PLANT ENGINEERING SERVICES

Industry Outlook

THEINDUSTRYOUTLOOK.COM

SERVICES & CONSULTING

CDC TECHNICAL SERVICES

Crafting Turnkey Solutions for India's Industrial Infrastructure Boom

PARTHA CHAKRABORTY, MANAGING DIRECTOR

₹150

MARCH, 2025

3rd Edition

GSSE
GLOBAL STAINLESS STEEL EXPO 2025

4 5 6 JUNE 2025

BOMBAY EXHIBITION CENTRE MUMBAI

POWERED BY JSL JINDAL STAINLESS

INTERNATIONAL TRADE FAIR FOR STAINLESS STEEL MATERIALS, PRODUCTS & PROCESSING TECHNOLOGIES

Scan to visit

UNVEILING THE INTERCONNECTED INDUSTRIES

EXPLORE STAINLESS STEEL'S ROLE IN DRIVING INNOVATION ACROSS DIVERSE SECTORS

200+ Exhibitors	100000+ Sq. Ft Expo Hall	15,000+ Trade Visitors	International Pavilions	CEO Round Table	Industry & Technical Seminars	B2G Meetings

FOR MORE INFORMATION, CONTACT
SWAGATAM
+91 7411203855
swagatam@virgo-comm.com

MEDIA PARTNER
Industry Outlook
The Outlook of Industry's Business

ORGANISED BY
virgo COMMUNICATIONS AND EXHIBITIONS (P) LTD
20 YEARS

WWW.GSSEXPO.COM

POLYNEXT
CONFERENCE
THE FUTURE OF PLASTIC RECYCLING

POLYNEXT CONFERENCE

EVENT DATE:
07-08, MAY, 2025
DUBAI, UAE

WWW.POLYNEXTCONF.COM

Industry Outlook

Vol 6 • Issue 07 - 03• MARCH, 2025

Publisher
Alok Chaturvedi

Managing Editor
Sudhakar Singh

Associate Editor
Thiruamuthan T K

Assistant Editor
Roshan Akthar

Editorial Team
Viswanathan A
Lakshmi Prabha

GM - Media & Graphic Designing Visualizer
Prabhu Dutta A.R.N Ray

Visualizer
V Hari Priya
Suanya Banerjee

Advertising Queries
Prajnya Paramita Bhol
Jaya Arora
Vidyashri Patil

GM Sales & Marketing
Virupakshi Pattar
sales@theindustryoutlook.com

Editorial Queries
editor@theindustryoutlook.com

Circulation Manager
Magendran Perumal

Magazine Price is Rs. 150 per issue

Printed and Published By Alok Chaturvedi on behalf of Biz Print Media Technologies Pvt. Ltd. and Printed at Executive Prints - 113/7, Ground floor, Old madras road, Halasuru, Bangalore 560008 and Published At No. 124, 2nd Floor, Surya Chambers, Old Airport Road, Murugeshpalya, Bangalore-560017.

Publisher Alok Chaturvedi

EDITOR'S NOTE

Future-Ready Engineering for India

Plant engineering services in India are experiencing substantial expansion because of quick industrial development together with technological progress and rising infrastructure investments. The manufacturing sector is expanding rapidly within the country due to government programs which promote home-grown production and independence. A rising market demand for engineering solutions has appeared because organizations need better operational efficiency and resource optimization alongside regulatory compliance. The growth has become possible because businesses across all industries now focus heavily on automation and digital transformation. Manufacturers use modern technologies such as AI along with IoT and robotics to enhance their production flows and decrease operational delays. Modern manufacturing facilities need specialized plant engineering services to implement advanced solutions into their traditional manufacturing systems because of this market shift.

Core industry growth in power and chemicals together with oil and gas, pharmaceuticals and food processing is driving the necessity for plant engineering capabilities. Companies are building new facilities while they enhance their current plants to achieve greater operational effectiveness combined with environmental sustainability and safe operational standards. Plant engineering services contribute critically to industry adoption of sustainable practices by creating environmental-friendly solutions according to global environmental standards. The combination of skilled engineering professionals and cost-effective services from India has established the country as a leading market for plant engineering service outsourcing. The global marketplace seeks cost-efficient engineering solutions from India which drives further expansion of this market sector. The plant engineering services market in India will continue expanding because of on-going urbanization, infrastructure development and growing industrial automation initiatives.

In this special issue, we introduce you to the top companies from this segment. Industry Outlook has identified the select few companies that have done particularly well with a high level of dedication. We have found that they have gone the extra mile in proving their commitment to excellence in an integrated manner.

We welcome your feedback and suggestion that you may have concerning this special issue.

