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• Testing is becoming an important source of engineering and manufacturing intelligence across the product lifecycle •

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As India's pharmaceutical, biopharma, medical device and diagnostics sectors expand their manufacturing and R&D capabilities, demand is growing for advanced test, measurement and validation technologies that can support increasingly complex, automated and data-driven operations. At the same time, artificial intelligence is emerging as a powerful tool to transform engineering workflows, from test development and validation to system understanding and quality assurance. Against this backdrop, Priyachandar P, Country Head and Director, NI India, Emerson Test & Measurement, discusses the evolving market, emerging technology trends, AI-led engineering transformation and Emerson's growth strategy for India's life sciences sector.



How do you assess the current demand for test, measurement and validation technologies in India's life sciences industry, particularly across pharmaceuticals, biopharma, medical devices and diagnostics?

India is moving beyond its traditional role as a manufacturing hub to become a centre for life sciences innovation, engineering and R&D. Global engineering centres are expanding their presence, while domestic companies are investing in areas such as surgical robotics, biologics, biosimilars, advanced medical devices and next-generation diagnostics.

This is driving demand for sophisticated testing and validation, particularly as companies increase automation and digitalisation, products become more complex and software-driven, and regulatory expectations around validation, traceability and quality assurance evolve.

What are the key technology trends you are seeing in India's life sciences sector that are driving greater demand for advanced testing and measurement solutions?

A key shift is that life sciences companies are increasingly treating test and validation data as a strategic asset rather than simply a quality requirement.

Investment in automation, AI, connected devices and advanced manufacturing is increasing the need for visibility into product performance, manufacturing processes and quality metrics. At the same time, applications such as robotics, OCT systems, tomography, spectroscopy and advanced laboratory analysis require flexible test platforms capable of handling complex systems and large volumes of data.

As a result, testing is becoming an important source of engineering and manufacturing intelligence across the product lifecycle. Increasingly, organisations are looking to turn test data into actionable engineering insight that can improve product quality, accelerate troubleshooting and support faster design decisions.

As pharmaceutical and biopharma manufacturing becomes increasingly automated and data-driven, where do you see the biggest gaps in testing, validation and quality assurance capabilities in India?

One common challenge is integrating data from multiple systems while maintaining validation and traceability requirements. As products become increasingly software-driven, organisations need scalable approaches that connect test, data management and compliance processes.

Could you outline Emerson test and measurement (T&M)'s current portfolio of T&M solutions relevant to life sciences, and which product categories are witnessing the strongest growth in India?

Emerson's T&M portfolio supports product development, validation and manufacturing test for medical devices, diagnostics and scientific instrumentation. It includes modular instrumentation, data acquisition systems, automated test platforms, embedded control systems and software for test automation, data management and analytics. Many of these technologies are supported by engineering teams in India, including Emerson T&M's largest R&D hub outside the US, helping connect local customer requirements with global product innovation.

Our technologies also support OEM applications. For example, the FDA-approved MMI surgical robotic system uses NI CompactRIO as part of its control architecture.

In India, we are seeing strong adoption across connected medical devices, diagnostic equipment, OCT systems, spectroscopy platforms, laboratory analysers and robotics.

How is AI changing test engineering and validation in life sciences? Specifically, where do you see tools such as NI Nigél AI creating measurable value for pharmaceutical, biopharma and medical-device companies?

AI is helping engineering teams develop, analyse and validate increasingly software-driven and data-intensive products more efficiently.

NI Nigél AI, the first AI specifically optimised for test and measurement, helps engineers understand complex code bases, accelerate test software development, troubleshoot issues and analyse test data. It can also assist with routine activities such as code generation and documentation.

AI is not intended to replace engineering expertise but to help engineers spend less time on repetitive tasks and more time solving complex problems, ultimately shortening development cycles.

India is expanding its capabilities in biologics, biosimilars, advanced therapies and medical devices. What new testing requirements will these emerging segments create, and how is Emerson T&M preparing its portfolio to address them?

We see particularly strong demand in medical devices, diagnostics and scientific instrumentation, where products are becoming more software-driven, connected and data-intensive.

For example, continuous glucose monitoring systems require highly precise electrical measurements to validate sensor performance, signal integrity and low-power operation. Pulsed field ablation systems generate high-speed waveforms and large volumes of data, requiring advanced data acquisition, synchronisation and analysis.

Similar requirements are emerging in diagnostic systems, laboratory analysers and OCT platforms, where manufacturers must validate complex combinations of electronics, sensors, embedded software and communication interfaces.

Emerson T&M is addressing these requirements through modular, software-connected test platforms that combine high-fidelity measurement, automation and analytics.

How significant is the opportunity for Emerson T&M in India as global life sciences companies diversify manufacturing and R&D operations into the country? Which segments or applications offer the greatest growth potential over the next three to five years?

India represents a significant opportunity as multinational and domestic companies expand their R&D, engineering and manufacturing capabilities.

For Emerson T&M, we see growing demand in medical devices, diagnostics and scientific instrumentation, including connected wearables and implantable devices, electrophysiology treatments, surgical robotics, diagnostic imaging, OCT platforms, laboratory analysers and spectroscopy.

Medical devices are particularly attractive because increasing software content, connectivity and regulatory requirements are creating more sophisticated validation needs.

Over the next three to five years, we expect strong opportunities at the intersection of advanced medical technology, automation and AI, supported by India's growing engineering talent and R&D footprint.

Who do you see as your major competitors in India's test and measurement market, and how are you differentiating in an increasingly competitive environment?

The test and measurement market is highly competitive, with global and regional providers serving different application areas. Rather than focusing on individual competitors, our focus is on addressing customers' evolving engineering challenges.

Emerson T&M differentiates itself through a software-connected approach that combines high-performance modular hardware with platforms such as LabVIEW and TestStand and AI-enabled engineering tools. This allows customers to build flexible test systems that can evolve from R&D through manufacturing.

We also stay closely connected with research across academia and industry to align our investments with emerging needs, including areas such as software and cybersecurity requirements.

Beyond products, how important are software, engineering services, system integration and local technical support to Emerson T&M's strategy for winning life sciences customers in India?

They are critical because customers increasingly need more than standalone test equipment.

Platforms such as LabVIEW and TestStand, together with NI Nigeli AI, help automate workflows, manage data and improve engineering productivity. Customers can develop and integrate systems themselves or work with our ecosystem of system integration partners for turnkey solutions.

Lifecycle support is equally important. Emerson T&M has a calibration centre at its Bengaluru facility, enabling us to provide local calibration services and help customers maintain measurement accuracy and test-system performance over time.

Looking ahead, what is your growth strategy for Emerson's T&M business in India, and what role will partnerships, AI and the expansion of the regional ecosystem play in achieving that growth?

India is an important growth and innovation market for Emerson T&M, combining a rapidly expanding life sciences sector with deep engineering talent and increasing R&D investment.

Our strategy combines global product innovation with local market understanding, supported by customers, system integrators, technology partners and research institutions.

AI will play an important role, with tools such as NI Nigeli AI helping engineers automate routine tasks, accelerate test development and extract greater value from engineering data.

Our local R&D capabilities are another key strength. Emerson T&M's R&D facility in India is its largest outside the US. This connects local customer requirements with our global R&D teams and helps translate emerging needs into relevant technology investments.

Together, our measurement technology, software, AI, partnerships and local engineering expertise position us to support the next generation of life sciences innovation in India.

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