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BINAY LED AVIATION OBSTRUCTION LIGHTS

BINAY LED-based HIGH, MEDIUM and LOW Intensity Aviation Obstruction Light Beacons

As per International Civil Aviation Organisation (ICAO) requirements Available in Low Intensity, Medium Intensity and High Intensity versions (as per International Civil Aviation Organization guidelines), BINAY's patented LED Aviation Lights come with 5-year/3-year warranties

The BINAY LED Aviation Obstruction Light offers the following advantages:

- Fit-and-forget maintenance-free operation
- A long life of 100,000 hours (20 years at 12 hours daily burning)
- Pays for itself within a short period of operation in the form of reduced installation, maintenance and servicing costs
- Quick Installation; Reliable operation 365 days per year
- Shock-proof and vibration-resistant
- Over-Designed Intensity to allow for natural LED intensity degradation over its operating lifetime

LED OBSTRUCTION LIGHTING for





All BINAY Aviation Lights are based on Non-switching passive type circuitry (NO SMPS) The circuitry incorporated inside the LED Aviation Obstruction Lights is passive electronic (solid-state) in nature, and does not use internal SMPS driver switching units to control the light unit. Internal LED current control is by non-switching electronic means only. No electrolytic capacitors are used inside the Aviation Obstruction Light unit.

The above is necessary to ensure reliability of the LED Aviation Obstruction Light. This system design effectively eliminates any active components and circuits inside the aviation light itself, and enhances the solid-state passive reliability of the LEDs (mounted in relatively inaccessible locations at the height of tall structures). This drastically reduces the possibility of component failure - and hence possibility of any maintenance requirement - in the LED Aviation Obstruction Lights themselve's (which are mounted at extreme heights in the system).

THE BINAY LED OBSTRUCTION LIGHT IS UNDER ACCEPTED PATENT, AND AS SUCH IS A PROPRIETARY PRODUCT



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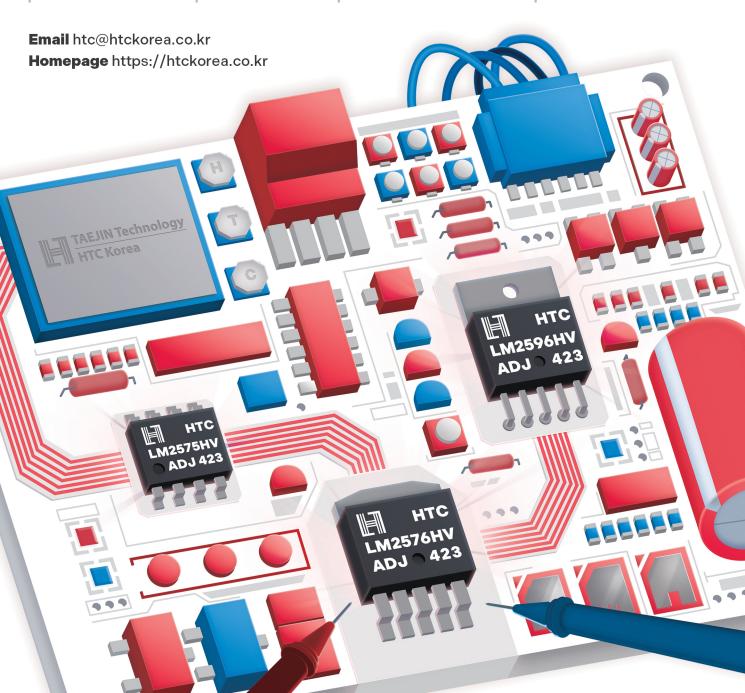




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3D Printing Cable-Driven Robots With Precision

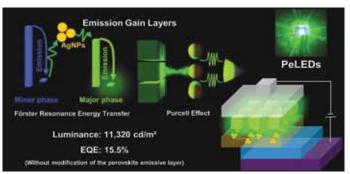


MIT's CSAIL(United States) has introduced Xstrings, a 3D printing method that embeds cables directly into printed structures, simplifying the creation of cable-driven devices. Using a multimaterial printer operating at 260°C and 10-20mm/s, Xstrings produces flexible interiors and rigid exteriors in one step, cutting assembly time by 40%. It enables precise motion types like bending or coiling, demonstrated in creations like a lizard robot, tentacle, and robotic claw. Tested for over 60,000 cycles, it shows high durability. It could revolutionise robotics, wearable tech, and even spacebased manufacturing.

The 'Xstrings' method can produce a range of colourful and unique objects, like a white tentacle that curls around items and a purple wall sculpture that can open and close (Credit: Mike Grimmett/MIT CSAIL)

Nanotech Boosts PeLED Efficiency

Researchers from the Institute of Polymer Science and Engineering at the National Taiwan University (Taiwan), and the Institute of Organic and Polymeric Materials at the National Taipei University of Technology(Taiwan) have boosted perovskite light-emitting diode (PeLED) efficiency without altering the emissive layer by introducing a polycaprolactone-silver nanoparticle (PCL@ AgNPs-P) emission gain layer. Using microwaveassisted post-addition, the layer leverages Förster resonance energy transfer (FRET) and the Purcell effect to enhance energy transfer and spontaneous emission. PeLEDs with this layer achieved 11,320cd/ m² luminance and 15.5% EQE. This method maintains perovskite purity, improves fabrication stability, and delivers narrow, stable green emission (94meV), offering scalable potential for advanced displays, laser optics, and quantum photonics.



The newly developed polycaprolactone@silver nanoparticle layer significantly enhances energy transfer and spontaneous emission in perovskite LEDs (Credit: National Taiwan University)



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RESEARCH & INNOVATION

Robot That Can Screw In Lightbulb

Northeastern University (Boston, USA) researchers have developed a hybrid robot that blends the torque of rigid robots with the flexibility of soft ones. Inspired by elephant trunks and car CV joints, this robot arm is sensitive and strong.



Hybrid soft and hard robot (Credit: Matthew Modoono/Northeastern University)

Unlike traditional robots, which are either powerful but dangerous, or safe but weak, this new design uses a novel, flexible material to apply precise force safely. The result: a robot that can screw in a lightbulb—safely and efficiently.

Artificial Nerve With Transistors For Brain-Machine Links

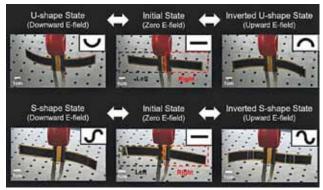
Researchers from Xi'an Jiaotong University and the Technical University of Munich have developed a high-frequency artificial nerve using homogeneously integrated vertical N-type and P-type organic electrochemical transistors. This system overcomes ionic/electronic transport and memory retention limitations, delivering fast response and longterm ion storage. It mimics biological nerve components receptors, synapses, and somas—and functions in sensing, processing, and memory. Successfully tested in mice with neural impairments, it demonstrated biocompatibility and conditioned reflex behaviour. This technology holds promise for neural repair, prosthetics, brain-computer interfaces, and advanced neuro-monitoring systems.

Smarter, Lighter E-Skin With Magnetoreception

Researchers at Helmholtz-Zentrum Dresden-Rossendorf (HZDR) (Dresden, Germany) have created an ultra-thin, transparent e-skin that detects magnetic fields using a single global sensor. This lightweight, flexible membrane simplifies e-skin technology by replacing multiple sensors with a magnetosensitive layer. Using tomography to map magnetic signals, the innovation enables touchless control, wearable tech advancements, and enhanced robotics. Its simplicity, efficiency, and resistance to interference mark a significant leap in human-machine interaction and smart device integration.

Shape-Changing OLED Panel That Works As A Speaker

Researchers at POSTECH (South Korea) have developed the world's first smartphone-sized OLED panel that changes shape and functions as a speaker, without sacrificing its thin, flexible design. This uses an ultra-thin piezoelectric



Multi-shape deformation without mechanical hinge system (Credit: POSTECH)

polymer actuator integrated with the OLED panel to enable dynamic shape transformations (e.g., concave, S-shaped) via electrical signals—no hinges or motors needed. The actuator also emits high-frequency vibrations, turning the screen into a speaker. Successfully demonstrated on real OLED panels, this tech merges audio output and shape adaptability, opening doors for next-gen foldable devices, wearables, automotive displays, and soft robotics.

Programmable Pixels Transform Infrared Technology

Researchers at Carnegie Mellon (Pennsylvania, United States) have developed an infrared technology: the electrically programmable graphene field-effect transistor (Gr-FET). This active metasurface uses gold pixel arrays and graphene layers to precisely control mid-infrared light across wavelengths, directions, and polarisations. Key applications include preventing thermal side-channel attacks in cybersecurity and enabling early cancer detection by monitoring temperature changes in wearable devices. The device supports scalable 2D pixel control and integrates with existing systems. Promising widespread adoption within 5-10 years, this innovation could transform autonomous vehicles, AR, medical imaging, and next-gen security systems.





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3D-Printed Robots That Walk Without Electronics

Researchers at UC San Diego's Bioinspired Robotics Lab have developed a six-legged robot that walks without electronics, powered solely by compressed gas. Fully 3D-printed in one step using a single flexible material, the robot



This robot can walk, without electronics, and only with the addition of a cartridge of compressed gas, right off the 3D-printer (Credit: David Baillot/ University of California San Diego)

includes integrated soft actuators and a pneumatic oscillating circuit that mimics a steam engine to control motion. Tested indoors and outdoors, it operated untethered across turf, sand, and underwater, and ran continuously for three days with a steady gas supply. Future designs aim to add onboard gas storage, biodegradable materials, and functional appendages like grippers.

Nuclear Batteries That Last For Decades

Researchers from Daegu Gyeongbuk Institute of Science & Technology (South Korea) are developing nuclear batteries using radiocarbon as a safer, long-lasting alternative to lithium-ion batteries. Led by Su-II In at DGIST, the team created a prototype betavoltaic battery using carbon-14 and a titanium dioxide-based semiconductor sensitised with a ruthenium dye. By placing radiocarbon on both the cathode and anode, energy-conversion efficiency increased from 0.48% to 2.86%. These batteries could power devices for decades, reducing environmental impact and minimising recharging needs.

Neuromorphic Computing With Standard Silicon Transistor

Researchers at the National University of Singapore have shown that a single standard silicon transistor can mimic biological neurons and synapses. This marks a significant step in neuromorphic computing by enabling inmemory computing using commercial CMOS technology. Their device, Neuro-Synaptic RAM (NS-RAM), switches between neuron-like firing and synaptic weight changes via punch-through impact ionisation and charge trapping. NS-RAM offers low power use, stability, and scalability, promising more efficient, brain-like AI hardware for future processors.

Slow Current Limits Organic Solar Efficiency

Researchers at Chemnitz University of Technology (Chemnitz, Germany) have enhanced organic solar cell efficiency using novel semiconductors and printable 'ink' technology. Unlike crystalline silicon, these lightweight, low-cost cells suffer from slow charge transport due to their disordered active layers. This increases transport resistance, reducing fill factor and power output. By analysing current-voltage behaviour and comparing it with the suns-Voc method, the team identified transport resistance as a significant but surmountable limitation. Further studies reveal that the shape of the density of states also impacts efficiency significantly.

Enhancing MIS With Tactile Sensing Technology

Minimally invasive surgery (MIS) offers faster recovery and lower infection risk but lacks tactile feedback, making precision difficult. NYU Abu Dhabi researchers have developed an 'off-the-jaw' sensor design that restores touch



without placing sensors near surgical tool tips. This reduces contamination, simplifies sterilisation, and integrates with standard laparoscopic instruments. The device provides realtime tissue stiffness and thickness

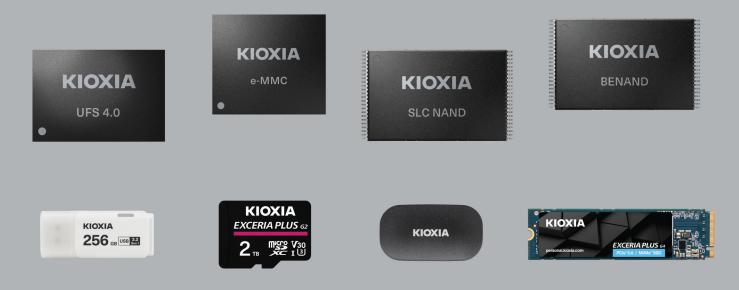
Enhancing MIS with tactile sensing technology (Credit: NYU Abu Dhabi)

data, improving safety and precision, especially for trainees. Early trials show a 30% efficiency boost. Plans include adapting the technology for robotic-assisted surgery and enhancing sensors for better tissue differentiation. **KIOXIA**

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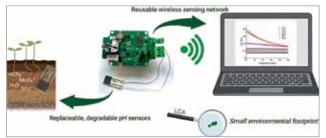
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Smart Sensors For Sustainable Agriculture

Researchers from the University of Glasgow, Central South University of Forestry and Technology, and the Institute of Microelectronics and Photonics have developed compostable smart sensors to reduce e-waste in digital agriculture.



Soil health sensor (Credit: www.hackster.io)

These sensors feature a reusable electronic module (Microchip ATmega328P, Zigbee-enabled) and a biodegradable patch made from polymer substrate, graphene-carbon ink, and molybdenum disulfide. The patch, produced via screenprinting, decomposes naturally. Lab tests confirmed the system accurately monitored soil pH (3-8) and detected ethephon. Replacing only the patch every three months could cut environmental impact by up to 79% over five years.

Wearable Tech Simulates Realistic Touch

Engineers at Northwestern University (United States) have created a lightweight, wearable haptic device that mimics complex touch sensations like sliding, twisting,



and pressing. Unlike typical devices that only vibrate, this one uses tiny multidirectional actuators with magnets and coils to simulate pressure, stretching, and motion. It connects via Bluetooth to phones

This haptic device reproduces complex sensations (Credit: Northwestern University)

or VR headsets and includes an accelerometer to respond to user movement. The device can convert music into touch signals and may enhance VR, aid the visually or hearing impaired, and improve online shopping.

Clean Transfer Of 2D Semiconductors

Researchers from Peking University (Beijing, China) and the Beijing Graphene Institute (Beijing, China) have developed a wafer-scale method to integrate 2D semiconductors with dielectric materials, significantly reducing defects during transfer. The team achieved a clean, polymer-free transfer using single-crystal antimony oxide (Sb_2O_3) deposited on graphene grown on Cu(111) via vacuum thermal evaporation. A water-ethanol pretreatment eased separation, while Sb_2O_3 also served as protective encapsulation. This enabled the defect-free transfer of a 10.16cm graphene wafer with high carrier mobility (~14,000 cm²V⁻¹s⁻¹) and stability.

Simple Test To Check Battery Overheating

Researchers at the University of Tokyo have developed a safer, low-cost method to study lithium-ion battery failures. They created a mini test battery—just 1/50th the size of a regular one—that's easier to overheat, allowing safer thermal runaway research in small labs. The team also introduced the thermal runaway factor, a simple equation for overheating risk using battery heat capacity, energy, and surface area. By altering the battery's shape and removing non-heating parts, the design minimises heat release. This approach aids safer battery development and supports cleaner energy innovation.

Mass-Produced Cancer-Fighting Nanoparticles

MIT (USA) researchers have developed a scalable method to manufacture drug-loaded, polymer-coated nanoparticles using a new microfluidic mixing technique. This approach enables rapid, large-scale production—about 50 doses in minutes—compared to nearly an hour with traditional methods. The nanoparticles, created using layer-by-layer assembly, carry therapeutic drugs and targeting molecules that bind to tumor sites and release treatments locally. In mouse models, IL-12-loaded particles delayed tumor growth and showed potential for cures. Initially targeting ovarian cancer, the FDA-aligned method may extend to other cancers.