Sudhakar Singh
Managing Editor
editor@theindustryoutlook.com

LITHIUM BATTERY

CARYVOLT® MIGHTY LI-ON

Smart Batteries

- Compact Size
- Less Weight
- Fast Charging
- Higher Back-up
- Longer Life
- Maintenance Free

IEC

AIS 156

*Condition Apply

Caryaire Equipments India Pvt. Ltd.
Head office: B-34, Sector 85, Noida - 201 305, Uttar Pradesh (India)

+91 98189 00908 +91 98186 85552
www.caryvolt.com | caryvolt@caryaire.com

CONTENTS

TOP STORIES

PANORAMA

INDUSTRY INSIGHTS

31

Speciality Lubricant Strategies for Enhancing EV Efficiency and Performance

Kushal Desai,
Chairman & Managing Director,
APAR Industries Limited

35

Building Tomorrow's Communities with Sustainable Living at the Core

Rakesh Reddy,
Director,
Aparna Constructions

39

Energy Efficient Welding: Enhancing Performance and Usability

Sachin Dobhada,
Head of Research, Development & Quality (Equipment),
Ador Welding

Industry Outlook TOP 10
PLANT ENGINEERING SERVICE PROVIDERS 2025

COVER STORY 14

PARTHA CHAKRABORTY,
MANAGING DIRECTOR

CDC TECHNICAL SERVICES

Crafting Turnkey Solutions for India's Industrial Infrastructure Boom

AFTERWORD

42

Textile Export – Challenges & Strategies

Partik Munjal,
CEO,
Pika Exports

HPCL AND TATA MOTORS INTRODUCE CO-BRANDED DIESEL EXHAUST FLUID

Public sector oil marketing company HPCL, in partnership with Tata Motors, launched a co-branded diesel exhaust fluid, 'Genuine DEF,' on Wednesday. The product will be available across HPCL's 23,000 fuel stations nationwide, along with over 2,000 authorized Tata Motors outlets.

Designed for modern BS6-compliant diesel vehicles, the high-quality Diesel Exhaust Fluid (DEF) plays a crucial role in reducing harmful emissions by breaking down nitrogen oxides into cleaner nitrogen and water. It also enhances vehicle efficiency, optimizes drivetrain performance, and extends the lifespan of diesel engines.

HPCL emphasized that Tata Motors customers can conveniently access Genuine DEF to ensure compliance with emission standards while improving overall vehicle performance.

"Our partnership with Tata Motors for co-branded Diesel Exhaust Fluid is a significant step toward reducing emissions and supporting cleaner transportation solutions," said Amit Garg, Director of marketing at HPCL.

"Our co-branded Genuine Diesel Exhaust Fluid ensures that Tata Motors customers can access it now even more easily across the country, and achieve optimal performance, while complying with highest environmental standards," said Girish Wagh, Executive Director at Tata Motors.

Diesel Exhaust Fluid (DEF) the non-toxic, colorless solution composed of 32.5% urea and 67.5% deionized water, is used in Selective Catalytic Reduction (SCR) systems of modern diesel vehicles. It helps reduce harmful nitrogen oxide emissions by converting them into harmless nitrogen and water, ensuring compliance with stringent environmental regulations.

OLA ELECTRIC PARTNERS WITH PLI SCHEME TO ENHANCE EV BATTERY MANUFACTURING

Ola Cell Technologies Private Limited, a division of Ola Electric Mobility, has entered into a Programme Agreement with the Ministry of Heavy Industries as part of the Production Linked Incentive (PLI) Advanced Chemistry Cell (ACC) scheme. The agreement aims to boost India's local production of batteries for electric vehicles.

The Union Cabinet approved the PLI ACC scheme in May 2021, allocating a budget of Rs 18,100 crore to create large-scale battery manufacturing plants in India. The initiative corresponds with the government's aim of enhancing the nation's EV ecosystem and lessening reliance on battery imports.

Through its involvement in the scheme, Ola Electric aims to enhance its battery production capacity and support India's electric mobility objectives. The initiative aims to assist the company in creating advanced chemistry cells and enhancing domestic value addition.

The partnership is a component of a wider initiative to encourage local battery production as part of the 'Make in India' movement. Enhancing local manufacturing of ACC batteries is anticipated to lower expenses and increase the accessibility of electric vehicles. As the demand for electric vehicles increases, India is concentrating on establishing a local supply chain for essential battery elements. The government advocates for self-sufficiency in advanced battery storage technologies, and collaborations with private companies such as Ola Electric are essential for reaching that objective.

Through supporting extensive battery manufacturing, the government intends to create a competitive market for EV parts, establishing India as a significant player in the worldwide clean energy shift.

MARQUARDT INAUGURATES ₹188 CR MANUFACTURING FACILITY IN TALEGAON

The German mechatronics firm Marquardt has officially opened a new manufacturing plant in Talegaon, close to Pune, India, on March 5, 2025. This new facility is a substitute for the firm's former location in Mumbai and signifies an investment exceeding 180 crore rupees (approximately $21.5 million USD) in infrastructure, machinery, and equipment.

The facility will mainly concentrate on producing mechatronic system solutions for India's automotive sector, including drive authorization systems, gear selector switches, and battery management systems for electric vehicles. Marquardt aims to create approximately 300 additional jobs at the facility within the next five years.

"India represents a key growth market for Marquardt with significant potential," said BjörnTwiehaus, CEO of the Marquardt Group. "By opening this new plant in Talegaon, we are advancing our success story in India and strengthening our role as a leading supplier of mechatronic systems for future mobility."

Vishal Narvekar, General Manager of Marquardt India, highlighted the plant's significance in aiding the Indian government's "Make in India" initiative by enhancing local manufacturing, fostering innovation, and generating job opportunities.

Marquardt has been established in India for many years and runs a development center in Pune, with more than 450 employees engaged in both local and worldwide projects as part of Marquardt's global innovation network.

LENOVO PLANS TO ACHIEVE 100% PC MANUFACTURING IN INDIA

Lenovo, a leading global technology firm, announced on Wednesday that it plans to produce all of its personal computer (PC) models in India over the coming three years. The company intends to achieve full 100 percent production for its PC business during this time, according to senior executives. This will also include its provision in AI-PC.

