amp module to measure the nano and pico amps.
- Worked on various trimming tests (Voltage, current and oscillator), ADC and DAC
- Trimming and OTP done using registers (SPI & I2C protocols) and Physical fuses.
- Used APU12 as APU10, DPU16 as DPU8 in emulation mode

# 1. Test Services

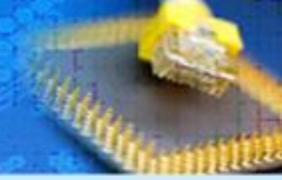
## Key Highlights – T2K



- ❖ Expertise in converting automotive products from legacy Systems to T2K - IPSE / T2K
- ❖ Worked on Digital inputs, MSS interface, Safety switch, Clamp & Temperature check modules of Automatic parking and braking IC
- ❖ High Voltage, High Current & Matrix resources (MMXHE/MFHPE/500MDM,GPWGD,MPCM/1GDM)
- ❖ Worked on SPI parameters, DCS, SyncPulse, JVT modules of Air Bag IC
- ❖ Performed VI spike check, plausibility check, GRR stability, 1000X loop, Bin flip analysis
- ❖ Extent use of Block Diagram, System viewer, Wave & Shmoo, Statistical analysis tools
- ❖ Low Rdson measurement of 50mohms with accuracy < 5mohms at WLCSP
- ❖ Measuring AC delay between 2 resource (MDMA/MMXH) using Module trigger

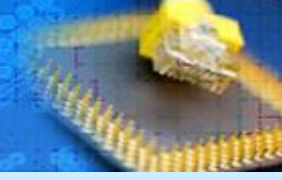
# 1. Test Services

## Data Mining Services & Capabilities

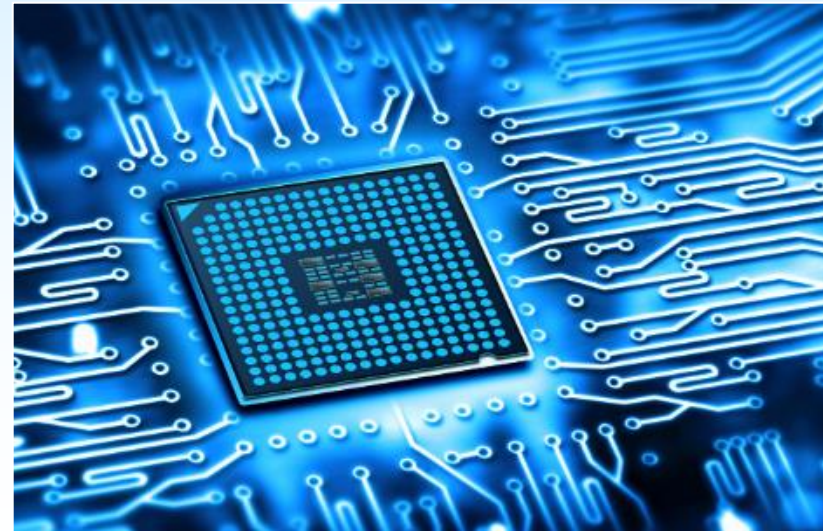


- In depth knowhow of semiconductor operations (Sort & Final test) with rounded skill sets on data mining technologies.
- Actionable insights from the massive amount of Data generated in semiconductor manufacturing operations and drive time-sensitive decisions that significantly optimize Yield, Quality and Productivity.
- Data derived from major foundry and OSATs can be intelligently worked upon to measurably improve Yield, Throughput, Tester Efficiency, Quality and RMA prevention.
- Provide customized reports required to Top Management on a daily basis.
- Experience in handling various industrial standard software like **Optimal Tool, Data Power, Sedana, Galaxy etc.**