DNA To Build 3D Electronic Devices

Columbia Engineering (New York) researchers have used DNA origami to build 3D, nanoscale electronic devices, a leap from traditional 2D microchip design. This bottom-up method relies on DNA's natural base-pairing to self-assemble precise structures. Led by Aaron Michelson, the team anchored DNA to gold squares, forming octahedral frames. These were then coated with silicon oxide and tin oxide essential semiconductor materials—and fitted with electrodes. The resulting devices function as light sensors, demonstrating that DNA-based 3D frameworks can be integrated into microchips, promising denser, brain-like architectures that are ideal for advanced AI and computing systems.

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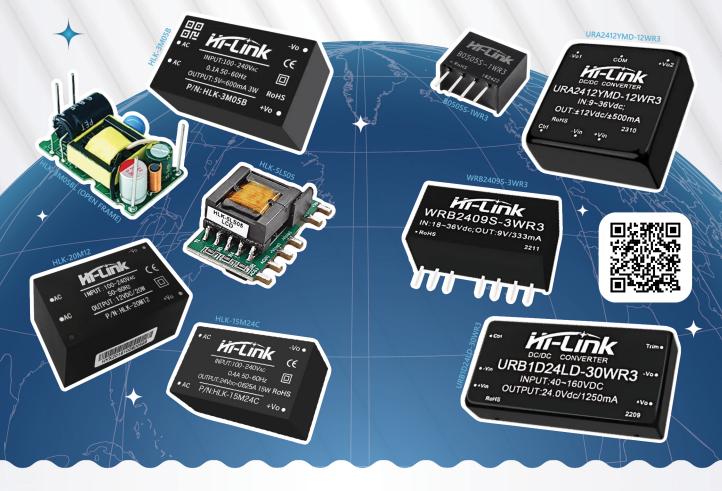
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INNOVATION UPDATES

Amongst numerous press releases of new products received by us, these are the ones we found worthy of the title *Truly Innovative Electronics*

First Photonic Processor for Real-Time AI Applications

Q.ANT has launched its first product: a native processing unit (NPU) built on its LENA architecture (light empowered native arithmetics).



The NPU runs on a PCIe interface and works with existing computing environments. It performs non-linear calculations using light instead of electrons, offering at least 30x more energy efficiency and improved performance over CMOS processors. Made for applications like AI inference, machine learning, and physics simulations, the NPU has shown results in tasks such as number recognition in neural network inference. *O.ANT*

http://qant.com

Industry's Highest Memory Bandwidth FPGA

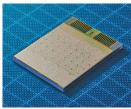
Altera Corporation has launched the Agilex 7 FPGA M-Series, the first FPGA



to combine high logic density with integrated high-bandwidth memory (HBM2E), DDR5, and LPDDR5 support. With over 3.8 million logic elements, it targets applications such as AI, data centres, firewalls, 5G infrastructure, and 8K broadcast systems. As AI, cloud services, and video streaming drive data growth, the need for more bandwidth, capacity, and power efficiency is increasing. Altera says the M-Series addresses these needs with fabric and memory interfaces that reduce latency and bottlenecks. It supports use cases including AI inference in data centres, memory buffers for firewall systems, data transfer for 8K video, and 800GbE test equipment. Altera Corporation https://www.altera.com

World's First UCle Optical Chiplet

Ayar Labs has introduced the Universal Chiplet Interconnect Express (UCIe) optical chiplet. Designed to increase AI



infrastructure performance, the chiplet reduces latency and power use while

removing data bottlenecks. With a UCIe electrical interface, it fits into existing chip designs. The TeraPHY optical I/O chiplet delivers up to 8Tbps of bandwidth, powered by Ayar Labs' 16-wavelength SuperNova light source. Its UCIe interface allows interoperability across chiplets from different vendors, supporting a system for optical integration in AI systems. It targets OEMs, ODMs, and cloud providers building AI servers and infrastructure and telecom and networking companies needing data links across different distances. Ayar Labs https://ayarlabs.com

Industry's First High-Power LTE-M/NB-IoT Module

Ubiik has introduced the Maverick 220, an LTE-M/NB-IoT module designed for utilities, private LTE networks, and



industrial IoT. It delivers transmit power up to 28dBm for LTE-M and 30dBm for NB-IoT, exceeding the standard 23dBm limit and extending the range of LTEconnected IoT devices. This capability is useful when operating in narrowband channels (1 to 5MHz), often used in private LTE deployments. Ubiik states that the Maverick 220 is the first LTE module designed to address these limitations, improving performance in bandwidthlimited environments. It supports longer connectivity and up to 50% more range than standard LTE modules. *Ubiik*

https://www.ubiik.com

World's First 12-Layer HBM4

SK Hynix has launched 12-layer HBM4, a DRAM designed for AI applications, for customers. The 12-layer HBM4 samples provide increased capacity and speed, with bandwidth capable of pro-



cessing over 2 terabytes of data per second more than 60% faster

than the previous generation, HBM3E. This allows for processing over 400 full-HD movies every second. It is suited for

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companies and organisations developing or operating computing systems used in AI and machine learning, and for use in supercomputing centres, research institutions, and companies working on AI accelerators or ASICs that require fast data processing. *SK hynix*

https://www.skhynix.com

Compact Wireless SoC with Memory and Power

Silicon Labs has introduced the BG29 Series 2 wireless SoC family. These chips are built for Bluetooth low energy (LE) devices that require performance



and a small footprint used in wearables, medical devices, asset trackers, and sensors. The

SoCs include 1MB Flash and 256kB RAM, supporting features like real-time data processing and communication protocols. Reducing size often leads to performance or battery life tradeoffs as medical devices get smaller. BG29 addresses this by combining small size, connectivity, processing capability, and battery efficiency, which are suitable for devices like blood glucose monitors and patches. *Silicon Labs*

https://www.silabs.com

World's Smallest PPG Sensor Head

SCIVAX Corporation and TSLC Corporation have jointly developed the world's smallest PPG (PhotoPlethysmoGraphy) sensor head. The



mounting area of 1 square millimetre—one-tenth the size of conventional models with about half the thickness, allowing for

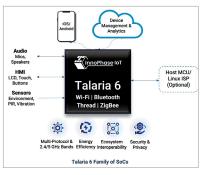
sensor head has a

miniaturisation. The PPG sensor head offers several advantages: it allows installation in tight spaces where conventional sensors cannot fit; it enables multiple sensor heads to be arranged in arrays for more precise sensing and the ability to measure blood flow in small areas, supporting use in beauty, home healthcare, and elder care; and its integrated resin package, combining the light source and optical sensor, provides cost efficiency compared to traditional models.

SCIVAX Corporation and TSLC Corporation https://www.scivax.com/en and https:// www.tslc.com.tw

SoCs Featuring Wi-Fi 6, Multi-Protocol Connectivity

InnoPhase IoT Inc. has launched the Talaria 6 Family of system-onchip (SoCs). Designed to meet the



demands of the IoT market, these chips integrate multi-protocol wireless connectivity, including Wi-Fi 6, Bluetooth 6.0, Thread, and Zigbee, along with PSA Level 2 and Level 3 security and an ARM Cortex M33 processor. The Talaria 6 family builds on the platform's low power capabilities, providing performance, energy efficiency, security, edge AI processing, and connectivity for IoT devices. Target markets for the SoCs include smart homes, building automation, industrial IoT, and healthcare sectors, with applications across video cameras, doorbells, locks, thermostats, lighting, environmental sensors, appliances, and more. InnoPhase IoT https://innophaseiot.com

First 'Amplifier-less' MEMS Tweeter

xMEMS Labs has announced Lassen, a micro tweeter designed to bring micro fidelity (µFidelity) audio to consumer earbuds. Based on industry feedback



and reviews of its speaker technology, xMEMS developed Lassen as a lower-cost solu-

tion for true wireless stereo (TWS) earbuds. Lassen delivers up to 115dB SPL in the 6kHz to 20kHz range using a 1Vrms audio signal, removing the need for an external amplifier. Lassen delivers audio performance that exceeds older tweeter technologies with dimensions of 3.2 x 5 x 1.15mm and low power use. By removing the amplifier, the company claims to reduce the cost of tweeter integration by about 25%, placing its MEMS speakers alongside other micro tweeter types. *xMEMS Labs https://xmems.com*

Smart Power IC for Longer Battery Life

Nordic Semiconductor's nPM2100 power management IC (PMIC) includes battery-powered products' energy-saving and system management features. It fills the gap between simple regulators and complete power management systems,



allowing designers to extend battery life or reduce battery size. Its 35nA ship mode lets devices ship with batteries installed and acts as an on/

off switch. The < 200nA hibernate mode supports wakeups from seconds to days, increasing standby life by up to 3x for devices that wake rarely. A 150nA boost converter reaches up to 90.5% efficiency at 10 μ A and 95% at higher currents. It can be used by developers working on wearables, medical sensors, wireless industrial sensors, remote monitoring devices, and asset trackers. *Nordic Semiconductor https://www.nordicsemi.com*

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COMPONENTS

Dual MOSFET Balancer

Advanced Linear Devices' dual SAB MOSFET simplifies supercapacitor voltage balancing in applications like



backup power, energy harvesting, industrial systems, UPS, renewable energy, and consumer

electronics. It ensures safe, efficient balancing of series-connected supercapacitors from 2.8V to 3.3V, minimising power loss and leakage. It supports stable power management across varying temperatures and is ideal for voltage dividers, current mirrors, and scaled capacitor stacks. *Advanced Linear Devices Inc. (ALD)*

https://www.aldinc.com

Power Amplifiers

CML Micro has expanded its SµRF line with two efficient GaAs HBT



power amplifiers the CMX90A007 and CMX90A009—ideal for dual-cell lithium-

powered wireless devices. Supporting 136-1000MHz, they target two-way radios, PMR, LMR, wireless modems, and critical communication handsets. Off-chip matching, compact packaging, and direct battery operation simplify integration into space-constrained, high-performance wireless systems.

CML Micro

https://cmlmicro.com

Magnetic Sensor

Coto Technology's RedRock RR133-1E83-511 magnetic sensor delivers ultra-low power (1.5μA) and high-frequency (1000Hz) magnetic detection for battery-powered applica-



tions. Ideal for medical wearables, flow meters, utility meters, and IoT devices, it offers high

sensitivity, broad voltage support, and reliable performance up to 125°C making it perfect for compact, energyefficient designs in medical, industrial, and consumer products. *Coto Technology*

https://cototechnology.com

Optoelectronics Silicon

Alphawave Semi has introduced advanced optoelectronics solutions for high-speed interconnects, enabling



800G and 1.6T data transfer in AI-powered hyperscale data centres. The lineup

designed to accelerate AI infrastructure and hyperscale connectivity.

Alphawave Semi https://awavesemi.com

MRAM

Everspin Technologies has launched new MRAM products—EM064LX HR and EM128LX HR—for aerospace,



automotive, and industrial applications. These AEC-Q100 Grade 1 devices offer

high-speed, persistent memory for extreme environments like LEO satellites. They enable reliable performance in mission-critical embedded systems with 64Mb/128Mb capacities, wide temperature tolerance, Quad SPI interface, fast writes, and no erase cycles. Everspin Technologies, Inc. www.everspin.com.

SPI NOR Flash

GigaDevice's GD25NE series SPI NOR Flash is optimised for 1.2V SoC applications, eliminating the need for

GigoDevice

external boosters. Ideal for wearables, healthcare, IoT, data centres, and Edge AI, it offers fast read/write

speeds, ultra-low power consumption, and high efficiency. Supporting STR and DTR modes, the GD25NE simplifies system design while boosting performance for next-generation low-power devices.

GigaDevice

https://www.gigadevice.com

SiC Schottky Diode

Infineon's CoolSiC Schottky Diode 2000V G5 is designed for high-power



applications like solar inverters and EV chargers with DC link voltages up to 1500V. Offering ratings from 10A to 80A, it reduces

component count, improves efficiency, and ensures seamless integration. Key features include zero recovery losses, excellent thermal performance, and enhanced reliability.

Infineon Technologies AG https://www.infineon.com/cms/en

Board-To-Board Connectors

JAE's WP11 and WP12 Series boardto-board connectors offer compact,



high-current solutions for space-constrained devices like smartphones, wearables,

tablets, and gaming PCs. Supporting up to 15A, these connectors enable faster charging and reliable power delivery.



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TDK Corporation

https://www.tdk-electronics.tdk.com/en

GaNFast ICs

Navitas Semiconductor has launched the first production-ready 650V bidirectional GaNFast ICs and isolated



gate drivers, enabling single-stage bi-directional systems (BDS) in applications like

EV charging, solar inverters, energy storage, and motor drives. By combining two power conversion stages into one, these ICs reduce size, cost, and energy loss, offering up to 10% cost savings and 20% energy savings for manufacturers.

Navitas Semiconductor https://navitassemi.com

Their robust design ensures durability during assembly, while the WP12's enhanced retention prevents disconnection, making both series ideal for modern ICT applications requiring miniaturisation and strength. JAE

https://www.jae.com/en

Super Junction MOSFETs

Magnachip Semiconductor has launched 25 new 6th-generation Super Junction MOSFETs, targeting high-efficiency electronic applications. These components are ideal for AI TVs, smart appliances, power tools,

Automotive Safety Fuse

Littelfuse's 823A Series Fuse, AEC-O200 qualified, delivers reliable



overcurrent protection for 1000V DC systems in space-constrained designs. Ideal for automotive and industrial applications like BMS,

BDUs, DC-DC converters, and fuel cell cooling systems. The fuse withstands inrush and surge currents, ensuring safe, efficient performance in demanding environments. Littelfuse

https://www.littelfuse.com

3-Phase Gate Driver

Qorvo's ACT72350 is a compact 160V 3-phase gate driver designed for automotive, industrial, and consumer BLDC



motor control applications like EVs, e-bikes, drones, power tools, and battery-powered systems.

It replaces up to 40 discrete components, reducing design time, BOM cost, and board space. Features include an integrated AFE, power management, and advanced safety functions. Oorvo

https://www.gorvo.com

motor drives, AI laptop adaptors, smart home devices, and EV charg-



ers. Offering 23% faster switching speeds and 40% reduced RSP, these

MOSFETs enhance performance, reliability, and size efficiency for energyefficient, compact products across various industries.

Magnachip Semiconductor Corporation https://www.magnachip.com

Microcontrollers

Microchip Technology has introduced the PIC32A family of 32-bit microcontrollers, designed for

high-performance, math-intensive applications in sectors like automo-



tive, industrial, consumer electronics, AI/ML, and medical technology. With a 200MHz CPU, 12-bit ADCs,

high-speed comparators, and integrated analogue features, these MCUs deliver cost-effective, efficient edge sensing and advanced signal processing. They also include robust security features and support for development platforms. Microchip Technology Inc. www.microchip.com

1200V SiC MOSFETs

Nexperia's new 1200V SiC MOSFETs, housed in the compact X.PAK top-



side cooled SMD package, deliver efficient thermal management and low inductance for high-power

applications. Ideal for battery energy storage, solar inverters, motor drives, UPS, and EV chargers, these MOSFETs offer stable performance across temperatures, enabling easier assembly and superior reliability for engineers, PCB designers, and advanced energy system developers.

Nexperia

https://www.nexperia.com

Thermal Printhead

ROHM's new KA2008-B07N70A thermal printhead is designed for A4-sized



mobile printers, industrial label printers, and tattoo stencil printers. Support-

ing 7.2V operation, it reduces energy use by ~66% versus 12V systems. Ideal for logistics, healthcare, and e-commerce printing applications. Rohm Semiconductor https://www.rohm.com

Fastening Torque Sensors

The SGR525/526 torque sensors feature square shaft ends for easy integration



into power tools, test rigs, and industrial machinery, eliminating extra adaptors.