Lenovo India Managing Director Shailendra Katiyal mentioned that currently, the company produces 30 percent of its total PC sales locally, aiming to reach 50 percent next year and achieve 100 percent within three years.

Katiyal additionally mentioned that the initial AI-driven servers will be launched from its manufacturing hub in India starting April 1. He was speaking at the company's main event Lenovo TechWorld India 2025 taking place in Mumbai.

In September of the previous year, Lenovo launched a manufacturing plant in Puducherry that will produce approximately 50,000 enterprise AI servers and 2,400 premium graphics processing units (GPUs) each year.

Lenovo, while enhancing its manufacturing presence in India, is also seeking AI talent and aims to boost its research and development capabilities. The firm revealed the establishment of an additional R&D center in Bengaluru, aiming to transform India into an AI hub.

The leading Chinese consumer electronics company also reported that it is experiencing rapid growth in India regarding AI. For the year-to-date period, Lenovo's revenue in India increased to $2.5 billion.

HOW PLANT ENGINEERING CAN BOOST OPERATIONAL EFFICIENCY

Increasing production, improving efficiency, reducing bottlenecks, upgrading to new technologies, manufacturing new products, and refurbishing or repairing all rely on effective plant engineering.

Establishing an eco-system conducive to innovation & achieving operational efficiency is the key objective for the manufacturers. Industry players have to introduce products at a faster pace than their competitors to retain market leadership. However, this needs realigning the engineering cycle for accommodating as well as addressing every engineering change.

Another important factor, which fuels profitable growth is based on how fast the manufacturers can adapt & deliver according to the regional regulatory compliance norms. Regulators are mandating compliance to great stringent mission & safety norms, forcing plant owners to spend precious hours on monitoring & auditing.

"Engineering services outsourcing has emerged as a major contributor to the energy, chemical, and petrochemical sectors over the past decade. The expansive pool of engineering talent with the necessary skills and technical expertise has contributed to the development of engineering services. Awareness among various industrial producers on sustainable plant design and energy-efficient solutions has provided positive momentum for growth. However, designing production and processing units for various industrial sectors demands experienced handling by engineering service providers as a partner to their clients," says Pravin Nikam, Managing Director, Winspiration Energy & Engineering.

Strong technical understanding, installation, & operational backgrounds

Companies in the plant engineering services field should possess the capability built on strong technical understanding, installation, and operational backgrounds to deliver practical real-world solutions. The plant engineering teams must possess years of experience in the design & maintenance of industrial processing plants and should understand that the plants & systems they design are critical to the performance of their client's operations and should have the capability of tailoring the engineered solutions to facilitate clients achieve their goals.

Focus on safety in design

Furthermore, in order to understand the key drivers for their projects, these companies must collaborate with clients & focus on safety in design throughout the life cycle of the plant, which

includes constructability, operability & maintainability of the installations.

The modern approach taken by companies offering Plant engineering services includes the utilization of the latest 3D modeling software for every single phase of project design development. This begins right from conceptual to definitive design and continues through to the production of documentation construction. Lastly, these companies also customize deliveries that meet their clients' project development strategies.

> Engineering services outsourcing has emerged as a major contributor to the energy, chemical, and petrochemical sectors over the past decade

"With the advent of technology innovations in the automation landscape, today's enterprises lookout for unparalleled automation solutions to accomplish the cost-effective method of production, operational efficiency, and optimal usage of resources," says Ravi Shankar, Managing Director of Naraiuran Controls (INDIA) Pvt Ltd.

"Owing to the large consumption of automation products, India's automation realm brings out a colossal amount of opportunities to the automation technology players. Indeed, enterprises demand innovative as well as trustworthy technology partners who are capable of offering complete integrated solutions for automation," he adds.

Successful design & installation of ethane meter station

While a meter station measures the flow of products along the pipelines without blocking their movement, it is a pipeline station that is designed for the continuous as well as simultaneous analysis of the quantity & quality of the product transported in a pipeline.

One of the biggest companies offering plant engineering services designed and installed the required equipment for an ethane metering station located in Westlake for the purpose of ethane delivery with custody transfer measurement. This engineering, procurement & construction project comprised mechanical, civil, instrumentation & electrical activities.

The company formulated the various activities such as civil activities comprising the construction of a 350/160 feet station site, satellite equipment, miscellaneous pipe supports, meter skid, analyzer pad, & the foundation for a power electrical control building.

Secondly, it formulated the Mechanical actives that comprised the installation of a 10-inch station inlet and outlet piping and associated valves and flare header with connections for a portable flare, a dual 4 & 6-inch Coriolis flowmeter with connections for an 8-inch portable connection, and electrical activities that consisted of 480 volts of electric service from utility to service disconnect, site grounding and lighting & feeders to motor-operated valves, while the instrument activities included Omni panel and communication cabling, field-mounted instruments & junction boxes.

The company successfully installed a flow meter & power electrical control building along with other installations that included a light liquid sampling system as well as a cold vent stack. It also delivered a programmable logic controller & flow computer.

Conclusion

Plant engineering companies have to digitize supply chains in order to boost efficiency and decrease lead time. In order to transform their businesses at a time when market conditions are likely to remain difficult, to go beyond cost cutting, established plant engineering organizations should make significant efforts. Therefore, if businesses make the right investments now, they could witness their competitiveness enhanced in the near future.