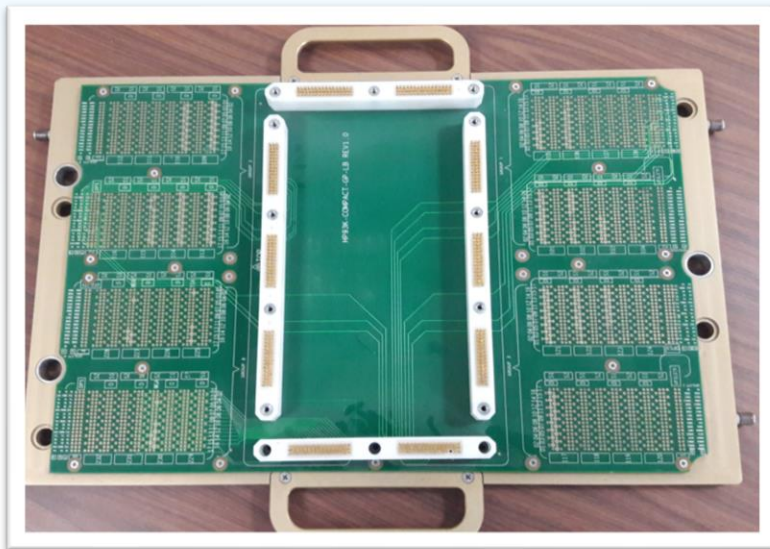
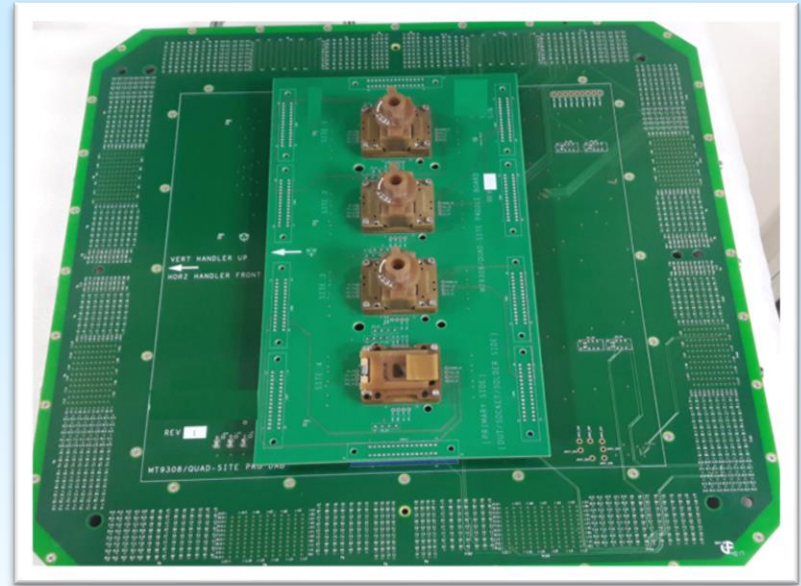




- Design for High Speed Digital & Precision Analog needs
- Support ATE's viz Adv **93K / T2K / T65**, Ter **Flex / J750**, **ETS 364 / 800 / 88**, ASL1K
- Schematics Design – **Cadence CAPTURE**, **Mentor PADS LOGIC & ALTIUM**
- Board Layout Design - **ALLEGRO**, **ALTIUM** and **PADS** Layout
- ATE load board design techniques.
- BGA Routing Techniques.
- Blind and buried Via's Implementation
- Implementation of High-Speed Layout techniques
- Final QC and CAM Support.
- Floor Planning, Net rules, Layer Stack-up planning & Placement constrains.
- Global Route Environment & Quick turnaround time



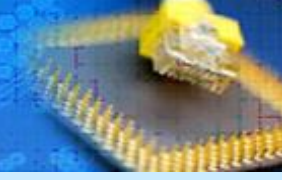
- Layer count: 2 to 56 layers
- Minimum trace width / spacing: 2.5 mils
- Minimum Platted hole and PAD size: 4/12mils.
- Board size: 24" x 24" max
- Board thickness: 0.016" - 0.280"



- Aspect ratio: 34:1
- Outline tolerance: + 5 mils min
- Copper thickness: Upto 4 oz
- Impedance control tolerance limit: + 3 %

## 2. Hardware Products

### Gravity PTB Handler

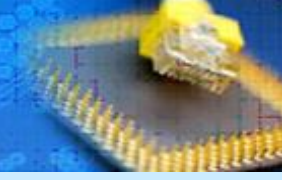


- Hot & Ambient Testing with Option for Cold
- User Friendly Touch Screen Interface
- Real Time Product & Error Monitoring Display
- Bench top & Production Test Applications
- Hard Dock & Soft Dock Mechanisms
- Proven Poke Yoke Features
- Economical & Lower Foot print
- Accelerated Return of Investment
- Various Packages with Conversion kit in each Family