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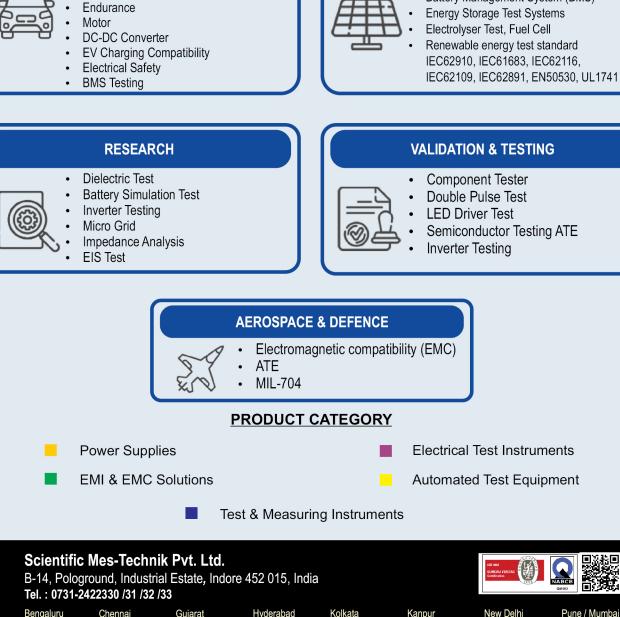
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Sensor Technology Ltd www.sensors.co.uk

Current Sense Resistor

Stackpole Electronics' CSSU2512 current sense resistor is designed for



Migh-power, high-density applications like power supplies, battery manage-

ment systems, DC-DC converters, motor drives, EV charging, telecom, aerospace, and medical devices. Its all-metal design ensures excellent thermal performance, precision, and long-term stability. Stackpole Electronics Inc.

https://www.seielect.com

Isolated Modulators

Texas Instruments' new isolated modulators-AMC0106M05, AMC0136, and AMC0106M25-boost precision motor control in robotics, industrial



automation, EV systems, medical devices, and aerospace. Their

compact size saves board space, while high ENOB (12-14 bits) ensures accurate current and voltage sensing. Texas Instruments

https://www.ti.com

DC-DC Power Solutions

Vicor has introduced a new family of 48V to 12V DCM DC-DC converters, ranging from 750W to 2kW with 5kW/ in³ power density. These non-isolated, regulated modules support the shift to 48V power delivery networks (PDNs),



enhancing efficiency and reducing size. Ideal for applications in high-

performance computing, automotive, battery formation, and semiconductor test equipment, they offer scalability, thermal management, and improved power density.

Vicor

https://www.vicorpower.com

650V Power MOSFET

Vishay Intertechnology's SiHK050N65E, a 650V Gen 4.5 power MOSFET, enhances efficiency and power density in telecom, industrial,



and computing applications. With a 48.2% reduction in on-resist-

ance and 65.4% decrease in resistance times gate charge, it excels in PFC and DC/DC converter blocks. Ideal for servers, telecom SMPS, solar inverters, motor drives, and more, it offers low capacitance and high performance, ensuring 96% peak efficiency. Vishay Intertechnology, Inc. https://www.vishay.com

IoT Platforms

MediaTek's Genio 720 and 520 platforms bring generative AI to edge devices, enhancing smart homes, retail, industrial, and commercial

MediaTek

applications. AI acceleration supports tasks like natural language

processing and computer vision. The platforms offer high performance, multimedia features, and robust connectivity, ideal for battery-powered or

fanless designs and faster development cycles. MediaTek https://www.mediatek.com

IC Direct Drive Linear Motor

Kollmorgen's new high-voltage IC Ironcore direct drive linear motor is engineered for demanding applications



like semiconductor manufacturing, machine tools, bat-

tery production, and industrial automation. Supporting 400/480V AC, it reduces current draw, cuts component size, and simplifies system design. Kollmorgen

https://www.kollmorgen.com/en-us

RZ/V2N Microprocessor

Renesas Electronics has launched the RZ/V2N microprocessor, ideal for AIpowered vision applications. With up to 15 TOPS of AI performance, it supports



dual-camera setups for tasks like motion tracking, fall detection, and vehicle counting. Its compact

15mm square design reduces space by 38%, offering low power consumption and less heat, making it perfect for AI cameras in traffic monitoring and industrial inspections.

Renesas Electronics Corporation https://www.renesas.com/en

EMBEDDED

Intelligent Edge IoT

Quectel's SG882G is a high-performance smart module, perfect for industrial and consumer applications. Powered by Qualcomm's QCS8550 IoT chipset, it offers real time data processing,





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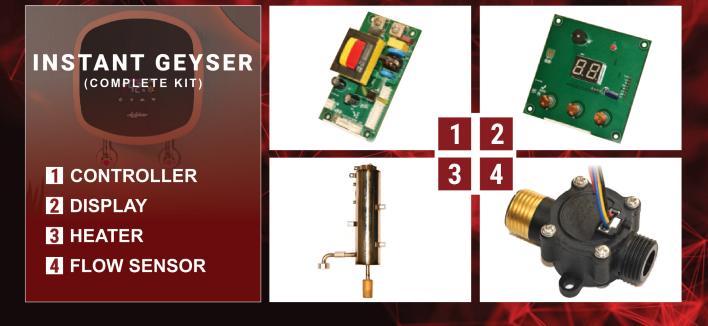
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options and support for Android/Linux, it's ideal for applications in video conferencing, live stream-

ing, gaming, robotics, automation, AR/ VR, smart retail, and security systems. **Ouectel Wireless Solutions**

https://www.quectel.com

Embedded Camera

e-con Systems recently launched an embedded camera optimised for NVIDIA Holoscan, ideal for industrial automation, robotics, and medical imaging. With high-speed, low-latency imaging and real time AI-based object



detection, it uses e-con's TintE ISP and integrates with the Holoscan Sensor Bridge FPGA board for

efficient data transfer. The camera's 8MP resolution and advanced features enhance performance, making it perfect for demanding real time AI applications. e-con Systems

https://www.e-consystems.com

MANUFACTURING **EQUIPMENT**

Galvo Scanner

Eutect's advanced galvo scanner boosts precision and speed in laser soldering, ideal for miniaturised and



J densely packed electronics. Its galvanometer-controlled mirrors enable millisecondlevel beam repositioning,

while minimal heat exposure safeguards components. Beyond soldering, it's perfect for welding, engraving, selective preheating, and large solder joints.

Eutect GmbH https://eutect.de/en

Semiconductor Packaging

Toray Engineering's UC5000 is a highprecision semiconductor packaging

system designed for panel-level packaging (PLP), targeting the growing



demand in AI servers and next-generation chiplet applications. UC5000 overcomes

warping and thermal challenges, supporting efficient, high-performance semiconductor assembly for advanced electronic systems.

Toray Engineering https://www.toray-eng.com

TEST & MEASUREMENT

Sampling Oscilloscopes

Keysight Technologies introduced new single and dual-channel DCA-M



Sampling Oscilloscopes for testing 1.6T optical transceivers. With

ultra-low noise, 120 GBd clock recovery, and FlexOTO software, these tools simplify compliance, boost production efficiency, and ensure precise signal integrity. Ideal for AI data centres, they enable fast, accurate optical analysis up to 240Gbps per lane, supporting evolving high-speed network applications.

Keysight Technologies, Inc. http://www.keysight.com

Wide Band Gap Tester

The Microtest Group has launched the VIP ULTRA tester, designed for testing



wide band gap devices like Silicon Carbide and Gallium Nitride. Ideal for automotive, industrial,

5G, AI, and renewable applications, it offers flexible configurations and high parallelism. VIP ULTRA ensures reliable, efficient testing of high-power chips at the wafer level. Microtest Group

https://www.microtest.net

EMI Antenna

Rohde & Schwarz's R&S HF1444G14 EMI antenna enables precise, highfrequency electromagnetic interference testing from 14.9 to 44GHz. Ideal for compliance testing with the R&S



ESW44 receiver, it accelerates measurements for industries

like automotive, aerospace, defence, consumer, and industrial electronics. Its high gain, wide beamwidth, and chamber-friendly design simplify testing large products in compact EMC labs.

Rohde & Schwarz https://www.rohde-schwarz.com

MISCELLANEOUS

PID Temperature Controller

BrainChild's E62 1/16 DIN PID temperature controller offers precise, cost-effective temperature control for



manufacturers, integrators, labs, HVAC systems, and automation setups. Featuring Auto-Tune,

Modbus RTU support, multiple input/output options, and a compact 46 × 46mm design, the E62 simplifies setup and enhances stability. Its IP65-rated protection, parameter lock, and clear LCD ensure reliable, userfriendly operation across industrial environments. BrainChild

https://www.brainchildtw.com

AI/ML-Driven Tools

Cadence's Conformal AI Studio addresses SoC design complexity in formal equivalence checking with



AI/ML-driven tools for logic equivalence, automated ECOs, and low-power signoff. Its

advanced features improve productivity, accelerate LEC and ECO processes, and optimise power, performance, and area. Used in infrastructure AI, hyperscaler, and mobile applications, it delivers faster, smaller ECOs and better design efficiency. Cadence

https://www.cadence.com



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- DGQA approved Russian standard Wires TY16-505.437-82
- Russian standard Wires TY16-505,185-71
- Russian standard Wire Braids TY22-3708-76
- RDSO approved Silicon cable as per BS-6195
- DMRC approved fire survival & ZHFRLS cables •
- LAN cable CAT 5E, Cat 6, Cat 6A as per ANSI/TIA-568-C.2/BEL Standards
- Electric Vehicle charging Cable as per IEC62893-1, IEC62893-2 & IEC62893-3
- PFA, ETFE, FEP wire & RJ Plenum Wires & Cables
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- Import substitute of Speciality wires & cables for Defence, Automobiles, Power & Communication etc.

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I think we are in big trouble, look at the clean blue sky—all our data is gone!



No doubt, Sir; every room has AC 230 Volts.





Of course, I go by my regular car, but I send the self-driving car a bit early to hold a parking spot for me.



Stop! Come back another time; everyone is busy finding extraterrestrial life.



Look, Ma! Father's mood is electrically programmable—he gets angry every time I pull the TV's power plug!



My new car runs on photosynthesis—the fossil fuel it uses is formed by photosynthesis.



Learn from that male human—he's making money just by creating and uploading our videos online!



Son, you keep forgetting every time I explain what 'volatile memory' is.



Al-Driven **Power Optimisation** Of High-Performance Networking Chips In **N3E Node**

Al is revolutionising power management in power-hungry networking chips, optimising efficiency and performance in real time. Here is how it is reshaping TSMC's N3E process node.



The author, VINAYAK RAMACHANDRA ADKOLI, is BE in Industrial Production and has served as a lecturer in three different polytechnics for ten years. He is also a freelance writer and cartoonist. www.ith high-speed data processing and network connectivity becoming more demanding, networking chips must balance peak performance and power efficiency. TSMC's N3E process node, an advanced evolution of its 3nm technology, presents new opportunities for power optimisation in high-performance networking chips. Yet, this innovation also brings fresh design challenges, such as power leakage, thermal hotspots, and dynamic workloads.

Artificial intelligence (AI) is proving to be a game-changer in overcoming these hurdles. Techniques like machine learning (ML) and predictive analytics allow real-time power optimisation, ensuring chips operate with greater energy efficiency without compromising performance. By integrating AI-driven approaches, power management in networking chips built on the N3E node is reaching new levels of sophistication.

The N3E node

The N3E process node by TSMC delivers significant power and performance advantages over previous technologies.

Key benefits include:

• 15–20% power savings at the same performance levels

• 18% performance improvement at equivalent power

• Higher transistor density while maintaining process reliability

Despite these advantages, advanced nodes like N3E face new challenges:

• Dynamic power dissipation caused by the rapid switching of transistors in high-bandwidth chips

• Increased leakage currents as transistors shrink, leading to idle power losses

• Thermal management issues due to dense transistor placement and heavy workloads

High-performance networking chips, which manage data routing, packet processing, and real-time communications, are particularly vulnerable to these issues. Traditional power optimisation techniques are no longer sufficient, making AI-driven solutions essential for energy-efficient chip performance.



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AI in power optimisation: Key techniques

AI-enhanced design optimisation.

AI techniques are revolutionising the chip design process, enabling better power management before the chip even reaches production.

• *Machine learning for power prediction.* ML models analyse design parameters to predict power consumption at various workloads. These insights help engineers optimise designs for power efficiency without sacrificing performance.

• *Dynamic voltage and frequency scaling (DVFS)*. AI algorithms dynamically adjust frequency and voltage levels to match workload demands, minimising power usage during idle periods.

• *Clock gating and power gating.* AI identifies underutilised cores or logic blocks and applies power gating (cutting power) or clock gating (pausing the clock signal) to reduce dynamic and leakage power.

For high-performance networking chips, these techniques ensure efficient packet handling, even at peak traffic loads.

Workload prediction and real-time power control. AI excels at analysing complex and variable workloads common in networking applications. By predicting workloads, AI can proactively optimise power usage:

• *Traffic pattern analysis.* AI algorithms use historical data and real-time inputs to forecast network traffic patterns. This enables the chip to prepare for high-demand periods while conserving energy during low traffic.

• Adaptive power scaling. Based on workload predictions, AI adjusts power levels across different chip components to minimise unnecessary energy consumption.

For instance, AI increases the power supplied to critical cores during peak traffic hours for efficient packet processing. Conversely, AI throttles these cores during lower workloads to save energy while

maintaining performance.

AI for thermal management. As transistors become smaller and denser, thermal hotspots pose a significant challenge for networking chips operating at high frequencies. Excessive heat can degrade performance, shorten chip lifespan, and cause failures. AI-driven thermal management techniques offer effective solutions:

• *Hotspot prediction and detection.* AI algorithms process sensor data and thermal simulations to detect hotspots before they escalate.

• Dynamic thermal throttling. AI dynamically adjusts voltage, frequency, or workload distribution across different chip regions to mitigate overheating.

By maintaining optimal thermal conditions, AI improves the energy efficiency and reliability of N3E-based networking chips, even during prolonged high-performance operations.

AI for power modelling and verification. Design verification is critical in ensuring power efficiency for chips in nanoscale nodes. Traditional methods are time-intensive and complex, but AI accelerates this process:

• *AI-assisted power simulations.* Machine learning models simulate power consumption across millions of workloads, providing accurate insights in less time.

• *Bottleneck detection*. AI identifies power-hungry areas or inefficient design components, enabling engineers to fine-tune the chip architecture iteratively.

This AI-enhanced verification ensures that power savings are achieved early in the design process, reducing time-to-market and improving overall performance.

Case study: Real-time AI optimisation

To understand the impact of AI, consider a high-performance networking chip designed for data centres with 400Gbps throughput:

Traditional power management.

Static optimisation methods result in power wastage during low-traffic periods or reduced throughput during peak loads.

AI-driven optimisation. AI dynamically adjusts voltage, frequency, and core utilisation based on real-time network traffic data. This results in 30% power savings with consistent throughput and lower latency.

AI-powered optimisation enables networking chips to meet fluctuating performance demands efficiently, addressing both power consumption and reliability challenges.

Future prospects and challenges

AI-driven power optimisation for N3Ebased networking chips is a promising solution, but it also presents challenges:

Model complexity. AI models must process large volumes of design and runtime data, requiring robust algorithms and computational resources.

Energy overhead of AI. AI itself consumes power. Lightweight, low-power AI models are being developed for on-chip optimisation.

Scalability. Ensuring AI-driven power optimisation scales across different chip architectures and use cases is essential.

Future advancements may include edge AI processors embedded within chips, enabling autonomous power management without relying on external systems.

Integrating AI in power optimisation transforms the performance and energy efficiency of high-performance networking chips built on the N3E node. By enabling real-time workload prediction, adaptive scaling, and proactive thermal management, AI techniques address traditional methods' limitations and unlock nanoscale technology's full potential.

The combination of AI-driven innovation and advanced nodes like N3E ensures a sustainable future for data processing and communication technologies.