STRATEGIES FOR CIOS TO DRIVE DIGITAL TRANSFORMATION IN LARGE ENTERPRISES

● *Prince Joseph, CIO, SFO Technologies*

Prince Joseph, CIO of SFO Technologies, shares his insights in an exclusive interview with Industry Outlook on key topics, including the challenges of integrating AI solutions, best practices for transitioning from legacy systems, and how CIOs balance rapid digital innovation with robust cybersecurity measures. As a business technology leader, Prince drives digital transformation by leveraging emerging technologies and innovations. His expertise spans Enterprise IT, covering Infrastructure, Software Engineering, Custom Applications Development, and more.

With organizations increasingly adopting AI, many face challenges in effectively integrating these technologies into existing frameworks. How can CIOs navigate these integration challenges while aligning AI solutions with business objectives?

Successfully integrating AI into an organization requires a tailored approach, as every company's data architecture and business framework are unique. While hybrid environments (on-premises and cloud-based) dominate, data often exists in varying formats and silos. The first step is to understand the organization's current state and create a strategy for introducing AI that complements its existing architecture and aligns with business objectives.

Preparation is key. Before integrating AI, organizations must ensure their data is well-structured and accessible. Starting small, focusing on specific contexts, and scaling incrementally is often the best approach. AI outputs can deliver exceptional insights, but they are only as good as the data and preparation behind them.

Collaboration across cross-functional teams—business, operations, IT, and data—is essential to ensure alignment and validate AI's value. Moreover, legal compliance, ethics, and data protection must be considered from the outset. Addressing these challenges early ensures smooth integration and long-term success.

The shift to cloud computing has intensified, leading to significant data migration challenges.What best practices can CIOs adopt to ensure a smooth transition from legacy systems to cloud-based solutions?

The shift to the cloud varies across organizations, with some embracing full adoption and others navigating hybrid environments. The key is to identify solutions that are "cloud-ready" and align them with the organization's specific business needs and operational context.

Prince Joseph,
CIO

For organizations prioritizing global collaboration and access, the cloud provides unparalleled advantages in terms of scalability and connectivity. However, security, performance, and data protection must be integral to the transition strategy. For localized workloads, edge computing can ensure data remains closer to the source, enhancing performance and compliance.

Hybrid environments often remain the most practical solution, offering elasticity and scalability while balancing performance and cost. However, managing data integrity and compliance in such environments is a challenge, as cloud providers do not take full responsibility for securing data. Organizations must adopt layered security measures, apply best practices, and work with trusted partners to ensure a resilient architecture.

As cybersecurity threats grow more sophisticated, enterprises must rethink their digital transformation strategies. How can CIOs balance the need for rapid digital innovation with robust cybersecurity measures to protect sensitive data?

Security must be foundational to digital transformation strategies. With the attack surface expanding due to

increasing threat vectors, organizations must start by addressing the weakest link—people. Ongoing security awareness programs are essential, educating employees on risks, best practices for managing credentials, and recognizing threats such as phishing.

> **The shift to the cloud varies across organizations, with some embracing full adoption and others navigating hybrid environments. The key is to identify solutions that are "cloud-ready" and align them with the organization's specific business needs and operational context**

Regulations provide a framework for minimum security measures, but organizations must go beyond compliance to ensure real-world protection. This includes robust monitoring and visibility across all layers of IT, from applications to IoT devices, ensuring that potential threats are detected and addressed in real time.

Adopting a zero-trust architecture is critical in today's landscape, where BYOD, remote access, and multi-source traffic are common. Every user and device must be verified continuously. Real-time monitoring and event correlation further ensure that cybersecurity is proactive rather than reactive, allowing enterprises to innovate while maintaining robust data protection.

Looking ahead, how do you envision the role of CIOs evolving over the next five years in driving digital transformation and addressing emerging challenges in technology and business?

The CIO role will continue to evolve as a bridge between technology and business. With the democratization of technologies like AI, IoT, and blockchain, CIOs must focus on driving value by aligning innovation with strategic business goals. They must wear both the technology and business hats, orchestrating solutions that generate tangible outcomes.

As custodians of organizational data, CIOs will increasingly focus on cybersecurity and resilience. Protecting intellectual property and ensuring compliance across geographies will be pivotal. Additionally, CIOs will need to prioritize employee enablement by integrating tools that enhance productivity and engagement while automating mundane tasks.

Sustainability will also play a significant role. CIOs must align with organizational green goals, driving decisions that contribute to long-term benefits and environmental responsibility. This multifaceted approach will cement the CIO's role as a key driver of innovation, resilience, and sustainability in the enterprise.


PARTHA CHAKRABORTY,
MANAGING DIRECTOR

Industry Outlook TOP 10
PLANT ENGINEERING SERVICE PROVIDERS 2025

CDC TECHNICAL SERVICES

Crafting Turnkey Solutions for India's Industrial Infrastructure Boom

By Deepshikha

COVER STORY

The Indian government's ambitious investments in smart cities, modern airports, and expansive transport networks have reshaped urban landscapes and created an unprecedented demand for robust power and allied industrial capacities. There is a push for faster project delivery, driven by the growing financial pressure to generate swift returns on investment, compelling organizations to adopt fast-track project management practices. Simultaneously, the global call for sustainable practices has intensified the need for eco-conscious solutions that minimize environmental impact, reuse existing structures, and optimize land and resource utilization. Adding to the complexity is the rising expectation for engineering solutions that seamlessly integrate cost-efficiency with cutting-edge technical precision, a balance that requires meticulous planning, innovative problem-solving, and expertise in diverse disciplines. With a proven track record across power plants, ports, and industrial facilities, CDC Technical Services stands at the forefront of this evolution, offering end-to-end solutions tailored to India's rapidly advancing industrial sector.

