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## 2024 edition of analytica Anacon India, India Lab expo & Pharma Pro&Pack expo set to take technology and industry convergence to new heights

OUR BUREAU, MUMBAI

**T**HE 2024 edition of Analytica Anacon India, India Lab expo, and Pharma Pro&Pack expo, which are all synonymous with beacons of innovation, is set to provide attendees with a unique opportunity to explore integrated solutions,

engage in innovative technologies, and enhance their strategic outlook.

This year's event, set to kick off in Hyderabad from September 26-28, will be the largest edition to date, featuring over 500 technology suppliers from 14+ countries. Following a highly successful edition in 2023, the triad event is set to create a transformative

experience for the pharmaceutical, analytical, biotechnology, and R&D sectors.

analytica Anacon India, India Lab Expo, and Pharma Pro&Pack Expo have firmly established themselves as product launch platforms for exhibitors, where cutting-edge innovations

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# The Indian Life Sciences Instrumentation Industry: Driving Sustainable Growth, Export Competitiveness



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**T**HE life sciences instrumentation industry in India is at a critical juncture, transitioning from a nascent sector with significant potential into a key player on the global stage. As India strengthens its capabilities in life sciences, biotechnology, and pharmaceuticals, the life sciences instrumentation industry plays a vital role in supporting research, diagnostics, and quality control. With growing emphasis on sustainability and export competitiveness, the sector is gearing up for significant growth, innovation, and global recognition.

This article explores how the Indian life sciences instrumentation industry is poised for sustainable growth and how it's positioning itself to become globally competitive in exports.

## Overview of the Indian Life Sciences Instrumentation Industry

The life sciences instrumentation industry encompasses a wide range of devices and technologies used for research, diagnostics, and therapeutic applications in the fields of biology, chemistry, and healthcare. Instruments such as microscopes, spectrometers, chromatography systems, and DNA sequencers are indispensable for research institutions, hospitals, and pharmaceutical companies.

In India, the life sciences instrumentation market has been growing steadily over the past decade, driven by rapid advancements in biotechnology, increased demand for diagnostic tools, and rising investments in healthcare infrastructure. According to industry reports, the Indian life sciences instrumentation market was valued at approximately USD 1.8 billion in 2021, and it is projected to grow at a com-

pound annual growth rate (CAGR) of 7-8% over the next five years.

The country's thriving pharmaceutical industry, which ranks among the largest globally, serves as a significant driver of demand for life sciences instruments. Furthermore, India's focus on biotechnology, personalized medicine, and advanced diagnostics has heightened the demand for high-precision instrumentation to support innovation and R&D efforts.

## Factors Driving Sustainable Growth in the Industry

Several key factors are contributing to the sustainable growth of the Indian life sciences instrumentation industry:

### 1. Government Initiatives and Policy Support

The Indian government has recognized the strategic importance of the life sciences sector and has implemented policies and initiatives to promote its development. Initiatives such as the "Make in India" campaign and the "Atmanirbhar Bharat" (self-reliant India) initiative are designed to boost domestic manufacturing capabilities and reduce dependency on imports. These policies are encouraging Indian companies to invest in research and manufacturing of life sciences instruments, reducing the reliance on foreign technologies.

Additionally, government programs such as the Biotechnology Industry Research Assistance Council (BIRAC) provide funding and support to startups and small and medium enterprises (SMEs) in the life sciences and biotechnology sectors. This is helping local companies develop innovative instruments that cater to both domestic and international markets.

### 2. Rising Investments in Healthcare and R&D

India's growing population and the rising burden of chronic diseases are increasing the demand for healthcare services and diagnostic tools. The Indian government has been steadily increasing its healthcare budget, with a focus on improving access to diagnostic facilities, particularly in rural areas. This has created a favorable environment for the life sciences instrumentation industry to grow, as more hospitals and clinics are investing in advanced diagnostic equipment.

Furthermore, increased investments in R&D by both the government and private sector companies are driving innovation in the field of life sciences. Indian research institutions and universities are actively involved in cutting-edge research in biotechnology, genomics, and drug discovery, which necessitates the use of sophisticated life sciences instruments.