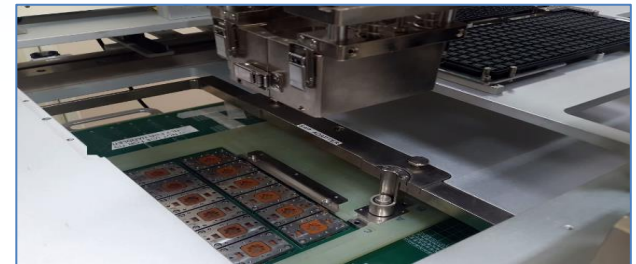


## 2. Hardware Products

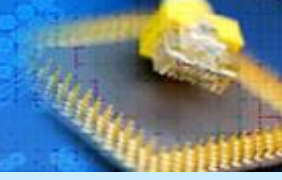
### Pick and Place Tri-temp Handler



- Automatic Pick & Place System with TCU Plunge
- Improved Efficiency with Precise Device Insertion
- Variety of Device sizes with same Base
- Easy Conversion Capability for different packages
- Fast and User-Friendly Touch Screen operations
- Real time Error Monitoring / Device Status display
- Remote System Operation & Monitoring
- Simple, Reliable and Easy to maintain
- Economical Low Foot print Areas Space
- Cost Effective Production Test possible

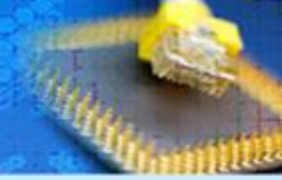




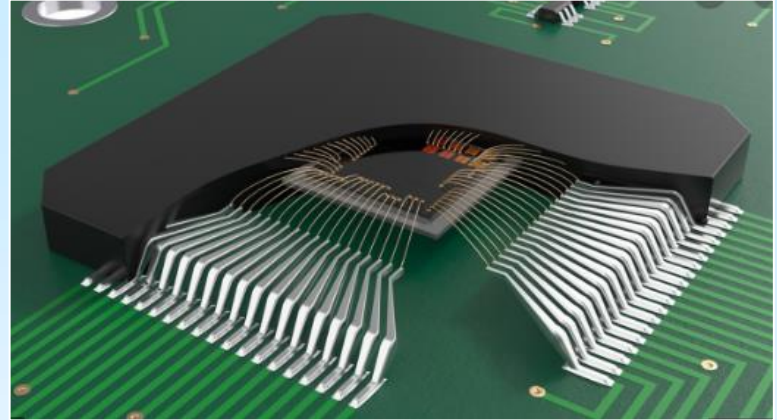


- Pick & Place Solutions for Industrial Applications
- Poke yoke systems to avoid manual errors
- Auto Liquid dispensing Systems
- OEE report dashboard of Inline equipment's data
- PLCC, PIC/PC Based Solutions
- Line Follower Trolleys for Product Movement
- Automated Gang Flash programming systems
- Inline Automated Screw Feeding, Mounting & Inspection Systems
- Auto Loading / Unloading Feature for Manual Equipment's
- Automation Hardware System Design, Development & Validation





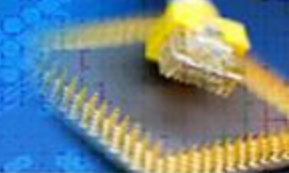
- Onsite Test Engineering Support
- Associated partners for the following :