Designing India's Urban Transformation

CDC Technical Services (CDCTS) has become one of the significant players in India's industrial engineering landscape, driven by the forces of rapid urbanization, substantial government investment in infrastructure, and a nationwide push for eco-friendly practices. The company's role in this environment is deeply intertwined with the country's evolution, capitalizing on burgeoning demands across the power, cement, fertilizer, and steel sectors. These industries are riding the wave of infrastructure growth fueled by the development of smart cities, airports, and transport networks, a wave that the company has adeptly positioned itself to surf.

With a portfolio of plant engineering services spanning industrial power plants, water treatment facilities, and mines, CDCTS has carved a niche in offering comprehensive solutions for complex projects. Its engineering services integrate disciplines ranging from civil and structural engineering to mechanical, electrical and control instrumentation. "We provide a complete engineering solution to all the major players in India such as NTPC, NMDC, Adani Group, and many of the major state Power Boards", says Partha Chakraborty, Managing Director, CDC Technical Services. The company's expertise covers every phase of project development, from conceptual planning to critical performance guarantee (PG) tests, ensuring seamless execution and client satisfaction.

Turning Challenges to Solutions

One of the most noteworthy projects highlights of CDCTS is its technical acumen and innovative problem-solving capabilities. Tasked with developing a material handling system at the Dhamra port for the Adani Group involving a Wagon Tippler, the company faced significant challenges due to adverse soil conditions. The site's high water-table and poor soil conditions and the need to excavate up to 20 meters below ground level posed a formidable engineering obstacle. The team devised a cutting-edge solution involving diaphragm walls, a technique typically used in metro construction, tailored to the project's unique demands. This solution ensured the system's stability and functionality under extreme conditions, reinforcing the company's reputation for overcoming complex engineering challenges.

Another ambitious undertaking showcased the organization's ability to merge structural aesthetics with engineering precision. The new terminal at Guwahati Airport, designed to resemble an open-winged butterfly from an aerial perspective, required advanced 3D modeling and intricate structural planning. Collaborating with the Adani Group and AECOM, the company developed

a BIM Model that brought the design to life, ensuring the terminal's visual appeal matched its functional integrity.

In industries such as power and cement production, where tight deadlines are the norm, CDCTS has established a reputation for meticulous planning and execution. Its approach centers on aligning engineering deliverables with site activity schedules, ensuring seamless team coordination. The company employs detailed L-2 and L-3 schedules to map out every project phase, working backward from deadlines to ensure timely completion. This rigorous planning minimizes delays and maximizes efficiency, allowing clients to meet their project targets within compressed timeframes.

In industries such as power plants, mines, steel plants, material handling systems where tight deadlines are the norm, CDCTS has established a reputation for meticulous planning and execution

Greenfield Ingenuity

CDCTS's approach to sustainability varies depending on whether a project involves a greenfield site or a brownfield site. In greenfield projects, it prioritizes minimal land use, designing systems that optimize space and reduce environmental impact. For brownfield projects, the focus shifts to retrofitting existing structures and repurposing facilities to minimize waste and conserve resources. A notable example is their work for Chambal Fertilizers, where the team integrated a new bagging plant with an existing railway platform. By retrofitting the old structure instead of demolishing it, the company saved significant amounts of concrete and steel for its client, showcasing its commitment to sustainable practices.

Engineering New Horizons

The company's team of experienced engineers, many of whom have been with CDCTS for over 15 years, embodies a culture of commitment and excellence. Low attrition rates and a focus on fostering long-term relationships enable the company to maintain continuity and deliver consistent results. Clients trust the company to meet their expectations and tackle their most challenging problems with ingenuity and determination.

Since its inception, the company has achieved several milestones that underscore its growth and adaptability. It's adoption of advanced software tools, has further enhanced its capabilities, enabling clients to visualize entire structures in 3D. In addition, the company plans to open a new office in the coming financial year, expanding its team to support an increasing workload. It is also offering pre-tender services, offering clients cost-effective engineering solutions that enhance their competitiveness in bidding processes.

By integrating these services into its portfolio, the company aims to solidify its role as a one-stop solution for engineering projects. Its journey reflects a commitment to excellence, sustainability, and innovation. As India's infrastructure landscape evolves, the company stands ready to play a pivotal role, leveraging its expertise to shape the future of industrial engineering. Whether it's solving complex technical challenges, delivering sustainable solutions, or pioneering new service offerings, CDC Technical Service continues to set benchmarks for the industry, earning the trust and admiration of its clients.