### 3. Technological Advancements and Innovation

Advancements in technology are playing a pivotal role in shaping the future of the Indian life sciences instrumentation industry. India has become a hub for innovation in biotechnology and healthcare, and the development of advanced instruments is a key enabler of this progress.

Technological advancements such as artificial intelligence (AI), machine learning (ML), and automation are being integrated into life sciences instruments, improving their accuracy and efficiency. For instance, AI-powered imaging systems and automated chromatography systems are helping researchers and clinicians achieve more precise and reproducible results.

Additionally, the adoption of digital technologies such as cloud computing and the Internet of Things (IoT) is enabling the remote monitoring and operation of life sciences instruments. This is particularly beneficial in areas with limited access to skilled technicians, as it allows for real-time data analysis and troubleshooting.

### 4. Sustainability and Green Technologies

As environmental concerns continue to grow, there is increasing pressure on industries to adopt sustainable practices. The life sciences instrumentation industry in India is no exception, and companies are increasingly focusing on developing eco-friendly instruments and processes that minimize their environmental footprint.

Sustainable practices in the life sciences instrumentation industry include the use of energy-efficient technologies, recycling of materials, and reducing waste generated during the manufacturing and operation of instruments. Some companies are also exploring the use of renewable energy sources to power their manufacturing facilities and reduce carbon emissions.

For example, energy-efficient labo-

ratory equipment such as low-energy-consuming centrifuges and chromatography systems are being developed to reduce power consumption in research labs. Similarly, manufacturers are designing instruments that use fewer consumables, reducing the amount of plastic waste generated.

## Challenges Faced by the Industry

While the Indian life sciences instrumentation industry has significant growth potential, it also faces several challenges that need to be addressed to ensure sustainable development and export competitiveness.

### 1. High Dependency on Imports

Despite the government's push for self-reliance, the Indian life sciences instrumentation industry still relies heavily on imports of high-end instruments and components. Advanced technologies such as mass spectrometers, DNA sequencers, and electron microscopes are typically sourced from foreign manufacturers, as domestic companies are yet to develop equivalent products.

This dependency on imports not only increases costs but also limits the ability of Indian companies to compete globally in terms of pricing. To overcome this challenge, the industry needs to invest in local R&D and manufacturing capabilities, with support from the government in the form of subsidies and tax incentives.

### 2. Lack of Skilled Workforce

The life sciences instrumentation industry requires a highly skilled workforce capable of designing, operating, and maintaining complex instruments. However, there is a shortage of skilled technicians and engineers in India who are trained in the operation of advanced life sciences equipment. This limits the industry's ability to expand and meet growing demand.

To address this issue, the government and private sector need to collaborate on training programs and educational initiatives that equip the workforce with the necessary skills. Partnerships with universities and research institutions can help bridge the skills gap by providing hands-on training in the use of life sciences instruments.

### 3. Regulatory Hurdles

The regulatory environment in India

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can be challenging for companies operating in the life sciences instrumentation sector. Stringent regulatory approvals, lengthy bureaucratic processes, and inconsistent enforcement of policies can create barriers to market entry for new products.

Simplifying the regulatory framework and streamlining the approval process will be critical to enabling the industry to innovate and grow. The government has taken steps in this direction by introducing measures to reduce red tape, but more needs to be done to create a conducive environment for the industry.

## Key Emerging Trends in the Life Sciences Instrumentation Industry

According to Indian Analytical Instrument experts, while online and at-line testing is becoming increasingly popular, traditional laboratory testing remains essential for in-depth analysis. The rise of inline and at-line testing during the manufacturing process highlights the growing need for real-time data acquisition and analysis to ensure process accuracy and efficiency.

A significant trend in the laboratory equipment and analytical instruments sector is the growing shift towards cloud-based data management systems. Many organizations are now opting to store their data on the cloud for seamless access across departments. This trend extends to Laboratory Information Management Systems (LIMS), which are increasingly being moved to cloud platforms to improve operational efficiency and foster better collaboration.

Looking to the future, Indian Analytical Instrument experts foresee the rapid integration of artificial intelligence (AI) in method development and process optimization. AI technologies, powered by vast amounts of historical data, are set to transform analytical methodologies, making workflows faster and more accurate.