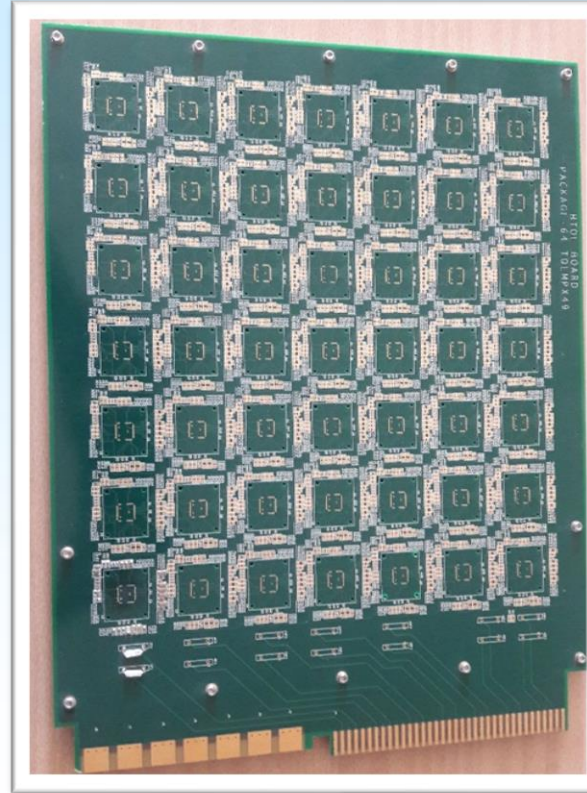
- Prototype Samples Packaging
- Surface Mount Package – Production Assembly
- Lead Scan / Tape & Reel Finish Process
- New Product / Package Qualification
- Long Term Reliability tests - HTOL, HAST, TMCL, Autoclave, etc.
- External & Internal Failure Analysis – X-ray & Decap
- Other Failure Analysis like ESD, Latch-up & CSAM

# 3. Allied Services

## Reliability

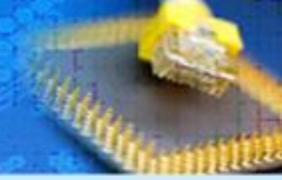


| #                     | Reliability Test Name                | Jedec Ref#     | Test Conditions     | Test duration  |          |
|-----------------------|--------------------------------------|----------------|---------------------|----------------|----------|
| 1                     | Initial CSAM inspection              | J-STD-020C     | -                   | -              |          |
|                       | Pre-conditioning test                | JESD 22 A113-E | Temperature Cycling | -40°C to +60°C | 5 Cycles |
|                       |                                      |                | Stabilization Bake  | 125°C          | 24 Hrs   |
|                       |                                      |                | Moisture Soak       | 85°C / 85% Rh  | 168 Hrs  |
|                       |                                      |                | Solder Reflow       | 260° C         | 3 Cycles |
| Final CSAM inspection | J-STD-020C                           | -              | -                   |                |          |
| 2                     | High Temperature Storage test        | JESD 22 A103-C | 150°C               | 1000 Hours     |          |
| 3                     | High Temperature Operating Life Test | JESD 22 A108-C | 125°C, Max Vdd      | 1000 Hours     |          |
| 4                     | HAST Test                            | JESD 22 A110-C | 130°C, 85% RH       | 96 Hours       |          |
| 5                     | Pressure Pot Test                    | JESD 22 A102-C | 121°C, 100%Rh       | 168 Hours      |          |
| 6                     | Temperature Cycling test             | JESD 22 A104-C | -60°C to +150°C     | 1000 Cycles    |          |
| 7                     | ESD Test                             | JESD 22 A114-D | -                   | -              |          |
| 8                     | Latch Up Test                        | JESD 22 78A    | -                   | -              |          |