Industry Outlook TOP 10

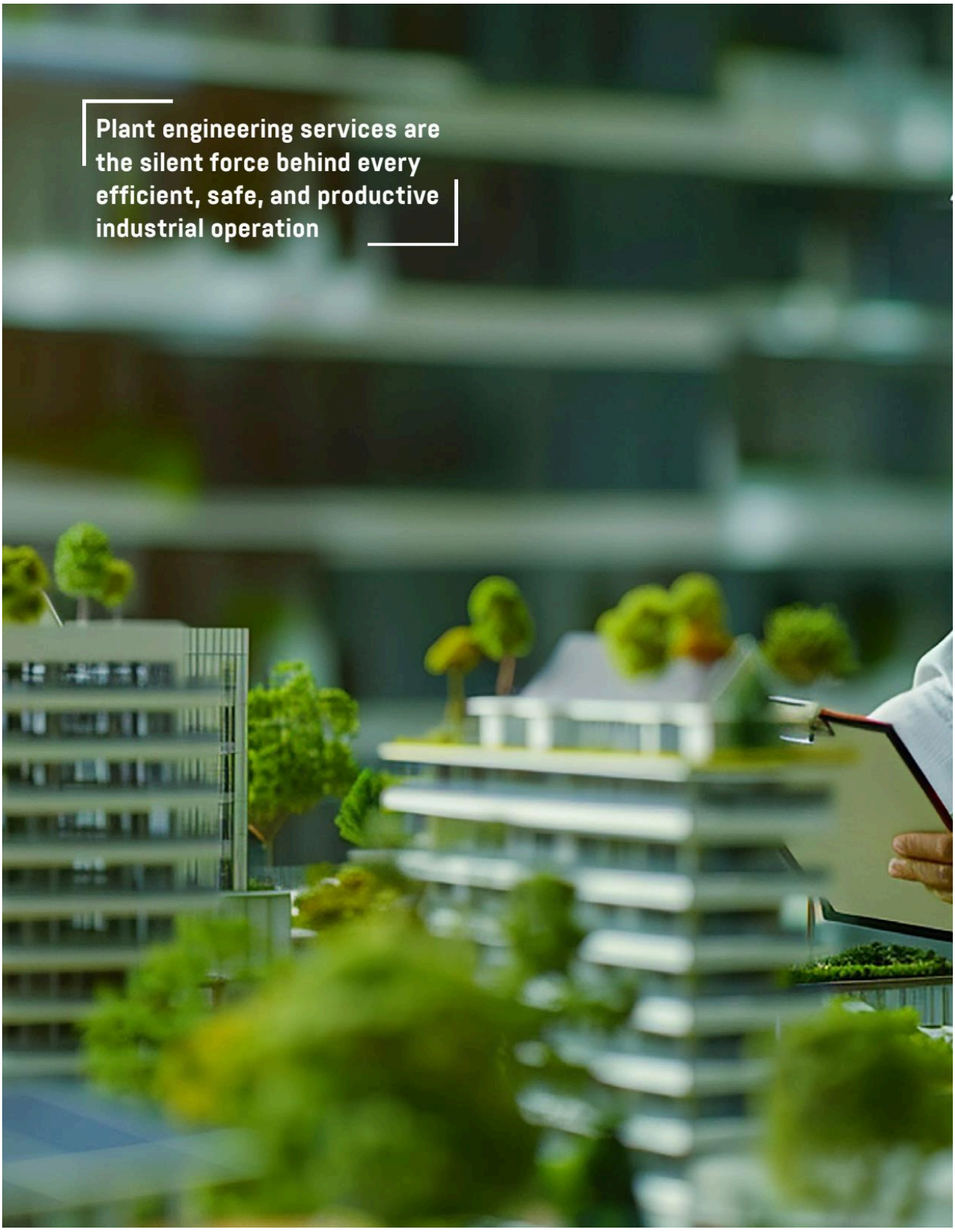
PLANT ENGINEERING SERVICE PROVIDERS 2025

The plant engineering services in India has been gaining strong traction, owing to rapid industrialization, technological innovations, and an increasing number of infrastructure projects. The industries include oil and gas, petrochemicals, power production, chemicals, and manufacturing, all needing high-tech engineering solutions to improve efficiency and productivity.

The Indian market for plant engineering services is growing driven by enhanced investments in infrastructure, energy as well as industrial automation. Demand drivers range from the need for sustainable solutions to digitalization and adoption of Industry 4.0, which would enable the demand for new-age engineering services. These firms are focused on building customized offerings directed at process optimization, plant maintenance as well as asset management opportunities, which further propels the market growth. The demand for operational efficiency and regulatory compliance are key drivers for this industry growth. In order to enhance their engineering capabilities, firms are investing in the development of advanced software tools, digital twins, and IoT-enabled technologies. Collaborative models between engineering service providers and various industries are- driving innovative models of project execution, reduced operational costs, and improved project timelines.