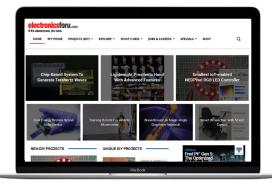
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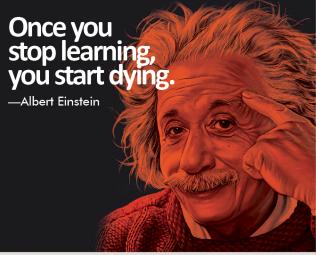
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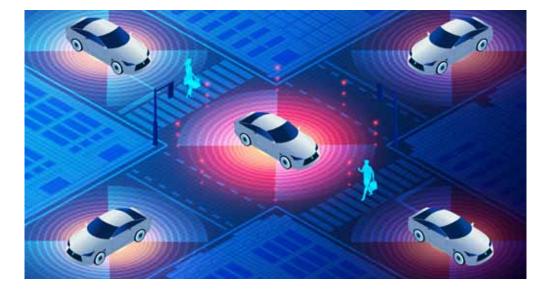


WHY IS LIDAR ADOPTION SLOWER Than Expected?

A decade of hype. Billions invested. But lidar still isn't mainstream. What went wrong—and what does it mean for the future of autonomous vehicles?



DR XIAOXI HE, Research Director at IDTechEx, specialises in technology scouting, market analysis, and business insights of autonomous vehicles, helping clients assess capabilities and identify commercial opportunities.



Heralded as a breakthrough for the automotive industry's shift towards safer, fully autonomous vehicles, lidar technology promises a future with zero road fatalities and enhanced accessibility. Despite a decade of extensive development, testing, and financial investments such as partnerships and acquisitions, lidar-equipped vehicles remain scarce on the roads. Known for its high-resolution 3D mapping and precise depth perception, lidar is essential for driverless cars but faces significant adoption challenges.

Although lidar delivers accurate data for autonomous navigation, several obstacles hinder its mainstream integration. High costs, technical limitations in various environments, complex data management, and competition from other sensor technologies have impeded its widespread use.

Despite its advantages in depth perception and detailed mapping, lidar confronts economic and technical barriers. Performance issues in adverse weather and the substantial investment required for deployment have made manufacturers and consumers cautious, slowing the technology's adoption in the automotive sector.

The cost barrier to lidar adoption

Lidar technology, known for its precise point cloud mapping and high-resolution data, faces a significant adoption barrier due to its high cost.



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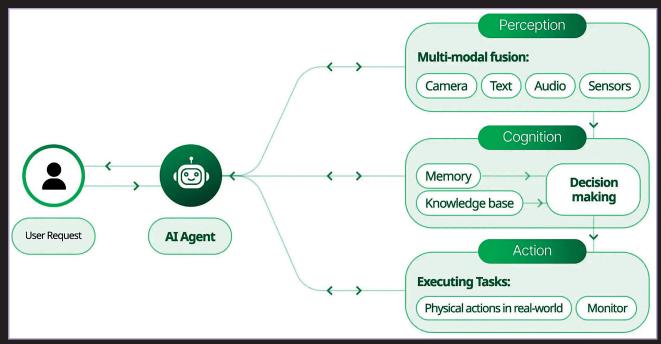
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AI AGENTS In Your Workforce

Companies are experimenting with AI agents for tasks ranging from coding and payroll processing to more intense ones like chip design.



Main components of agentic Al architecture (Source: Markovate)



JANANI G. VIKRAM is a freelance writer based in Chennai, who loves to write on emerging technologies and Indian culture.

hen a leading German manufacturing company faced challenges with the manual handling of order updates, they turned to 'AI agents' for help. Order updates were received in various formats, ranging from emails and PDFs to spreadsheets. Employees had to extract data like product codes, quantities, and delivery addresses from these, enter them into the enterprise resource planning (ERP) system, and alert concerned stakeholders about the update. This was a back-breaking job that exhausted employees and led to errors

too. By automating 96% of this task using an AI agent from Beam AI, the manufacturing company claims to have experienced an 89% reduction in manual processing time and a 23% decrease in errors, with resultant cost savings. The AI agent could seamlessly work with the company's existing ERP system, which made it quick and easy to start. By taking over the routine task of processing more than 300 order updates per day, it freed up the employees' time for higher-value activities.

In India, when the Covid pandemic triggered an unprecedented surge in

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"EMBEDDED WITHIN NETWORK DEVICES, AI AGENTS CAN DETECT ANOMALIES, PREDICT POTENTIAL FAILURES, AND IMPLEMENT CORRECTIVE ACTIONS PROACTIVELY WITHOUT HUMAN INTERVENTION. THIS AUTONOMY ALLOWS NETWORKS TO ADAPT DYNAMICALLY TO CHANGING CONDITIONS



AND USER DEMANDS, LEADING TO ENHANCED RELIABILITY AND PERFORMANCE."

- PRAMOD GUMMARAJ, FOUNDER & CEO, APRECOMM

broadband demand, Excitel's subscriber base increased by 55%. Consequently, there was also a rise in support calls, but support staff could not move around safely due to the raging pandemic. Excitel managed the situation by deploying Aprecomm's agentic AI-driven Virtual Wireless Expert (VWE), a cloud-based upgrade seamlessly deployed to the Wi-Fi access points of around 500,000 subscribers. Using advanced AI algorithms, VWE enabled real-time monitoring, remote management, and autonomous self-healing.

Excitel reported a 35% improvement in first-call resolution, a 30% reduction in support call duration, and a 62% drop in truck rolls. This enhanced customer experience and network reliability resulted in a dramatic growth in Excitel's subscriber base to over one million.

"The idea of agents is not new; we have been working on this for a while," said Thadeous Goodwyn, director of generative AI at Booz Allen Hamilton, in a media interview. "But the reason why it's getting so much attention now is because large language models and generative AI accelerated some of the characteristics agentic AI needs to be successful."

Companies—not just large enterprises, but also small and medium-sized ones—across the world have started deploying AI agents for various jobs in software development, customer service, business analytics, human resource management, etc. Interestingly, we even see AI agents being employed in chip design, for activities like code generation, verification, and optimisation.

Deloitte's State of Generative AI in the Enterprise, published in January 2025, names agentic AI as one of the most closely watched areas in AI development. 52% of the respondents picked agentic AI, while 45% chose multi-agent systems as the most interesting area in AI now.

So, what is this trend all about? Let us attempt to simplify and understand what is agentic AI, how it is different from generative AI, what are AI agents, what kind of tasks can they handle, how do they work, what are their components, how are companies across the world using them, future trends, and challenges, and more.

Say hello to agentic AI and AI agents

We see a lot of terms like generative AI (gen AI), agentic AI and AI agents strewn around the web, often irresponsibly, without realising that they are different in terms of their core functionality and objectives. So, before we even begin to understand the impact of agentic AI, let us first try to decipher these terms.

Generative AI. Gen AI is primarily focused on creating content such

as text, images, video, audio, or software code in response to a user's prompt. It uses machine learning (ML), large language models (LLM), and reinforcement learning (RL) to study a vast amount of given data and identify patterns and relationships in that. It uses that learning to understand natural language prompts and generate new content in real time.

Agentic AI. An agentic AI system is focused on completing tasks autonomously to achieve a given goal, rather than just creating content or answering questions. It is equipped with advanced reasoning capabilities, and can autonomously make decisions and complete the given job, even in ad hoc situations, with limited or no supervision.

Rather than learn from a prescribed dataset, an agentic AI system learns on the go from the ecosystem it works in. It constantly gathers data, and enhances its knowledge and methods in real time. It can independently analyse a situation, decide what needs to be done, and act to achieve its goal, while also learning from that experience to fine-tune itself.

The key point to be noted is that agentic AI is not about executing single, clearly-defined tasks, but about achieving a goal, which might involve strategising and executing multiple steps or tasks. An agentic AI system can work within an existing organisational setup as part of a chain of command and interact with external tools, databases, and application programming interfaces (APIs).

AI agents. AI agents can be seen as the building blocks of an agentic AI framework. An AI agent is a simpler task-oriented system with limited scope and functionality, vis-à-vis a broader, goal-oriented agentic AI system.

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"MANY PEOPLE DON'T UNDERSTAND THE IMPACT... SOME STILL THINK IT'S JUST
ANOTHER TOOL. BUT AGENTIC AI WILL BRING A FUNDAMENTAL CHANGE IN HOW WE OPERATE.
IT WILL CREATE NEW WAYS OF WORKING."
— STUART BROWN, HEAD OF DIGITAL BUSINESS AT GUIDEHOUSE (IN A MEDIA INTERVIEW)

An AI agent is designed to handle a routine, well-defined task, based on pre-defined rules and learned behaviours. It has limited autonomy, to the level required for the assigned task. There are various types of AI agents, like learning agents, utility-based agents, simple reflex agents, model-based agents, and hierarchical agents, and multiple AI agents can work together in a complex workflow.

And this brings us back to agentic AI system, which would typically string together and orchestrate multiple AI agents to achieve a given goal. It brings together AI agents with the required skills to handle a complex, multi-step process. While AI agents are usually reactive and respond to specific triggers and requests, agentic AI is more proactive-it recognises a need, designs a solution, and gets it done using the required AI agents. For example, if you take an agentic AI system for IT support, it might employ and manage different AI agents to handle ticket classification, knowledge base search, user communications, and so on.

Agentic AI frameworks

An agentic AI framework is a platform that makes it easy to develop and deploy agentic AI systems, which can seamlessly work with other agents, enterprise systems, and humans to achieve the required goals. It provides pre-built components and abstractions, tool integration, memory management, communication fabric, AI models for reasoning, and other basic infrastructure.

The components of an agentic AI framework can broadly be categorised as follows:

• *Perception module.* Includes devices that collect data from the environment; data processing software to clean up the raw data and extract useful information from it, like faces, names, and keywords; and natural language processing to converse with stakeholders.

• *Knowledge module.* Stored information about the environment, past interactions, and experiences helps the system to understand the context and learn from it.

• *Cognitive module.* This module is the brain of the agentic AI system—an interplay of LLMs, ML, enterprise automation, and more. Here, the system understands its broader goal and current tasks, and deploys methods like chainof-thought reasoning or heuristic decision trees to formulate a strategy and devise a series of steps to achieve it.



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Practical Thinking: Smart Energy Meter-Equipped with Diotec Voltage Regulator LDI734C-3.3EN

A smart energy meter is an advanced version of a traditional electricity meter that records energy consumption in real-time and communicates data to consumers and utility companies. It helps in better energy management, cost savings and efficient electricity distribution.



By incorporating a low quiescent current and low drop-out voltage LDO, the smart energy meter can achieve long battery life, high power efficiency, reliability, and cost-effectiveness, all of which are essential for the practical deployment and sustainable operation of energy meters in a wide range of applications.

Extended battery life is a common design requirement in the smart energy meter. Using an LDO is a common way to generate a regulated voltage from the battery. This is especially true with a single-cell lithium-ion (Li-ion) battery that outputs 4.2V when fully charged. The LDI734C3.3EN specifies a typical dropout voltage of 170mV when the output current is 300mA and the output voltage is 3.3V with integrated current limiting and thermal overload protection. The low quiescent current 60uA extend the battery life. Diotec LDI734C-3.3EN is capacitor free LDO



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INDOOR UVB DEVICES: Billion Dollar Opportunity To Solve Vitamin D Deficiency?

Modern lifestyles are reshaping how essential nutrients are accessed—bringing Vitamin D deficiency into sharper focus. Urbanisation, indoor work routines, and limited winter sunlight have left nearly half the global population deficient. While dietary supplements offer a fallback, controlled indoor UVB technology is fast emerging as a promising, potentially billion-dollar solution.

NIDHI AGARWAL

Vitamin D synthesis in the body relies on UVB radiation—a specific range of ultraviolet light emitted by the sun. Though natural sunlight remains the most effective source, barriers such as pollution, indoor occupations, and geographic latitude restrict exposure. UVB rays activate Vitamin D production by penetrating the skin, supporting vital functions including immunity, bone health, and cellular repair. By contrast, UVC rays are absorbed by the outermost skin layer and do not contribute to this process.

To address this growing deficiency, lighting innovations and phototherapy technologies now offer safe, controlled indoor UVB exposure. Unlike older systems prone to overexposure risks, new devices deliver ultralow doses calibrated to mimic natural midday sunlight. Studies show these can replicate the benefits of brief outdoor exposure, offering

Key players manufacturing UVB devices

Several prominent manufacturers are producing UVB devices for residential or workplace use, particularly for treating skin conditions such as psoriasis and vitiligo:

- C Cube Advanced Technologies (India) https://www.ccubeadvtech.com
- Daavlin (USA) https://daavlin.com
- Indetouch (India) https://www.indetouchexporters.com
- Philips (Netherlands) https://www.philips.co.in
- Solarc Systems Inc. (Canada) https://solarcsystems.com

a practical solution for those with limited sunlight access. However, creating reliable and safe UVB systems demands careful attention to thermal management, dose regulation, and smart system integration. Recent strides in AI, IoT, and miniaturisation are transforming indoor UVB systems into viable, user-friendly wellness solutions.

Design challenges and engineering solutions

Developing effective indoor UVB systems involves navigating several critical challenges, foremost among them thermal management. UVB light sources naturally emit heat that, if unchecked, can compromise performance and reduce lifespan. Integrating robust thermal protection ensures safe, stable operation.

Equally important is precision exposure control to avoid overexposure while delivering optimal UVB doses. Smart integration enables seamless compatibility with existing lighting infrastructure, automating adjustments based on proximity and environmental factors. Features such as real-time performance tracking and predictive maintenance also enhance system reliability.

Nidhi Agarwal is a Senior Technology Journalist at EFY with a deep interest in embedded systems, development boards and IoT cloud solutions.



ΠεοΘεπ

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AI IN SECURITY CAMERAS: Real Change Or Hype?

Many brands have announced Al-powered security cameras. But, is it just a marketing hype or an actual game changer?

AKANKSHA SONDHI GAUR

rtificial Intelligence (AI) is rapidly reshaping security camera technology, equipping surveillance systems with advanced capabilities—from facial recognition to predictive analytics. AI is not only redefining how cameras operate but also expanding the scope of real-time monitoring. The global market, valued at US\$64.10 billion in 2023, is projected to reach US\$209.10 billion by 2033, growing at a CAGR of 12.55% over the forecast period. Rising adoption of AI and deep learning is driving this growth, significantly enhancing the effectiveness of surveillance.

Is AI in security cameras just a marketing hype?

Given the surge in AI-powered camera announcements, it is natural to question whether the systems deliver on their promises. To summarise: while certain features remain in early development, the impact of AI in security is both tangible and significant. The ability to reduce false positives, automate surveillance tasks, and provide deeper insights into security data marks a major shift. However, as with any emerging technology, there are growing pains—AI models may occasionally underperform or require tuning. Still, the overall trend is clear: smarter and more efficient surveillance solutions are on the rise.

Edge vs cloud

The 'edge versus cloud' debate sits at the centre of AI-driven surveillance innovation. Some cameras process data directly on the device (edge AI), while others transmit footage to a central server for more complex analysis (cloud AI). Here is how the approaches differ:

• *Cloud AI.* This traditional architecture is still widely used. In this setup, AI-powered servers operate

in the cloud. Data from the cameras is transmitted to these remote servers for processing. While this allows for more powerful and scalable machine learning models, it also introduces latency and demands highbandwidth internet connections. Cloud AI is particularly common in largescale installations, where data from multiple cameras must be aggregated for pattern recognition and broader situational awareness.

• *Edge AI.* Thanks to advancements in electronics and camera hardware, it is now possible to analyse data and make real-time decisions directly on the device. A true edge AI system equips cameras with the computing power to capture, process, and respond in real-time, eliminating the need to transmit data externally. This significantly reduces reaction time, though it results in higher device costs due to more sophisticated hardware.

• Server-on-Edge AI. This emerging architecture blends the strengths of edge and cloud AI. In this model, the server is positioned close to the edge (i.e. near the cameras).

Akanksha Sondhi Gaur is Senior Technology Journalist at EFY with a German patent to her credit. She has seven years of industrial and academic experience, and has penned several research papers.