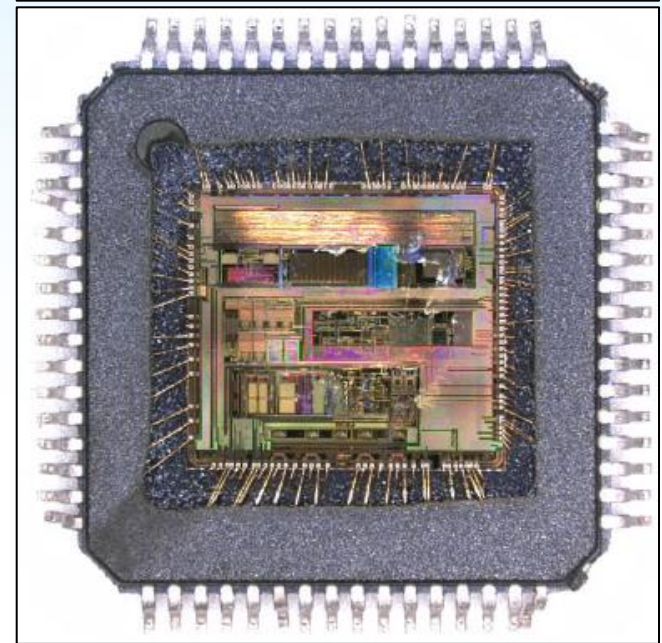


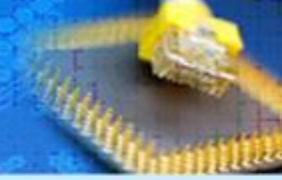
# 3. Allied Services

## FA Facilities



| SI # | Test Description   |
|------|--|
| 1    | Optical Inspection at 1000X  |
| 2    | X-ray Inspection for internal assembly abnormalities                             |
| 3    | Scanning Acoustic Microscopic Inspection (Through Scan, C-scan, B-scan & A-scan) |
| 4    | Chemical Decapping   |
| 5    | Cross Sectional analysis   |
| 6    | Die Shear Test   |
| 7    | Ball Shear Test  |
| 8    | Wire Pull Test   |





When the customer comes first,  
the customer will last

- Integrated Device Manufacturers
- Fabless Product Design Companies
- Start-up, ATE & Subcontracting Companies
- Equipment Manufacturing Companies
- Global Semiconductor Customer Base
- Inbuilt Long-Term Partnership Model
- Customer Specific Teams – Offshore & Onsite

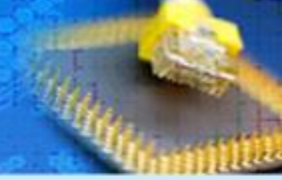
## Markets:

- Served – America, Asia Pacific, Europe, Israel & India
- Explored – Japan

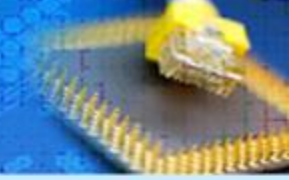
## Applications:

- Mobile, Computing
- Automotive & Consumer



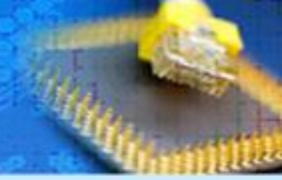


*“To consistently excel in Semiconductor Test Software and Hardware Solutions and exceed the fast-emerging needs of our Customers through continuous innovation, high quality, accelerated, versatile & cost-effective services, along with increasing value addition to all stakeholders”*



- Quality Controlled Process flow approach
- Archival of Process records and Quality data
- Closely monitored Corrective Action Systems
- Well defined Process Flow documents & Check-lists
- Setting & Monitoring of Key Performance Indices
- Project Scheduling & Milestone Tracking
- Systems for Continuous Process Improvement
- Customer specific Qualification Process





## Team:

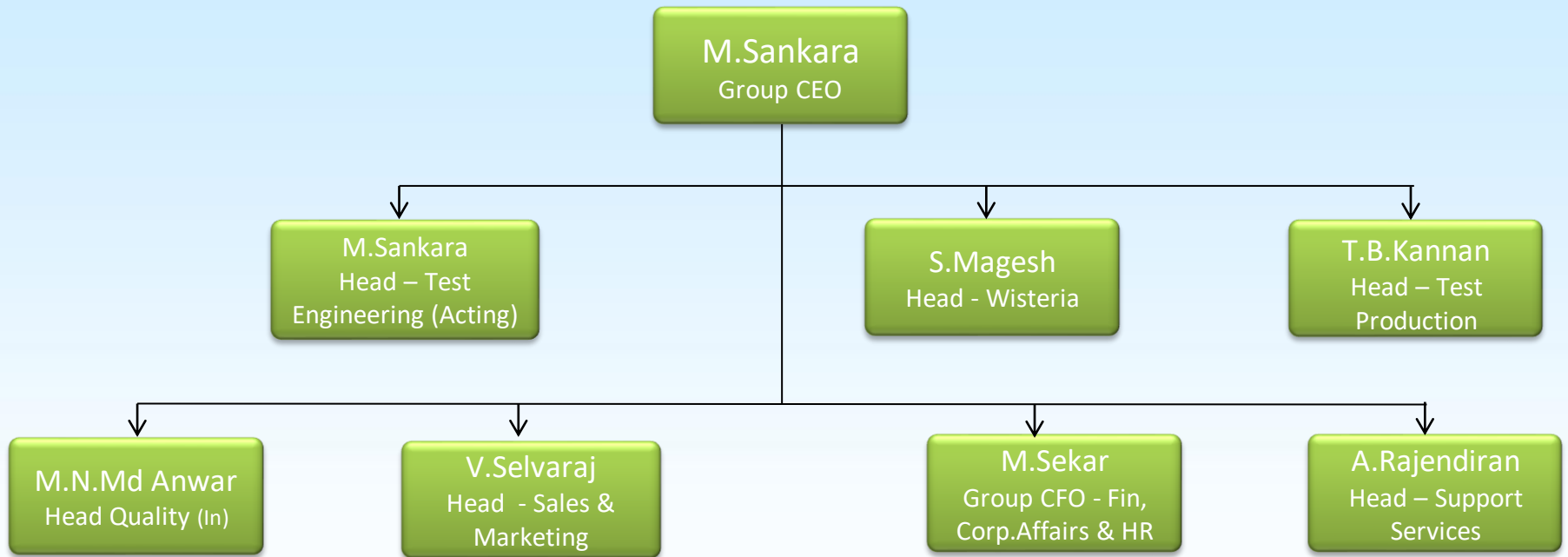
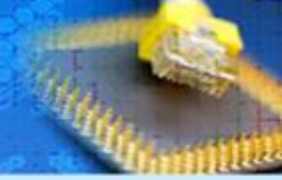
- Talented Test Engineers
- Well Experienced Leadership
- Qualified & Skilled Technicians
- Proficiency in Communicating in English
- Low Direct Labor Cost
- Ready availability of Engineering Resources for expansion