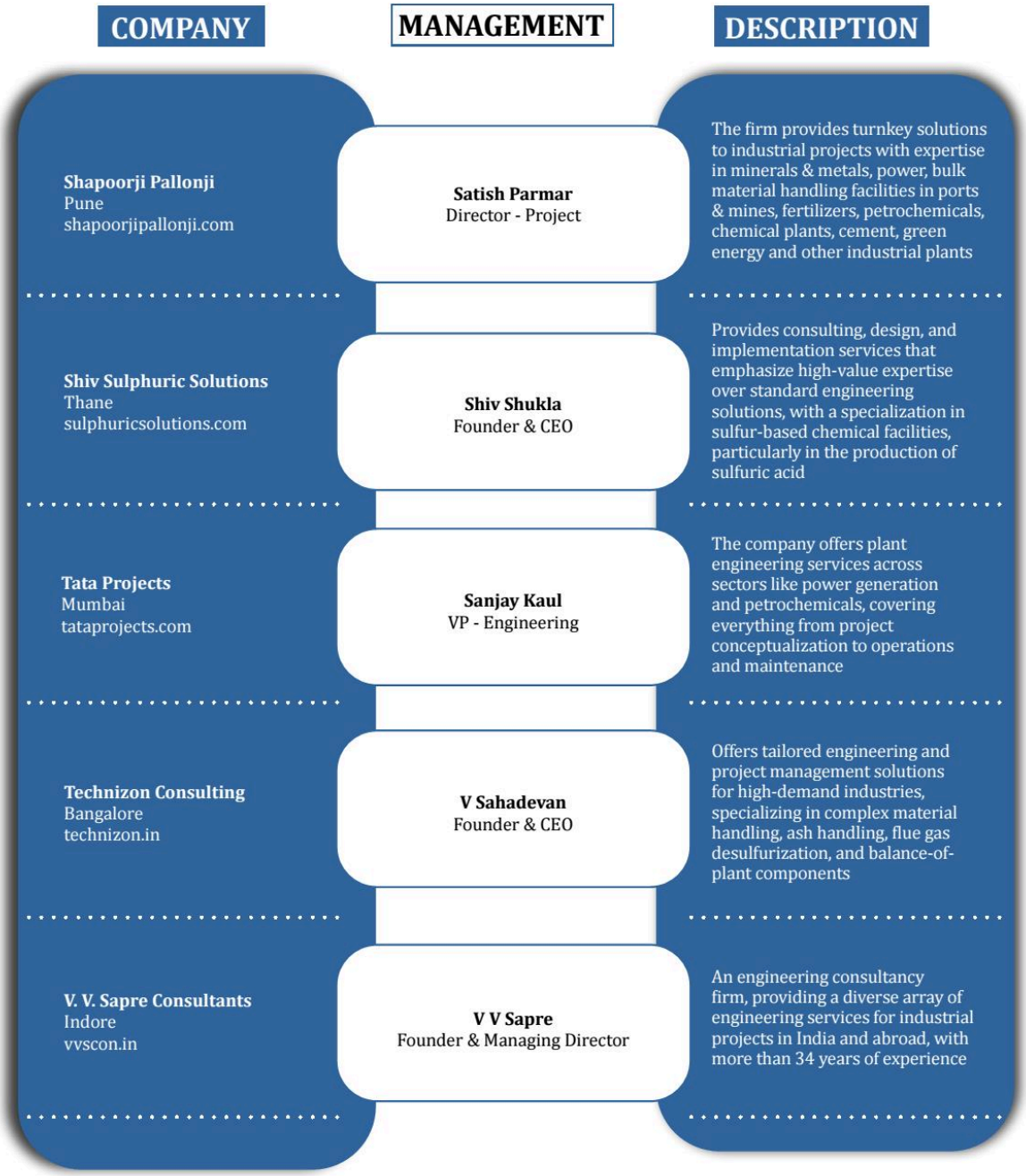
Technological innovations are going to reshape the future of plant engineering services. The inclusion of AI, big data analytics, and cloud computing will serve refined plant design, monitoring, and preventive maintenance. Digitalization permits real-time analysis of data and better decision-making and operational excellence. Moreover, smart manufacturing practices and sustainable engineering solutions are now in vogue. The future is bright for plant engineering services in India, backed by more investments in industrial infrastructure alongside sweeping technological advances. There will be continued economic growth into and out of this market, given the ascendance of companies that will continue to modernize and embrace advanced engineering methods.

Industry Outlook in this issue presents a list of **'Top 10 Plant Engineering Service Providers - 2025'** who have leveraged their extensive industry expertise and experience in offering high quality products in the industry. The following list has been prepared after being closely scrutinized by a distinguished panel of judges including CXOs, analysts, and our editorial board. We recognize their valuable contribution to the ever expanding and competitive market and their ability to sustain themselves and emerge as top contestants through their reliable products.


Plant engineering services are the silent force behind every efficient, safe, and productive industrial operation

Industry Outlook TOP 10 PLANT ENGINEERING SERVICE PROVIDERS 2025

COMPANY	MANAGEMENT	DESCRIPTION
CDC Technical Services Kolkata cdctechnical.in	**Partha Chakraborty** Managing Director	The firm delivers end-to-end solutions for power plants, cement facilities, steel plants, and other industrial projects, with a focus on innovation, sustainability, and precision in execution
Engineers India New Delhi engineersindia.com	**Vartika Shukla** Chairman & Managing Director	The firm offers engineering consultancy and EPC services, including project management, procurement, construction management, R&D, supply chain management, maintenance, and environmental engineering
GMR Group New Delhi gmrgroup.in	**Rohit Kumar Singh** VP & Head - Engineering Services	With more than 15 years of expertise, the firm provides a comprehensive solution for engineering and management services related to airports, power plants, transportation initiatives, and infrastructure development
Innovative Engineering Services Coimbatore innovativeengg.co.in	**Sivanesan Ponnusamy** COO & Director **Srinivasan Channaiyan** Director	A provider of comprehensive automation solutions, specializing in the design, manufacturing, and implementation of manual, semi-automated, and robotic systems across various industries
Intercede Engineering Purba Medinipur intercede.in	**Anupam Khanrah** Director	Offers a range of services that encompass thorough engineering, project management, and full turnkey solutions, covering every stage from design and procurement to installation and commissioning