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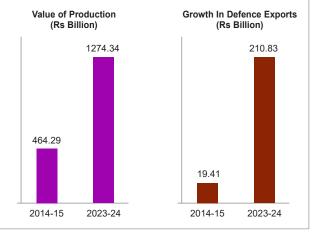
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India's Defence Production Skyrockets 174%, Exports Surge 30-Fold Over Decade

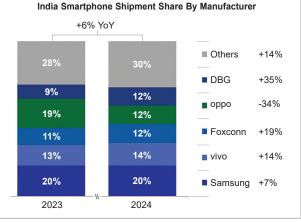
India's defence sector hit a record ₹1.27 trillion in production for FY 2023-24, up 174% since 2014-15. Exports soared to ₹210.83 billion—30× growth in a decade. Of ₹2.09 trillion in new contracts, 92% went to domestic firms. With 65% of equipment now made locally, India is fast-tracking self-reliance and aiming for global leadership by 2029.



(Source: https://www.pib.gov.in)

Made-In-India Smartphone Shipments Rise By 6% In 2024

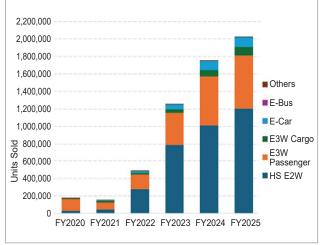
Driven by Apple and Samsung, which comprised 94% of exports, India-made smartphone shipments rose 6% YoY in 2024. Contract manufacturers Foxconn's production increased 19%, and Tata Electronics surged 107%. Dixon led mobile handset manufacturing, benefiting from Transsion and Motorola shipments. Meanwhile, vivo's shipments grew 14%, and oppo's declined 34%. Boosted by the PLI scheme, 2025 production is expected to grow in double digits.



(Source: Counterpoint Research)

India Hits 2 Million EV Sales Milestone In FY25

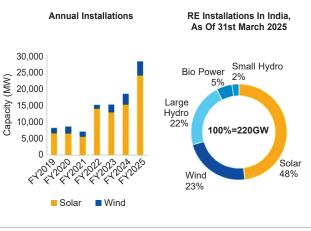
India's EV sales touched a new peak of 2 million in FY2025, up 15.6% YoY. E2W led with 1.2 million units (60% share), growing 20%. E3W passenger sales rose 9% to 609,762 units; cargo E3Ws surged 26%. EV cars hit 110,748 units (12% rise), while buses dipped 3.8%. Ola, Mahindra, and Tata Motors led their respective segments, while Hero MotoCorp, Bajaj Auto, and MG Motor recorded growth across categories.



⁽Source: JMK Research)

India's Renewable Race Speeds Up In FY25; 27,983MW Added

India added 27,983MW of renewable energy in FY2025, with solar contributing 23,832MW (58.5% increase) and wind 4151MW (27.9% rise). This makes India's total renewable capacity 220GW. Utility-scale solar installation surged 47%, while rooftop solar grew 72%, and off-grid solar tripled. Rajasthan led in large-scale solar, and Karnataka, Tamil Nadu, and Gujarat were top wind contributors.



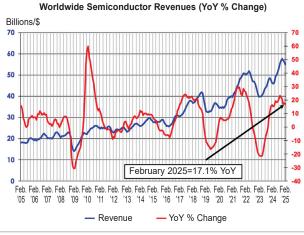
(Source: JMK Research)



At-a-glance view of key industry trends that can shape the future of your business...

Global Semiconductor Sales Rise 17.1% YoY In February 2025

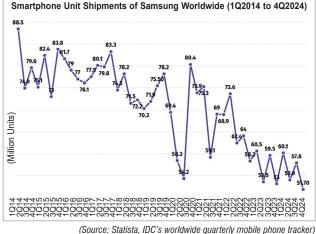
Global semiconductor sales set a new February high of \$54.92 billion in 2025, up 17.1% YoY from \$46.90 billion, despite a 2.9% MoM dip. The Americas led with 48.4% YoY growth to \$18.64 billion in sales. China rose 5.6%, Japan 5.1%, while Europe fell 8.1%. However, the three-month average dropped 5.3%, signaling a broader slowdown despite strong annual momentum.



(Source: WSTS)

Worldwide Smartphone Battle Intensifies As Samsung Falls Behind Apple

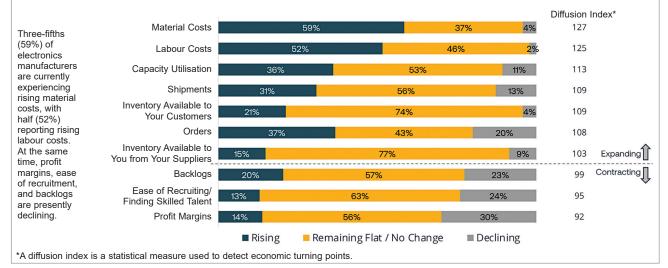
Samsung's smartphone shipments dropped by 36.8 million units over the past decade, falling from 88.5 million to 51.7 million in 4Q24. Its market share declined from 30.5% to 23.5%, driven by a shift to premium devices and rising competition from Chinese brands. Meanwhile, Apple climbed to 76.9 million shipments and a 27.7% share, up 4% in ten years. Samsung's focus on high-end models boosted margins but cost it scale in key markets.



Global Electronics Makers Saw Their Strongest March 2025

Global electronics manufacturing saw a positive March 2025, with demand index at 107.25, shipments at 109, and capacity utilisation at 113—marking yearly highs. However, material and labour costs rose sharply (indexes at 127 and 125). At the same time, profit margins fell (index 92), and recruitment worsened (index 95). Firms are rethinking supply chains amid tariff pressures, with 61% renegotiating contracts and 18% freezing hires.

Current Conditions For The Electronics Supply Chain



(Source: IPC)

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Bengaluru Startup Develops Device That Turns Breath Into Health Insights "This Robot Cooks, Stirs, And Senses Just Like You Would"

3

AI-Based Quality Inspection Systems By Kerala Startup Verifygn

BENGALURU STARTUP DEVELOPS DEVICE THAT TURNS BREATH INTO HEALTH INSIGHTS

Humors Tech Private Limited was founded in 2021 by Ankur Jaiswal to address a crucial gap in preventive healthcare. In 2022, Suchita Mulye Kanaldekar joined the company as a co-founder, further strengthening its leadership team.

umors Tech, a Bengalurubased DeepTech preventive healthcare startup, is redefining how individuals monitor and manage their health. Focused on early intervention, the company is building solutions that empower users to take charge of their wellbeing before illnesses manifest. Its flagship device, Respyr, analyses breath biomarkers to detect early signs of potential health issues, offering personalised scores for sugar, liver, gut, respiratory health, and more.

On December 24, 2024, the company launched Respyr 1.0—a patented, handheld Class B IVD device, according to Ankur, Founder and CEO of Humors Tech.

The device works by capturing breath biomarkers through a small, portable unit into which users exhale. It provides clinical scores related to several health parameters, including sugar, liver, gut, and



Ankur Jaiswal, Founder & CEO, Humors Tech Pvt Ltd with the product

respiratory functions, based on the user's breath sample. "The device also tracks lifestyle data, such as food intake and physical activity, and combines this with breath analysis to offer a comprehensive view of a user's health," explains Ankur.

Designed for ease of use, the device requires users to exhale into it, connecting to a mobile application simply. It calibrates itself, and the app guides users through the testing process. The data is then uploaded to the cloud, where it is analysed using machine learning models trained on clinical study data. Based on the results, the application provides users with personalised feedback and suggestions to help improve their health.

Respyr's target audience includes workers in high-risk industries such as coal, mining, chemical, cement, steel, construction, and factories. It provides health monitoring aimed at detecting chronic conditions early and enhancing workplace safety. Through collaborations with state governments and public health programmes, the company aims to improve access to preventive care and promote early screening in communities with limited healthcare infrastructure.

-Nitisha Dubev

"THIS ROBOT COOKS, STIRS, AND SENSES JUST LIKE YOU WOULD"

It began with one family's quest for the perfect meal-and grew into a mission to ensure no one sleeps hungry, powered by a robot chef.

OSH Robotics began with a common problem—getting the right food at the right time. Co-founder Yatin Varachhia, a Gujarati living in Bengaluru with

his working wife, struggled to find a cook who could match their taste and food preferences. This sparked a bigger question: what if kitchen tasks could be automated? What if

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food could be made to suit personal diets and be available anytime, anywhere? NOSH Robotics was created to solve this by building robots that prepare meals for people who do not cook often and rely on quick or outside food, which can impact health.

NOSH stands for 'No One Sleeps Hungry,' aligning with the company's goal. While discussing the challenges, Yatin said, "The first big

problem we faced was getting the food to taste right. We had to build a machine that could add the right amount of spices and handle all



NOSH Robotics founders: Sudeep Gupta, Co-Founder and Head of Tech & AI (Right), Yatin Varachhia, Co-Founder and Head of Product (Center), Amit Kumar Gupta, Co-Founder and Head of Marketing (Left)

kinds of ingredients. Then came the challenge of mixing and cooking. As humans, we can move our hands in many directions while cooking, but a robot only has one or two motors, so making it mix and cook properly was quite tough."

To overcome the challenges, they kept building one version after another, improving the design each time. Their approach was simple: do not just discuss—keep building. Brainstorming helped bring in new ideas, but they believed real progress came from testing those ideas with quick prototypes. Government funding

supported their prototyping efforts, so they did not face any major money issues while building and testing. —*Nidhi Agarwal*

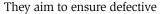
3 AI-BASED QUALITY INSPECTION SYSTEMS BY KERALA STARTUP VERIFYGN

A Kerala startup deploys Al-driven hardware-software solutions to automate quality inspection in manufacturing.

erifygnTech Private Limited, a Kerala-based deep tech startup founded in 2019, specialises in leveraging advanced AIdriven software to automate quality inspection processes for manufacturing and related industries. The company offers a hybrid of hardware and software products designed to be integrated into customers' manufacturing lines.

Kesava Prasad T D, the Founder and Director of VerifygnTech, elaborates on the scope of defect detection, stating, "Anything visible to a camera can be identified by our system." Citing an example, he highlights the PCB industry, where their AI-powered solution is used to detect bent pins that may interfere with the assembly process—just one of many applications of their technology.

The startup has also developed systems for inspecting relay modules, capable of detecting issues like improper wire crimping, loose connections, and incorrect wire colour sequences. More broadly, their advanced camera-based vision technology can identify a wide range of visually detectable defects. In PCB assembly, the system ensures correct component placement. It detects errors such as inserting the wrong part (like a capacitor instead of a resistor) or using components with incorrect specifications.





Kesava Prasad T D, Director, VerifygnTech Pvt Ltd

parts—referred to as 'NG' or 'not good' in manufacturing terminology—are detected efficiently and accurately. This is also the inspiration behind the company's name, which cleverly plays on the idea of 'verifying NG,' flipped to form 'Veri-fy-GN.'

—Nitisha Dubey





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INDUSTRY UPDATES

Cabinet okays ₹229.19 billion electronic components manufacturing scheme

The Union Cabinet has approved a ₹229.19 billion scheme to boost electronics component manufacturing, attract ₹593.5 billion investments, and generate 91,600 jobs over six years. Aimed at import reduction and global value chain integration, it offers targeted incentives for sub-assemblies, bare components, and CapEx. It aligns with a larger goal of self-reliance, says the Ministry of Electronics & IT in India.



Trump's 26% tariff on Indian goods takes effect

Trump's 26% tariff on Indian goods took effect on April 9 2025, sparking concerns across sectors. However, India's resilient economy, particularly in electronics, may turn challenges into opportunities. The tariff impacts steel, aluminium, and auto components, but exemptions for pharmaceuticals and semiconductors benefit India. Experts expect minimal short-term economic impact, with recovery anticipated.

PEOPLE (on the move)

KC Ang joins Tata Electronics as President and Foundry Head



Tata Electronics has named KC Ang the president and head of its semiconductor branch, Tata Semiconductor Manufacturing. With over 30 years of experience, Ang will lead Al-driven semiconductor operations and drive innovation. He previously served at Global Foundries. His leadership aims to strengthen Tata's position as a global leader in chip production.

Bharat Kaushal named Executive Chairman of Hitachi India

Bharat Kaushal has been appointed Executive Chairman of Hitachi India, effective April 2025, and will serve as acting Managing Director. Kaushal, previously MD, is credited with driving growth in the country's energy, healthcare, infrastructure, and other industries. Hitachi continues to focus on expanding its presence in India across key sectors with this new appointment.



Magenta Mobility welcomes Sujit Cherian as CSO



Sujit Cherian has joined Magenta Mobility as Chief Strategy Officer (CSO), bringing over 25 years of expertise in strategy, business transformation, and financial planning. A former CSO at LEAP India, he aims to accelerate Magenta's growth, particularly in sustainable EV infrastructure and clean energy solutions, as India focuses on decarbonisation.

EdgePoint Towers appoints Ravin Vickneswaran as COO EdgePoint Towers has appointed Ravin Vickneswaran as COO to



drive 5G innovation and support Malaysia's digital transformation. With 25+ years of experience, Ravin will oversee operations, enhance services, and strengthen partnerships. Previously VP at EdgePoint, he has held senior roles at Celcom, Flexenclosure, and Maxis, bringing deep industry expertise to his new role.

Chandrasekar Krishnamurthy becomes Product Head at BorgWarner

BorgWarner has designated Chandrasekar Krishnamurthy as Global Director of Product Management. He will lead product industrialisation, enhance competitiveness, and align product roadmaps with company strategy. Krishnamurthy previously served as Global Director of Engineering for



ePropulsion Systems and held leadership roles at HELLA and Continental.



Samsung CEO Han Jong-hee dies, leaving the future uncertain

Samsung co-CEO Han Jong-hee has died at 63 from cardiac arrest, leaving Jun Younghyun as the sole CEO. Han's passing comes as Samsung faces tough challenges in Al chips, smartphones, and global trade. His

absence raises concerns over future strategy, especially in consumer electronics. The company has yet to announce a successor for his role.



India exported smartphones worth over \$21 billion in FY25

India's smartphone exports crossed \$21 billion in FY25, surpassing the \$20 billion target set by IT Minister Ashwini Vaishnaw. Driven by Apple's \$12.5 billion share and vendors like Foxconn and Tata, exports have consistently topped \$2 billion monthly since October 2024. With strong US and EU demand, the government is expanding production-linked incentives to boost global competitiveness further.

US tariff cuts make Indian electronics 20% cheaper than Chinese exports

The US has removed import duties on Indian electronics, making iPhones and similar devices about 20% cheaper than China's. This benefits Apple and boosts India's export potential. With rising mobile exports and tariff-free access, India is emerging as a global tech hub. Experts see this as a strategic shift strengthening India's role in electronics manufacturing.

Piyush Goyal announces ₹100 billion fund for deeptech startups

At *Startup Mahakumbh*, Commerce Minister Piyush Goyal announced a ₹100 billion fund for deeptech startups, targeting AI, robotics, and quantum tech. A new helpline will aid startups with regulatory issues. Goyal urged a focus on innovation over consumer services, sparking debate. The initiative follows the budget's FoF proposal to boost India's research-driven, high-tech startup ecosystem.

India halts **\$23** billion PLI Scheme, seeks alternatives

The Indian government plans to halt its \$23 billion Production-Linked Incentive (PLI) scheme due to underperformance, despite success in mobile phones and pharmaceuticals. Launched to boost domestic manufacturing, it achieved only 37% of its target by October 2024. Challenges included slow investments and red tape, with India now considering alternative methods to encourage manufacturing growth.

Parliamentary Committee recommends FAME-III expansion

A Parliamentary Standing Committee has recommended including electric vehicles (EVs) in the upcoming FAME-III scheme to boost market share and infrastructure. It also proposed extending FAME-II for three years. Concerns were raised about overlap with the PM E-Drive scheme. As of March 2025, 1.6 million EVs have been supported under FAME-II, including buses and chargers.