In the realm of bioprocess analytics, innovations are emerging to meet the needs of the biopharmaceutical industry. Instruments designed to measure critical parameters like pH and CO<sub>2</sub> in bioreactors are gaining popularity, and single-use technolo-

gies are being introduced to simplify bioprocess cleaning. Notably, leading companies such as Serum Institute of India are adopting these innovations to enhance efficiency.

Indian Analytical Instrument experts also emphasized the role of the Indian Analytical Instruments Association (IAIA), which has been bringing together manufacturers, suppliers, and customers in the laboratory equipment and analytical instruments sector for over two decades. The IAIA provides a platform for industry stakeholders to discuss challenges, identify opportunities, and establish new business connections, helping the industry

industry has the potential to become a major player in the global market, but achieving export competitiveness will require concerted efforts in several areas.

### 1. Leveraging India's Cost Advantage

India has a significant cost advantage over many developed countries when it comes to manufacturing life sciences instruments. Lower labor costs, favorable exchange rates, and a well-established manufacturing infrastructure enable Indian companies to produce instruments at a fraction of the cost of their Western counterparts.

By leveraging this cost advantage, Indian companies can offer high-quality

sciences instrumentation manufacturers gain access to global markets. By establishing strategic alliances with foreign companies, Indian manufacturers can tap into new distribution networks and reach customers in regions such as North America, Europe, and Asia-Pacific.

These partnerships can also facilitate the transfer of knowledge and technology, enabling Indian companies to improve their manufacturing processes and product offerings.

### 4. Meeting Global Standards

To succeed in the global market, Indian life sciences instruments must meet international quality and safety standards. Compliance with standards such as ISO, CE, and FDA certifications is essential for exporting instruments to developed markets.

Indian manufacturers will need to invest in quality control processes and ensure that their products undergo rigorous testing and validation to meet these standards. Building a strong regulatory compliance framework will also help Indian companies gain a competitive

edge in international markets.

### Conclusion

The Indian life sciences instrumentation industry is on the verge of significant growth, driven by increasing demand for healthcare services, rising investments in R&D, and government support for domestic manufacturing. With a focus on sustainability and innovation, the industry is well-positioned to become globally competitive in exports.

However, achieving sustainable growth and export competitiveness will require overcoming challenges such as dependency on imports, a shortage of skilled workers, and regulatory hurdles. By investing in local R&D, building global partnerships, and maintaining a strong focus on quality, the Indian life sciences instrumentation industry can emerge as a major player in the global market, contributing to the country's economic growth and technological advancement.

*(Author is the Leading Pharmaceutical Consultant and Editor-in-Chief of JIMToday)*



grow significantly.

Through partnerships with organizations like Messe Muenchen India, IAIA plays a critical role in fostering industry dialogue and promoting emerging trends. Events such as Analytica Anacon create opportunities for stakeholders to exchange ideas and explore business prospects. While the recent event in Mumbai focused on manufacturers, the upcoming show in Hyderabad will also include customers from the pharmaceutical, biotechnology, healthcare, diagnostic, and research sectors.

While India continues to rely heavily on imported machinery, Indian Analytical Instrument experts are optimistic about the future of domestic production. Government initiatives like Production Linked Incentives (PLI) and the Make in India campaign are expected to boost local manufacturing, paving the way for a robust indigenous industry in the life sciences and analytical instruments sector.

### Export Competitiveness of the Indian Life Sciences Instrumentation Industry

India's life sciences instrumentation

instruments at competitive prices in international markets. However, it will be important to ensure that the lower cost does not come at the expense of quality. Building a reputation for producing reliable and durable instruments will be critical to gaining the trust of global customers.

### 2. Strengthening R&D and Innovation

Innovation is key to achieving global competitiveness in the life sciences instrumentation industry. Indian companies need to invest in R&D to develop cutting-edge instruments that can compete with products from established players in the US, Europe, and Japan.

Collaborations with global research institutions and universities can help Indian companies stay at the forefront of innovation. Additionally, fostering a culture of innovation within the industry will be important to encourage the development of new technologies and solutions.

### 3. Expanding Global Partnerships

Building partnerships with international companies, distributors, and research institutions can help Indian life