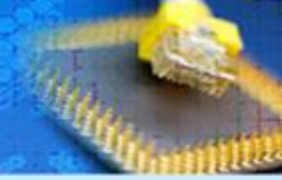


## Development:

- Continuous & Standardized Training Methodologies
- Periodical Performance and Training needs review
- Employee Appreciation & Rewarding Schemes
- Performance based Long Term Career Growth Plans





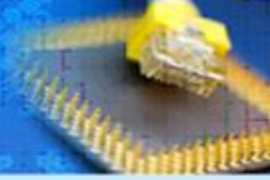


For most people, the idea of Social Service is donating money to a social organization - perhaps an old-age home or an orphanage or similar. This however is the easy part. The difficult part is volunteering one's time to improve society.



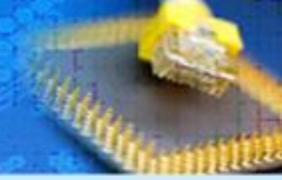
### When can we make a contribution to society

- **During Phase 1** of our lifetime, perhaps up to the age of 35, we are so focused on building our careers, starting our families & establishing a name for ourselves
- **During Phase 2**, perhaps from age of 35 thru 65, we are the most active in our work, working as a team, being able to significantly contribute to Economic Development
- **During Phase 3** perhaps from age 65 onwards, we are most able to contribute our time on an increased basis to social causes



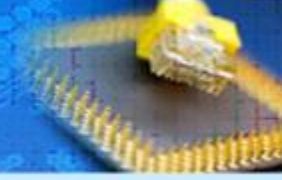
- Unique one for Semiconductor Training
- 6 months PG Diploma Course in IC Assembly & Test
- Incumbents are the Engineering graduates
- Practical Online Training with State-of-the-Art Equipment's
- Dissertation in Tester Software & Hardware in ATE
- Trained Professionals readily available for expansion





- Green Channel Status for Imports & Exports
- Zero Duty
- No Open Inspection
- Clearance within 6 Working Hrs
- Drop ship Facility to end Customers
- Easy Equipment Consignment In & Out of our Facility
- Proximity to Sea & Airports with efficient Cargo Handling
- Daily Flights to US, Europe & Asia Pacific Destinations



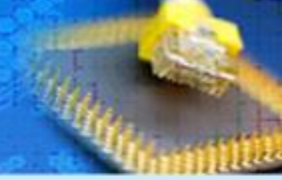


- ❖ 30+ Years of Experience in Test Engineering & Operations Management
- ❖ Resources provided will be of a value addition rather than for Head Count
- ❖ Mixed expertise level in order to maintain cost
- ❖ Highly Efficient resources allocation at lower cost
- ❖ Continuity of support by means of process capturing
- ❖ Focus on Continuous Efficiency improvements & Test Cost Optimization
- ❖ Transparent, Ethical, Adaptive and Value-added Service Support
- ❖ Cost effective Trustworthy Partnership on a Long-term sustainable basis with no compromise in Quality





# Contact



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