Delhi's 2026 deadline; fossil fuels out, EVs in

Delhi's new EV policy, effective from August 2025, aims to phase out fossil fuel-powered vehicles, including



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INTERNATIONAL NEWS 🌐

US exempts smartphones, electronics from reciprocal tariffs

The US government excluded smartphones, computers, and electronics from reciprocal tariffs, protecting consumers from price hikes and benefiting tech giants like Apple and Samsung. The exemption, announced by US Customs and Border Protection, also covers semiconductors, solar cells, and memory cards. This move narrows the scope of former President Trump's trade levies.

China demands full reciprocal tariff repeal from the US

Amid escalating US-China trade tensions, China urged a full rollback of US tariffs after limited tech product exemptions, calling them inadequate. Most Chinese exports still face steep duties, while Beijing imposed retaliatory tariffs on US goods. China's commerce ministry stressed the need for mutual respect and broader action to repair strained trade ties and stabilise markets.

US targets 50+ Chinese firms to control AI advancements

The US has blacklisted over 50 Chinese companies to curb Beijing's advancements in AI and high-performance computing. The action restricts American firms from supplying these entities, citing national security risks. Targeted companies are linked to military tech and AI developments. China condemned the move, escalating tensions in the ongoing US-China tech rivalry.

Malaysia tightens semiconductor rules amid US pressure on China

Malaysia has tightened semiconductor regulations under US pressure to prevent AI chips, especially from Nvidia, from reaching China. This follows concerns over Chinese firm DeepSeek's potential use of banned chips. The US is investigating fraud cases linked to the shipment of advanced chips, while tensions between the US and China over AI technology intensify.



Taiwan to assess US chip tariffs and urges fair talks

Taiwan is preparing to counter potential US semiconductor tariffs by assessing their impact and initiating talks with Washington. Economy Minister Kuo Jyh-huei highlighted fair competition for Taiwan's chip sector amid growing trade tensions. Taiwan, led by TSMC, remains a key supplier to the US and aims for balanced treatment in ongoing discussions.

Nvidia invests \$500 billion in US AI infrastructure

Nvidia has decided to invest up to \$500 billion over four years to produce AI chips in the US, shifting from Taiwan. Partnering with TSMC, Foxconn, and others, the move will expand AI infrastructure, create thousands of jobs, and strengthen supply chains. It supports US efforts to reshore tech manufacturing and meet rising global demand for AI.

Infineon acquires Marvell's Ethernet business for \$2.5 billion

German chip giant Infineon is acquiring Marvell's automotive Ethernet business for \$2.5 billion to boost its software-defined vehicle (SDV) capabilities. The deal strengthens Infineon's automotive semiconductor dominance and expansion into AI and humanoid robotics. Marvell will refocus on data centres, while Infineon aims to integrate Ethernet tech into its portfolio, targeting long-term growth.

Samsung forecasts 1Q25 profit drop amid chip woes and market struggles

Samsung Electronics faced a 21% drop in Q1 profit, primarily due to weak AI chip demand and losses in its foundry business. Despite rising smartphone shipments, declining chip prices and stiff competition from SK Hynix, which benefits from AI chip demand, have hampered performance. Additionally, tariffs and reduced Chinese demand for AI chips pressure the Korean tech giant.

Google in talks to rent Nvidia Blackwell GPUs from CoreWeave

Google has been in talks to rent Nvidia's Blackwell GPUs from CoreWeave, as demand for AI chips outpaces supply. Struggling with shortages, Google plans to boost its AI infrastructure with a \$75 billion capital expenditure by 2025. The deal, smaller than Microsoft's or OpenAI's, could expand, with Google also considering leasing space in CoreWeave's data centres.

Schneider Electric boosts US operations with \$700 million investment

France's Schneider Electric would be investing \$700 million across eight US states by 2027 to expand data centres and energy infrastructure, aiming to create over 1000 jobs. The investment supports the growing demand for AI and energy solutions. This is part of a broader \$1 billion initiative to boost local production and mitigate tariff impacts.

UK government endorses Vishay's £250 million fab venture in Newport

The UK government has approved Vishay Intertechnology's £250 million investment in the Newport Wafer Fab, South Wales, to boost silicon carbide production for EV technology. The project will create over 500 jobs and support the UK's goal of expanding semiconductor manufacturing.

Qualcomm accuses ARM of stifling competition and files complaints

Qualcomm has filed global antitrust complaints against ARM, accusing it of limiting access to its technology and stifling competition by changing its licensing model. Qualcomm claims this harms the chip industry, while ARM denies the allegations, calling them a 'desperate attempt' amid their commercial dispute. Both companies' stocks have seen declines recently.

SEMI, ESIA advocate for a stronger EU semiconductor future

SEMI and the European Semiconductor Industry Association (ESIA) are urging more R&D funding and a stronger European semiconductor strategy following the 2023 EU Chips Act. At a European Parliament roundtable, political leaders emphasised boosting technological capabilities, accelerating innovation, and strengthening global competitiveness. Members called for follow-up actions, including new funding and policy revisions.





- India, Malaysia extend talks on trade, semiconductor industry expansion
- Apple's iPhone exports from India hit ₹1.5 trillion
- LG Electronics India gets SEBI nod for IPO
- IG Drones reports 330% revenue growth in FY25, eyes ₹1 billion target
- Motorola boosts India production amid US tariff changes
- Skoda eyes EV production in India amid legal dispute
- Apple to start AirPods production in India soon for export to the US and Europe
- DPIIT, Kyndryl partner to charge India's tech startups
- AIIMS, SAMEER collaborate to advance AI medical tech
 Tata launches EV line-up in Mauritius, partnering with Allied
- Motors • India's indigenous wireless EV chargers coming soon
- two-wheelers and CNG autos, by 2026. It mandates that residents with two vehicles must switch to EVs for a third vehicle. The policy targets cleaner air, requiring electric autos and retrofitting older CNG vehicles, while boosting EV adoption.

Haier India to invest ₹10 billion in Greater Noida expansion

Haier India would be investing ₹10 billion in its Greater Noida plant by 2028 to boost production, especially of air-conditioners, increasing capacity to 4 million units annually. This expansion will create 3500 jobs, supporting the 'Make in India' initiative. Haier also plans further growth, eyeing a new facility in South India.

Tata Group powers Tesla's growing India supply chain

Tesla is sourcing \$2 billion in components from Indian firms, including Tata Group companies, as it deepens ties with India's supply chain. With plans for local manufacturing and talks underway in several states, Tesla aims to reduce reliance on China. This expansion may boost India's EV ecosystem but could intensify competition for Tata Motors.

Infineon to double India workforce and focus on R&D

Infineon Technologies plans to double its workforce in India to 5000 by 2030, focusing on R&D, innovation, and collaborations. The company, which currently employs 2500 people across four locations, has signed MoUs with Indian government bodies and partnered with local organisations like ARAI. However, it has no plans for a semiconductor manufacturing plant in India.

HCL-Foxconn seeks EPC partners for UP's OSAT facility

HCL-Foxconn's joint venture seeks engineering, procurement, and construction (EPC) partners L&T and CTCI for an outsourced semiconductor assembly and testing



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	Updates From EFY Group	0			
Event, Date and Venue	Topics	Contact for details			
EFY Expo Pune May 15-17, 2025 Auto Cluster Exhibition Centre, Pimpri, Pune	Electronics expo with conferences on automotive electronics, EVs, and Industry 4.0 (IIoT). Covers a wide range of electronics-related technologies, products, and topics, including electric drives, battery management systems, and IIoT solutions.	Website: https://www. efyexpo.com/PUNE			
NEPCON ASIA 2025 October 28-30, 2025 Shenzhen Convention & Exhibition Centre	Asia's leading exhibition for electronics R&D, manufacturing and packaging technology. It consists of six shows specialised in essential areas for electronics manufacturing and R&D. The show has increased its value as an exhibition representing Asia's leading one-stop venue for all those involved in the electronics industry.	Website: https://www. nepconasia.com/en-gb.html			
Open Source India November 5-6, 2025 NIMHANS Convention Centre, Bengaluru	The twenty-second edition of Open Source India (OSI) maintains its ethos of bringing various stakeholders under one roof. The team at Open Source For You magazine, in partnership with India's Open Source community and industry, comes together to accelerate development and deployment of Open Source in India and beyond.	Website: https://www. opensourceindia.in			
productronica November 18-21, 2025 Trade Fair Center Messe München, Germany	This event presents the entire range of technologies and solutions for electronics production and provides in-depth insights into the latest trends in practice-oriented forums and live demonstrations. Every two years, the world of electronics production meets in Munich.	Website: https:// productronica.com/en			
DigiTech ASEAN Thailand 2025 November 19-21, 2025 Hall 7-8, Impact Exhibition Center, Bangkok, Thailand	Southeast Asian face-to-face 'Digital Solutions for Business' exhibition and networking platform to connect with the global tech and digital markets.	Website: https:// digitechasean.com			
NEPCON China 2025 November 22-24, 2025 Shanghai World Expo Exhibition & Convention Center, Shanghai, China	With the new theme of 'New Business, New Opportunities,' NEPCON China gathers new resources of high-quality electronic manufacturing, enhances brand value, efficiently develops new business, discovers new industry networks, and expands new business opportunities.	Website: https://www. nepconchina.com			
EFY Expo Chennai December 12-14, 2025 Hall 1, Chennai Trade Centre, Chennai	Major tech conference focusing on electronics, IoT, and Al. Simplifies new product development and manufacturing challenges in India. Offers assistance from leading suppliers, even for small batch productions.	Website: https://chennai. efyexpo.com			
EFY Expo Pune January 8-10, 2026 Auto Cluster Exhibition Center, Pimpri, Pune	Electronics expo with conferences on automotive electronics, EVs, and Industry 4.0 (IIoT). Covers a wide range of electronics-related technologies, products, and topics, including electric drives, battery management systems, and IIoT solutions.	Website: https://pune. efyexpo.com			
Since this information is subject to change, all those interested are advised to ascertain the details					

from the organisers before making

(OSAT) facility in Uttar Pradesh. Located near Noida, the facility is set to be the state's first. Foxconn is investing \$37.2 million, with the venture awaiting cabinet approval for the project's progression.

BYD refutes the rumour of its ₹850 billion expansion in India

A report claimed BYD would build a ₹850 billion EV plant in Hyderabad, producing 600,000 cars annually by 2032. Though BYD denied it, such a move, boosted by Telangana's EV incentives, could have shaken India's EV market, offering affordable options and challenging Tesla's delayed entry and grip on the premium segment.

India's electronics manufacturing value addition hits 70%

India's electronics sector reportedly saw value addition rise from 30%

to 70%, with exports increasing and import dependence falling. Policies like PLI and PMP have supported local manufacturing, especially mobile phones and AC components. With value addition expected to reach 90% by FY27, India's role in global electronics supply chains has grown.

MoD signs ₹627 billion helicopter deal with HAL

The Defence Ministry has signed contracts worth ₹627 billion with HAL for 156 indigenous LCH Prachand helicopters for the IAF and Army. Deliveries begin in year three, creating 8500 + jobs. A separate deal with Metrea leases a KC135 refueller for IAF and Navy training. In 2024-25, India's Ministry of Defence signed 193 contracts, 92% with Indian firms.

MoD signs ₹23.85 billion deal with BEL for electronic warfare upgrades

India's Ministry of Defence (MoD) has signed a ₹23.85-billion contract with Bharat Electronics Limited (BEL) to equip Mi-17 V5 helicopters with indigenously developed electronic warfare systems, boosting survivability in hostile zones. Developed by DRDO's CASDIC, the EW suites include radar and missile warning systems. The deal supports 'Aatmanirbhar Bharat,' with major components sourced from Indian MSMEs and private manufacturers.

Cyient targets India's sémiconductor market with **₹9** billion investment

Cyient Semiconductors is investing ₹9 billion to develop power-efficient chips targeting India's data centres and industrial sectors. The company aims to tap into India's growing semiconductor market by focusing on smart grids, electric mobility, and data centre power efficiency. Leveraging local talent, Cyient plans to drive global growth and reduce operational costs in key industries.

Jupiter International raises ₹5 billion for solar manufacturing expansion

Jupiter International secured ₹5 billion from ValueQuest SCALE Fundits second investment—supporting expansion to 5.6GW solar cell and





2.4GW module capacity. With a 1GW plant in Baddi, Jupiter aims to become a fully integrated solar player, reduce imports, and boost jobs. The funding supports India's clean energy goals. Aum Capital advised on the deal.

Samsung faces \$601 million penalty in India over tariff evasion

Samsung has been fined \$601 million by the Indian government for misclassifying telecom components to avoid import duties. The company was accused of evading tariffs on key equipment used in mobile towers, which was sold to Reliance Jio. Samsung disputes the charges and may challenge the ruling, while seven executives face additional fines. The investigation began in 2021.

Ather Energy mulls \$50 million IPO cut

Ather Energy may cut its \$400 million IPO by \$50 million due to market volatility, though it still plans to proceed soon. The EV maker's investors might offer fewer shares, and the valuation could be adjusted. While exploring private placement, if conditions worsen, Ather could hold SEBI approval and retain Hero MotoCorp as its long-term investor.

Ola Electric under scrutiny over misreporting of sales

Ola Electric faces regulatory heat over a mismatch between scooter sales and registrations—claiming 25,000 sold in February but only 8651 registered. This 16,000unit gap raises legal and investor concerns, risking penalties and trust erosion. Allegations of booking inflation and recent internal registration shifts add to scrutiny, as its stock dropped amid the controversy.

VIT collaborates with UK University on Al-powered hydrogen solutions

UK's Coventry University and Vellore Institute of Technology (VIT) have partnered to revolutionise hydrogen transport using AI, addressing hydrogen embrittlement. Funded by UKIERI, the two-year UK-India project aims to improve hydrogen storage safety and efficiency. Researchers seek AI-driven, cost-effective solutions to support net-zero goals, foster global innovation, and strengthen academic collaboration between the UK and India.

Nokia to upgrade Vodafone Idea's IP backhaul network infrastructure

Vodafone Idea has partnered with Nokia to upgrade its IP backhaul network over three years, enhancing 4G and 5G speeds. Nokia will deploy advanced IP/MPLS routers to replace legacy systems, improving performance and reducing operational costs. The upgrade supports growing data demands and includes endto-end services to ensure scalability and faster, more efficient deployments.



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Manufacturing

"Separate Production Lines Prevent Conflicts, Allowing Both R&D And Large-Scale Manufacturing To Run Without Delays"

The Electronics Manufacturing Services industry is key to transforming ideas into reality—right from client discussions to final delivery. Behind this lies a web of intricate functions that demand seamless coordination, technical precision, and an unwavering commitment to quality. In conversation with EFY's Nitisha Dubey and Nidhi Agarwal, Sudharsan Ramajeyam of Thinksemi Infotech outlines how his team steers R&D, quality control, and multi-sector demands while tackling the challenges of scale, customisation, and streamlined production.

What are the main steps involved from talking to a client to delivering the finished product?

Our R&D team categorises queries into fresh ideas or reverse engineering needs. For reverse engineering, we analyse samples to identify components and take necessary actions. For fresh ideas, our design team works with the component team to check market availability and potential EOL risks. Early discussions among R&D, CFT, and component teams help create a BoM with multiple AVL options to reduce production dependencies. Once designs and prototypes are approved, we coordinate with manufacturers on component availability, cycle times, and PCB requirements. PCB design aligns with EMS capabilities and incorporates CFT team inputs. Gerber file creation and alignment are set up for our production process. The box-building and wiring harness teams ensure that connector specifications meet the required standards. Each team is involved at every stage to complete the product smoothly with minimal issues.

How does the R&D team support product development?

Currently, our R&D team supports power electronics and BLDC-based solutions. When customers need design and development services, even from other industries, we connect them with the right experts to create tailored solutions. We also handle BoM design and optimisation to help reduce product costs. This approach enables customers to access comprehensive solutions in one place. SUDHARSAN RAMAJEYAM MANAGING DIRECTOR, THINKSEMI INFOTECH PRIVATE LIMITED





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How do you efficiently manage and manufacture products for diverse sectors?

We have assigned leaders to each business sector to ensure smooth management and customer support. For example, a leader oversees customer needs in the automotive sector, while another manages the telecommunications segment. These leaders coordinate operations, engage with customers, and ensure process efficiency. Our facility has three automatic production lines-one dedicated to research, development, and small production runs, and the other two for mass production. With nine shifts running daily, we efficiently meet demand. A real-time dashboard tracks operations, and any issues are promptly resolved. Separating production lines prevents conflicts, allowing both R&D and large-scale manufacturing to proceed without delays.

How do you ensure quality across R&D and mass production lines? Do you have two different quality control teams?

Each production line is supported by dedicated line inspectors, NPD, and CFT members to maintain rigorous and specialised quality control. We follow a robust multi-stage quality control process that begins with IQC (incoming quality control), where all incoming materials are thoroughly inspected. During production, IPC (in-process control) monitors each stage to ensure consistency and accuracy. We also employ AOI (automated optical inspection) to detect visual defects, while dedicated PTH and PDS OC teams conduct inspections specific to through-hole components and PCB boards. Finally, all products undergo a comprehensive check by final QC inspectors before dispatch. In total, we conduct quality checks at 8 to 12 critical stages, ensuring high reliability and near-zero rejection rates.

What were the challenges in moving from prototype to mass production?

Many companies design their products using commonly available components, similar to the approach in Korea, China, and Taiwan. They base their designs on market availability and finalise them during the R&D phase. We follow the same strategy, selecting components that are easy to source and have shorter lead times. This approach allows a smooth transition into production without challenges related to component changes. By addressing potential issues during the design stage, we avoid future production obstacles.

What are the challenges in design changes?

We gather customer feedback and execute design and development activities accordingly. When modifications are required in existing designs, we ask customers to specify the changes-whether for the entire design or a specific section, such as power input, frequency, module updates, or communication interfaces. Since multiple segments may be involved, we carefully identify the necessary modifications for a new version (e.g., Version 1.2). Instead of redesigning the entire product, we implement only the required updates. This ensures that any issues related to connectivity, power, or functionality are effectively addressed.

How do you keep equipment working and avoid breakdowns?

We are implementing an AI-driven system within our MES (manufacturing execution system) to enhance operational efficiency. This system connects all manufacturing equipment to a central server, enabling automated monitoring and alerts. For instance, if two preventive maintenance sessions are scheduled within a month, the system sends reminders—typically two days in advance prompting us to initiate maintenance activities. This enables timely coordination with machine manufacturers. AI also automates alerts for AMC and maintenance schedules. Additionally, a dedicated team oversees this system, ensuring smooth operations and minimal downtime.

What is the role of AI in modern electronic manufacturing? Are you using it?

We optimise cycle time through AI-driven calculations for component modifications. Our AI module analyses machine cycle times, evaluates the BoM to identify repetitive components on both the top and bottom layers, and adjusts machine operations accordingly. By selecting the most efficient option, we minimise unnecessary loading and unloading, thereby preventing time wastage. This AI-driven strategy reduces changeover time, improves machine efficiency, and ensures a smooth production workflow while maintaining high productivity.

How do you do quality control?

Our quality control follows stringent parameters and adheres to IPC, IATF (for automotive), and ISO standards. We maintain in-house testing facilities that include AI-enabled SMT (surface mount technology), 3D solidbased printing, X-ray inspection, and ICT (in-circuit testing) for feasibility and functional hardware tests. Additionally, our FCT (functional circuit testing) verifies complete box-build assemblies. These in-house labs ensure production stability and significantly reduce field issues. By conducting all tests internally with advanced equipment, we proactively resolve potential challenges and maintain consistent product quality without production disruptions. EFY

This interview is an excerpt of a longer discussion. For the full transcript, please visit: https://efy.co.in/intMay25





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FROM SURVIVAL TO CEO: The Story Of Taher Madraswala



Taher (extreme right) with his colleagues at recent Quest Global Annual Meet

Born into a family with a business at its core, young Taher's birth coincided with his parents' move from Madras to Calcutta. The eldest of three boys, Taher was a mischievous child, quite unlike the conventional eldest son expected to be responsible and disciplined. Up until the age of ten, Taher showed no entrepreneurial aspirations, nor any inclination towards academic brilliance. Scraping through exams and spending his time playing gully cricket, he relied on grace marks to pass from one grade to the next.

With a carefree zest for life, Taher enjoyed his childhood to the fullestuntil everything changed when he was ten. His father, Husein Madraswala, watched a flourishing business collapse, plunging the family into financial ruin and putting an end to his innocent frivolities. With creditors lined outside their house and no money to pay for rent or even two square meals, young Taher's childhood ended abruptly at the tender age of eleven. Abandoned by their fair-weather friends and relatives. Taher and his family were left to the mercy of the creditors amidst misfortune. With no money to pay for house rent, Taher and his family struggled to keep the rental apartment and pay for school fees. Desperate and hungry, it was at this juncture that Taher's father suggested leaving Kolkata and going back to their ancestral village in Gujarat.

A question of survival

Taher and his mother, Shirin Madraswala, vehemently opposed this idea.







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Three-vear-old Taher

"We had two choices—either return to our hometown in Gujarat, where my grandfather lived, because we could not afford to stav in an expensive city like Calcutta, or face starvation. My mother, despite being uneducated, was determined to educate her children. I believe that who I am today is largely because of her," shares Taher.

But what could an eleven-yearold schoolboy do to provide for a family of five?

"My mother went around the locality asking for work for me. At 12 years old, all I could do was teach young kids. One kind lady in our neighbourhood gave me my first break and asked me to teach nursery rhymes to her son. She paid me one rupee per lesson, and since I worked every day, I earned 30 rupees in the first month. That was my first salary," recalls Taher.

His income supplemented his mother's earnings of 100 rupees from stitching and knitting. "Our total household income was just 130 rupees for the first few months. It was barely enough to survive-we could not even afford an egg a day

for our family of five. We did not have proper clothes, and we could not even pay our school fees," he recalls. While survival was somehow contrived, the purpose of this handto-mouth living was to ensure that no Madraswala kid would have to forego their education. Taher's parents approached the principal of St. Joseph's College in Bowbazar, requesting assistance with school fees or a possible reduction.

"Our principal agreed and allowed us to continue on the condition that we would pay the fees whenever we could, with an extension of up to two years to clear our dues," he says.

However, Brother James also warned Taher about his academic performance. "Up until seventh grade, I was just scraping by. If I passed, my mother would celebrate by distributing sweets at home. That was the bar we had set!" he smiles. recalling his youthful idiosyncrasies.

This warning, coupled with a mere thirty rupees as salary, forced Taher to rethink his choices.

"Baa Baa Black Sheep was simple, but 30 rupees a month was not enough! So, I started teaching first graders, then second graders, and eventually third graders. Within a year, I developed a knack for

teaching, and instead of teaching one child, I started tutoring six or seven. My earnings increased to more than 300 rupees per month. We were finally able to pay our school fees, though we still could not afford rent or proper meals," he narrates.

By the time he reached the ninth and tenth grades, he had established himself as a trusted tutor in the locality. "People paid me 100 to 120 rupees per student, and I had 10-12 students, earning around 1000 rupees a month. This was a significant amount at that time, during 1977-79. With this income, we could pay off old debts and slowly stabilise our lives."

Choosing duty over dreams

With a flourishing tutoring business, young Taher had found a way to support his family whilst continuing his education. But as he finished school, a critical question loomedwhat next?

Taher's first preference was medicine. "I had heard that doctors earned well and were highly respected. Coming from a business community, there were no engineers or doctors in my family, so I thought this would be a good path," he recalls.

However, his father had other



Taher with his school friends in Kolkata

plans. "My father insisted that I pursue engineering instead of medicine. He believed that becoming a doctor would take too long—seven to eight years—whereas engineering was a shorter route. He also worried that if I studied medicine, our household income would drop because I would not be able to earn while studying," says Taher.



Taher speaking at the recent VLSID conference held in Bengaluru

Once again, responsibilities presided over aspirations. Taher respected his father's decision and enrolled in an engineering programme. But even as an engineering student, his mind constantly worked on ways to sustain himself. While his peers were busy forming friendship bonds. Taher was consumed with a more significant concern—survival. "I had no money. My biggest worry was how to earn while studying. Since I joined Aligarh Muslim University late in the academic year, I had to quickly find a way to earn while maintaining my grades and attendance. I needed to find students, but this was a new city where no one knew me," he says.

Instead of befriending classmates, he strategically built relationships with decision-makers — the warden, professors, and school administrators. Within three weeks, he had secured his first tutoring job, teaching a teacher's child from Lady Fatima School, one of the most prestigious schools in Aligarh.

"That was my breakthrough. Once I started teaching her children, she recommended me to others," he shares. This network of students kept growing, and before long, he was once again balancing a fullfledged tutoring business alongside his engineering studies. "My classes would finish at 3 pm. I would then return to my hostel and cook *dal-chawal* or quickly gobble a couple of *rotis* and *sabzi* delivered from the kitchen, and by 4pm I was out again, teaching students till 10pm. I did this every single day for five years. When you have responsibilities beyond yourself, you stop making excuses. You just do what needs to be done," he reflects, pausing to wipe his moist eyes.

His childhood burdens never gave Taher the luxury of dreaming for himself, but dreams have a way of slipping into the mind, uninvited vet persistent. For Taher, a poster of the New York skyline hanging in the college canteen drew stars in his eyes, which up until now hadn't even gotten a chance to tear up amidst adversity. Every time he sat there, his eyes would drift toward it, mesmerised by its magnificence. "Ek *din wahaan toh jaana hi hai!"* he would think to himself. The boy who had once been consumed by survival now dared to dream of the Big Apple.

He had a dream; he worked for it

By the time he reached the final years of his engineering degree, something had changed. Initially, I was just trying to survive. But as I became more comfortable managing my studies and work, I started thinking about what came next," he says. While many of his classmates aspired to become bureaucrats—several went on to become IAS and IPS officers—Taher's aspirations differed. He wanted to build something of his own. This was the beginning of a mindset shift—from survival to leadership. He realised that success was not just about working hard but about working strategically.

While the New York skyline continued to beckon Taher in his dreams, fate refused to let him off easy. His first attempt at securing a visa was unsuccessful, forcing him to rethink his approach. In the meantime, he took a job at an HCL subsidiary in New Delhi, earning just 1400 rupees per month—less than what he had made as a tutor. As a part of the research and development team at HCL, Taher worked on building computer designs and learning about how global technology companies operated.

Over the next two years, his salary increased from 1400 rupees to 6000 rupees per month. "For someone who had struggled with money all his life, that felt like a fortune," he recalls.

"If you want to grow, start performing at the next level before



Key persons at Open-Silicon to attend a course in 'Managing at the Top' at IIM Bangalore in 2006 with Chitra Hariharan (second from left)

you get there," he advises. "Many people wait for a promotion before they start acting like a leader. That is the wrong approach. The best way to advance is to start doing the work of the next level before you are officially given the title." This philosophy shaped his career in the years to come.

Alongside a colleague, Balasubramaniam, he started a side business designing electronic doorbells. Utilising reverse engineering, he expanded into designing other products, developing a deeper understanding of how to build and innovate. "That was my first experience with product design—taking something apart, understanding it, and then improving it," he says.

Amidst all this, he was focused on his goal of studying in the US and managed to save up to ₹32,000 in two years. He dedicated himself to preparing for the Graduate Record Examinations, improving his vocabulary by studying through flashcards while travelling to work. He scored well on the GRE on his second try and secured a scholarship to pursue his master's degree at the University of Louisiana in Lafayette.

Surviving the American Dream

In 1989, two years after starting his job at HCL, he finally set foot in the

United States, closer to his dream of touching the New York skyline—a new chapter in his journey. Taher's life in the US was no American dream but another battle of survival. The scholarship covered tuition, but he had to figure out a way to sustain himself again.

"When I arrived in the US, I had to start from scratch—find students to tutor, manage finances, and adjust to an entirely different culture. But I had already done this before. I had rebuilt my life in Calcutta and then in Aligarh. This was just another challenge," he reflects.

Once again, teaching became his lifeline. Amongst his students at the university was an elderly gentleman pursuing an MBA, a man almost his father's age. "He struggled with math—vector multiplication and other concepts that were completely foreign to him, and reached out to me for tutoring," Taher recalls.

The student soon became Taher's family in the foreign land. "He and his wife took me under their wing. They became like my second parents. On my birthday, they even gifted me a brand-new bicycle. That was a huge deal for me at the time," he says.

To this day, he calls them 'Mom' and 'Dad,' and they remain in touch. "They used to tell people at church, 'Our son is going to do very well in life.' Their faith in me meant a lot," he shares.

Taher balanced his studies and was not afraid of hard work, and he never let his circumstances define him. The US offered him exposure to cutting-edge technology, a fastpaced corporate culture, and a chance to dream bigger than ever before.

Graduating into a recession

In 1991, after two years of rigorous study and constant hustling, Taher graduated with his master's degree in computer science engineering, which was welcomed by a recession in the US, which had slowed down hiring drastically. "I was told that if you send out 100 applications, maybe two companies will respond," he recalls.

With no degree from an Ivy League school, Taher knew the odds were stacked against him. But when the going gets tough, the tough get going. Taher sent out 200 applications and heard back from a startup called HAL Computer Systems. It was not the big-name company he had hoped for, but it was a foot in the door. After four months of working at HAL, he received a call from Intel. A step closer to his dreams, Taher knew that securing

a job at Intel would bring stability to his career and a chance to build something new.

Amidst all the chaos of building a career, there was one aspect of life that Taher had not yet given much thought to—marriage. With his life revolving around academics, work, and survival, relationships had never been a priority.

"Back in Calcutta, all the girls I had taught called me 'Sir.' There was never any With L romantic angle because they saw me as a teacher, someone to be respected, not pursued. And by the time I was ready to think about marriage, most of them were already married!" he laughs.

With each passing day, his mother, like a typical Indian mom, was worried that Taher would never settle down. So, when he visited India after securing his job at Intel, she decided to take matters into her own hands.

"I had one condition—I wanted to marry a professional woman. In the US, life as a homemaker can be isolating, and I did not want my wife to feel that way. She had to have a career of her own," he says.

His cousin, who lived in Nagpur, introduced him to Farida, a doctor from the city, who would become his life partner. They got married in 1992. "I couldn't become a doctor, but we do have a doctor's degree in our house," he quips!

They have now been married for 32 years and have a daughter who works as a nurse. "She gave me the freedom to chase my ambitions, and I gave her the same. She became the assistant chief of a hospital, and I became a CEO. We both grew together," he reflects.

Despite all his achievements, the relationships he has built—both



With Louisiana parents-being pampered by mom

personal and professional—are what he holds closest to his heart.

Tutor turned trailblazer

At Intel, Taher started as an engineer working on microprocessors. He was part of the team that designed the Pentium processors technology that would eventually power millions of computers worldwide.

"I worked on four versions— Pentium I, II, III, and Itanium. The first time, it was incredibly challenging. But after the fourth version, it became repetitive," he shares. He had reached a point where he wanted more. More challenges, more learning, and more opportunities to innovate.

In the 1990s, Intel was at its peak and held nearly 90% of the microprocessor market, looking for ways to expand beyond computing. They saw an opportunity in supplying silicon to networking and communication—a space that companies like Cisco were rapidly dominating. Taher saw this as his next challenge. "I had spent years working on processors, and the move from computing to communications was something new," he says.

However, fate had something else planned. Despite investing

billions into the communication sector, Intel failed to win market share from TI, PMC-Sierra, Broadcom, and Conexant. "We spent billions acquiring companies, but the experiment failed. With that, my career also took a hit," he admits.

But failure had never stopped him before. And it was not about to stop him now.

During this time, Taher and his friends at Intel identified a gap in the semiconductor industry. Outsourcing

chip development was an expensive and inefficient process, dominated by large corporations charging exorbitant prices. "We realised that semiconductor design was overpriced. Instead, we could design and get semiconductor chips manufactured at much lower prices and still be profitable," he explains.

Seeing an opportunity to disrupt the industry, he and his colleagues took a leap of faith. In 2003, Taher joined Open-Silicon, a company focused on making chip development more accessible and affordable. The Open-Silicon team pitched their idea to investors and secured \$45 million in funding. "At the time, this was a massive amount—equivalent to around \$300 million today," he says.

Within a few years, Open-Silicon became a success story, challenging industry giants and lowering the barriers for startups to develop their own chips. In 2007, the company was bought over by a private equity firm for \$200 million. Many of the original founders exited over time and moved on, but Taher stayed. "By then, money was no longer my motivation. I wanted to build something bigger," he says. He continued as CEO, leading the company till it was sold again in 2018.



Some of Taher's favourites

Favourite Movie: Sholay Favourite Actor: Amitabh Bachchan Favourite Actress: Hema Malini Favourite Food: Dal chawal Favourite Drink: Diet Coke Favourite Travel Destination: The Galápagos Islands Favourite Book: Homo Sapiens Favourite Sport: Cricket Real-Life Role Model/Inspiration: Mother

Favourite Quote: Wake up every morning and do your best. Everyone—whether it is a human, an animal, or even the tiniest bacteria—gets 24 hours in a day. The key to a fruitful life is making the most of those 24 hours, every single day.

A leader without a company

In 2018, after years of hard work and leadership, circumstances forced Taher to sell Open-Silicon. The company's investor, a private equity firm, needed the cash, and Taher had no choice but to let go of the company he and his friends had built. It was another setback. But by then, Taher had learned one of the most valuable lessons of all—failure is never the end.

"I did not want to sell. It was heartbreaking. I had to let go of something I had built from the ground up," he recalls. After dedicating 15 years to Open-Silicon, he left a successful startup that had grown into an industry disruptor. But now, for the first time in years, he was not leading a company.

Money had stopped being a concern long back for Taher. Still, the urge to make a mark was strong, so he teamed with another entrepreneur to build an ASIC business at Invecas Corp. Unfortunately, Covid disrupted those plans also, and Taher went back to where it all started—Intel.

Returning to Intel in 2020, Taher took on the role of Vice President and General Manager in the Graphics Processing Unit (GPU) division. His mission? To take on Nvidia by creating custom silicon solutions with the Graphics IP that Intel owns and establish Intel as a leader in the graphics industry. It was a high-stakes challenge. Nvidia had long dominated the GPU market, and catching up would require a combination of innovation, strategy, and execution.

"We believed that we could change the industry. Intel originally started its graphics division years ago during my first tenure at Intel. I knew the team, I knew the technology,

and I truly believed we could beat Nvidia," he shares.

However, the reality of corporate decision-making often clashes with vision. Despite efforts to build a competitive GPU business, the challenges were immense. Intel struggled to fund the custom silicon business, and in 2022, the company decided to shut down that part of the graphics division. It was another setback, another failure. "My first failure at Intel was when I switched from Processor to Communications division in the late 1990s. The second was when I took on the responsibility of proliferating the Graphics Xe architecture through custom silicon," he reflects.

But if there was one thing Taher had learned from his journey, it was that failure is never the end.

The quest for something new

At this point, Taher had seen it all—success, failure, entrepreneurship, corporate leadership, and even the pain of losing a company he built. He had reached a stage where he could have retired comfortably. But that was never his style. It was then that Quest Global produced an opportunity.

The CEO and CBO of Quest

Global shared a vision with Taher to create a generational company and take Quest Global public someday.

That one sentence reignited something in Taher. "I had always wanted to take Open-Silicon public, but circumstances had prevented it. Now, here was another chance to do it, one more time," he narrates.

After careful consideration, he agreed to take on the challenge. He joined Quest Global, in its semiconductor division, with the goal of assisting the company toward an IPO. News reports have been rife with probable dates and figures for an IPO valuation, but Taher remains unfazed by any report with a calm, stoic smile that perseveres through decades of struggle and turmoil.

Looking back at his career, Taher acknowledges that the road has not always been smooth. Carrying the pride of massive successes and the despair of bitter failures, he advises, "Ambition alone is not enough. You can have a vision, but if you do not execute it flawlessly, you will not reach your goal."

He also believes that true leadership is about working at the next level before you get there. "If you want to grow, you have to start acting like the person you aspire to be. Do not wait for a title to start behaving like a leader," he says.

After all these years, his biggest motivation remains the same helping others grow. "For a long time, I have taught maths and science to underprivileged kids. At this stage of my life, if I can impact someone's life the way my mentors impacted mine, then I would have done something meaningful," he says.

As for what he wants to be remembered for? His answer is simple: "If just one person says, 'If it were not for Taher, I would not be here,' then I know I have done my job."



HOW EMS FIRMS CAN SCALE UP To Box Build And Make More Profits



S.A. SRINIVASA MOORTHY is 4-decade experienced electronics engineer with passion for teaching.

It is no longer enough to play it safe. EMS firms that step up to full product builds will own the future—one box at a time. The choice is clear: stay stuck, or scale smart.



ith the era of electronics manufacturing migrating to India, a new opportunity is fast emerging. However, we see many small and medium electronic manufacturing services (EMS) firms struggling due to pricing issues and shying away from full product builds.

Here are a few ideas that can help you, as the leader of an EMS firm, grow both revenue and margins:

The key shift required is letting go of the low-risk mindset, where customers supply the components and your firm sticks to assembly. This model yields only arbitrage margins, with no manufacturing value add. That said, a hybrid approach may be practical for builds involving highcost components (such as FPGAs).

Globally, manufacturing costs typically account for 25-30% of the BoM (bill of materials) for standard products. In contrast, regulated sectors—like aerospace, defence, automotive, or medical—can deliver significantly higher margins, often by at least 10%. Targeting these segments can dramatically increase profitability.

Board assembly alone is heavily machine-driven, and margin expansion is limited, unless your offering includes value-added services, such as PCBA testing, system build, cable harnessing, product testing, certification, calibration, and after-sales support. Defence products, for instance, often generate large annual maintenance contracts, given their lifecycle of 20-25 years.

Most global OEMs expect boxbuild capabilities. When they begin sourcing in India, they often find a lack of product-level thinking. Since these firms typically cannot train vendors themselves, strong boxbuilding capabilities set you apart from competitors and open doors to multinational clients.

In short, scaling up and improving margins means moving to box build. Here is a list of core skills and competences your team must develop—or you must hire for: Solid 'component engineering' skills. Component engineering is often thought to concern only electronics, but it actually encompasses all product elements—mechanical, plastics, sheet metal, cables, wires, connectors, complex backplanes, etc. Most small or medium EMS players do not have these skills, and scaling to the next level will not be possible unless they develop them.

Post-PCB assembly capabilities. Trained professionals are needed for post-PCB assembly processes like flying probe testing, in-circuit testing, functional testing, cable harness fabrication, programming devices, and perfectly maintaining product-related manufacturing data, as products in domains like medical, defence, and avionics require meticulous documentation and storage.

Security-focused team and infrastructure. With increasing requirements for embedded cybersecurity in manufacturing, both processes and infrastructure need to be secure, and personnel must be trained and monitored. We know of a company supplying secure devices to the government of India, which has invested in 20% more manpower just to meet these security requirements.

In short, invest in training, develop internal subject-matter experts, and create a solid Learning Management System with a culture of continuous updates. Prioritise video-based training content over static manuals—creating videos is now easier than ever, and they deliver faster, more effective learning outcomes.



Interesting Reference Designs Of **PULSE OXIMETER**

Title of Reference Design	Pulse Oximeter	Pulse Oximeter And Heart-Rate Monitor
Image		
Key Attractions	The reference design supports signal processing, wireless connectivity, and power management. It integrates an external display controller, an analogue front end, and data storage.	The reference design collects biometric signals, supports multiple interfaces, and enables data acquisition with low power use. It integrates an optical sensor and rechargeable battery.
Highlights	The Renesas pulse oximeter reference design is based on the RL78/G13 16-bit microcontroller but requires additional external hardware to meet specific requirements. Since the microcontroller lacks an integrated display controller, an external LCD display controller is added, and the DAC for operating the LED driver is implemented externally. Wireless connectivity can be enabled by connecting a Zigbee or Bluetooth module via the CSI port. The RL78/G13 includes a hardware MAC function for signal processing algorithms that reduce artefacts in Sp02 measurements and features on-chip data flash for implementing the look-up table functionality. The microcontroller is suited for applications in ambulatory and hospital markets when combined with an external analogue front end, including a 12-bit ADC. The firmware manages LED and IR-LED control, signal acquisition, signal processing, LCD display output, and Sp02 data storage in the data flash. Power management software is necessary for low power consumption, and a communication driver can enable USB or wireless connectivity with other devices.	The MAXREFDES280 reference design integrates into a wrist- worn device to collect biometric signals, streaming raw photop- lethysmography (PPG) data for monitoring vital signs like heart health and blood oxygenation. It provides a platform to evaluate the MAX86171 optical analogue front-end across body sites, focusing on wrist applications. Supporting both I2C and SPI inter- faces, the MAX86171 features two optical readout channels that operate simultaneously for data acquisition. Users can configure the band to optimise signal quality while maintaining low power consumption, making it suitable for wearable designs. The hard- ware setup includes two boards: the MAXSensorBLE# for data acquisition and the MAX86171_OSB# as the sensor daughter board. The system runs on a lithium polymer battery, recharged via a USB-C port. The band includes the MAX86171ENI+ in a 28-bump wafer-level package.
Applications	The reference design is suitable for medical applications in various settings.	The reference design is suitable for wearable health monitoring.
OEM Brand	Renesas	Analog Devices (ADI)
URL	https://www.electronicsforu.com/electronics-projects/pulse- oximeter-reference-design	https://www.electronicsforu.com/electronics-projects/pulse- oximeter-and-heart-rate-monitor-reference-design



Nidhi Agarwal is Senior Technology Journalist at EFY with a deep interest in embedded systems, development boards, and IoT cloud solutions.

Advanced Pulse Oximeter	Single-Chip Pulse Oximeter	Tower System Module Pulse Oximeter
The reference design supports a low-cost, low- power pulse oximeter for measuring heart rate and oxygen levels, integrating signal processing, power management, and data handling while reducing the need for extra components.	The reference design enables a single-chip pulse oximeter with signal processing, power manage- ment, and data handling. It supports heart rate and oxygen measurement, low power consumption, and integration into patient monitoring systems.	The reference design supports pulse oximetry and medical prototyping with microcontrollers, development tools, and sensor integration. It enables measurement, connectivity, and system expansion for various applications within a devel- opment platform.
Microchip's pulse oximeter reference design demo board enables the development of a low-cost, low-power handheld or wearable pulse oximeter with a user interface for measuring heart rate and blood oxygen levels. It serves as a foundation for hospital or clinical pulse oximeter designs and wearable activity trackers. The de- vice measures heart rate and oxygen saturation using a dsPIC33FJ128GP802 with a 513th-order digital-FIR bandpass filter, eliminating the need for an analogue front-end and reducing costs. A pulse-width modulation module drives the LCD, while an MCP1640 boost regulator, MCP4728 DAC, and MCP6002 dual op-amp manage power and signal conditioning. It features an 8-channel hardware direct memory access (DMA) system with a 2kbyte dual-ported DMA buffer. The design includes power management with an on- chip 2.5V voltage regulator and real-time clock source switching for performance.	Texas Instruments' TIDA-010267 reference design demonstrates the analogue capabilities of the MSPMOL1306 in a single-chip pulse oximeter. The MSPMOL1306 uses its operational amplifiers as a trans-impedance amplifier and current control driver with zero-drift and low-noise properties. An integrated analogue-to-digital converter (ADC) enables oversampling, achieving a 90dB dynamic range. The design includes a graphical user inter- face that displays photoplethysmography (PPG) waveforms and provides heart rate and oxygen saturation measurements. It supports heart rates from 30 to 240 BPM and a perfusion index range of 0.1% to 20%. The internal 12-bit ADC ensures readings with a display resolution of 1 BPM for heart rate and 1% for Sp02. The device supports battery life with low power consumption and a shutdown current below 83nA. It is used in clinical pulse oximeters and multiparameter patient moni- toring systems, contributing to the assessment of oxygen saturation and patient care.	The MED-SPO2 tower system module refer- ence design is a medical development tool for the 9S08MM Flexis 8-bit, MCF51MM ColdFire 32-bit, and Kinetis 32-bit MCU families, sup- porting pulse oximetry application development and compatibility with multiple tower system modules. It measures oxygen levels using two light wavelengths, 660nm (red) and 940nm (infrared), based on differences in absorption by deoxygenated and oxygenated haemoglobin. The 9S08MM128/64/32 is an 8-bit microcontroller with USB connectivity, graphic display support, and measurement accuracy for medical and industrial applications. The MCF51MM256/128 is a 32-bit microcontroller with low power operation, USB connectivity, and analogue performance for medical devices and industrial control. The TWR- K53N512 supports product development for the Kinetis MCU family, functioning as a standalone debug tool and integrating with the Tower System. The TWR-MCF51MM module supports the MCF51MM256 Flexis ColdFire 32-bit MCUs for medical prototyping, including an electrocardio- graph sensor.
The reference design is suitable for wearable and clinical applications.	The reference design is suitable for clinical applica- tions.	The reference design is suitable for medical and industrial applications.
Microchip	Texas Instruments (TI)	NXP Semiconductors
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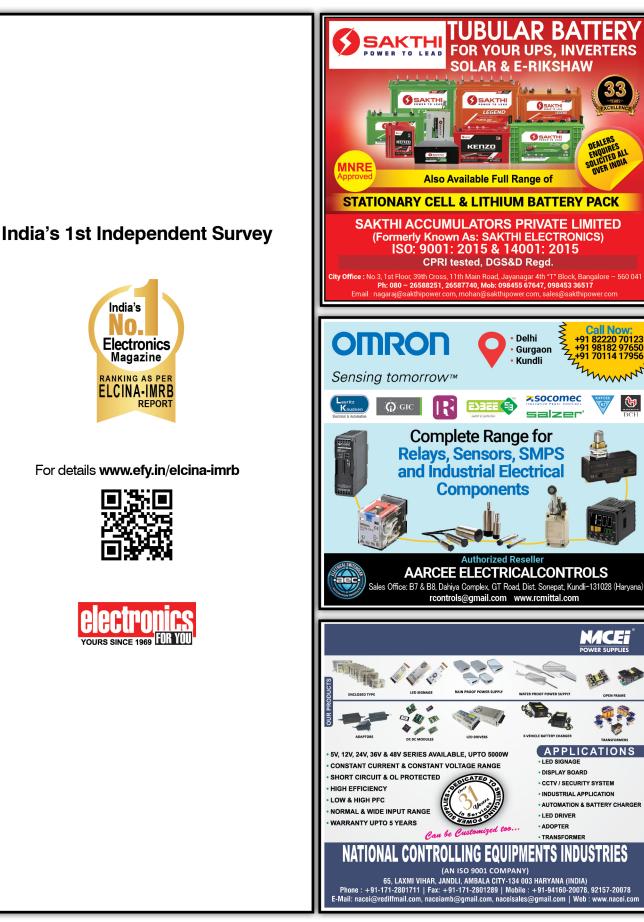


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LTpower Analyzer System



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Power supply frequency and time domain measurements often require expensive and large lab equipment to get accurate results. The Power Analyzer was developed with the goal of putting a small, portable, and inexpensive instrument that can measure Bode plots, impedances, power supply rejection, and transient load response into the hands of every engineer designing power supplies.

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- Optional ADALM2000 (M2K) Active Learning Module

Included Accessories

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Advanced Active Learning Module

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- 16-channel pattern generator (3.3V CMOS, 100MS/s) and virtual digital I/O
- Two input/output digital trigger signals for linking multiple instruments (3.3V CMOS)
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- Two programmable power supplies (0...+5V , 0...-5V)



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For more information, please reach out to Cic.asia@analog.com



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