COMPANY
MANAGEMENT
DESCRIPTION
Shapoorji Pallonji
Pune
shapoorjipallonji.com
Satish Parmar
Director - Project
The firm provides turnkey solutions to industrial projects with expertise in minerals & metals, power, bulk material handling facilities in ports & mines, fertilizers, petrochemicals, chemical plants, cement, green energy and other industrial plants
Shiv Sulphuric Solutions
Thane
sulphuricsolutions.com
Shiv Shukla
Founder & CEO
Provides consulting, design, and implementation services that emphasize high-value expertise over standard engineering solutions, with a specialization in sulfur-based chemical facilities, particularly in the production of sulfuric acid
Tata Projects
Mumbai
tataprojects.com
Sanjay Kaul
VP - Engineering
The company offers plant engineering services across sectors like power generation and petrochemicals, covering everything from project conceptualization to operations and maintenance
Technizon Consulting
Bangalore
technizon.in
V Sahadevan
Founder & CEO
Offers tailored engineering and project management solutions for high-demand industries, specializing in complex material handling, ash handling, flue gas desulfurization, and balance-of-plant components
V. V. Sapre Consultants
Indore
vvscon.in
V V Sapre
Founder & Managing Director
An engineering consultancy firm, providing a diverse array of engineering services for industrial projects in India and abroad, with more than 34 years of experience

INNOVATIVE ENGINEERING SERVICES

STREAMLINING INDUSTRIAL OPERATIONS WITH END-TO-END AUTOMATION SERVICES

Sivanesan Ponnusamy, COO & Director

Automation has become the driving force in the plant engineering services market, as industries worldwide race to enhance efficiency and productivity. The shortage of skilled manpower, maintaining consistent product quality, and meeting escalating demand have necessitated industries to prioritize scalable, process-based solutions while integrating robotic systems. However, finding a partner who is capable of delivering turnkey solutions that align with sustainability goals while reducing carbon footprints remains a pressing concern. Many businesses rely on companies like Innovative Engineering Services who have been helping industries with end-to-end services encompassing design, manufacturing, and implementation, with a strong emphasis on process automation and cutting-edge engineering solutions.

Innovative Engineering Services is a leading provider of comprehensive automation solutions, specializing in the design, manufacturing, and implementation of manual, semi-automated, and robotic systems across various industries. Its expertise encompasses the development of special-purpose machines capable of performing multiple welding operations such as spot welding, nut welding, and MIG welding within a single, fully automated unit. "We have also developed our proprietary ERP system named i2Smart, which seamlessly integrates every stage of our operations, from design to final assembly, with process-based automation at its core", says Sivanesan Ponnusamy, COO & Director, Innovative Engineering Services. By meticulously capturing the entire process flow within i2Smart ERP, the company streamlines operations and eliminates potential bottlenecks, delivering efficiency and consistency across projects.

Over the years, the company has carved a niche in developing advanced automation systems, including special-purpose machines that enable spot welding, nut welding, and MIG welding within a single unit. The innovations eliminate the need for manual intervention, empowering businesses to optimize operations while remaining accessible to unskilled operators. For instance, the company was recently involved in developing fully automatic robotic framing station with Auto Tool Changer Unit for SPOT weld with material Handling and Automotive (Closures) Doors Robotic Roller Hemming for three and four-wheelers.

Addressing Scalability and Sustainability

Recognizing the challenges of scaling operations, Innovative Engineering Services focuses on designing automation processes that adapt to companies of varying sizes. Whether serving small, medium, or large enterprises, the firm ensures that its solutions meet productivity goals and maintain the consistency of output. Alongside technical expertise, the company prioritizes knowledge transfer by providing exhaustive training and operational guidance to clients. Its commitment extends to updating client teams and its internal workforce, fostering a culture of continuous learning.

In addition, the company embraces a balanced approach to diversification to reduce redundancies and implement

Srinivasan Channaiyan, Director

sustainable practices to lower the client's environmental footprint without compromising efficiency. "By operating across multiple sectors, including automotive, textiles, aerospace, High precision engineering and general engineering, it ensures business stability while addressing the unique automation needs of each industry", speaks says Srinivasan Channaiyan, Director, Innovative Engineering Services.

A Significant Milestone

Building on its success in India, the company has begun replicating its automation models overseas, bolstered by its proven track record of delivering high-precision and high-quality solutions. In addition, the company has strategically planned for growth by expanding its team and enhancing its resource capabilities to provide more comprehensive solutions to customers. This includes scaling up inspection and design capacities to meet evolving demands. As part of this vision, the company has established an additional new entity, IES Innovative Engg Automations Pvt Ltd., dedicated to delivering complete turnkey automation solutions. This venture focuses on various types of automation, including welding, process-based systems, and sequential automation. With an approach to blend technological innovation, Innovative Engineering Services continues to exemplify the spirit of modern industrial progress, and a commitment to quality, sustainability, and client-centric solutions.

ENHANCING EFFICIENCY OF WATER TREATMENT PLANTS USING SMART TECHNOLOGIES

● *Kamal Verma, CEO - Water Business Group, Triveni Engineering & Industries*

In an interview with Industry Outlook, Kamal Verma, CEO - Water Business Group, Triveni Engineering & Industries Ltd , discusses technologies such as AI-driven analytics, IoT-enabled monitoring, and automation systems, emphasizing their role enhancing efficiency and sustainability in water treatment. Verma is a seasoned civil engineering professional with over 35 years of experience managing EPC and infrastructure projects for major conglomerates across India.

Kamal Verma,
CEO - Water Business Group

How are IoT devices currently being deployed in water treatment plants to enhance real-time monitoring of water quality and system performance, and what specific improvements have resulted from these integrations?

IoT devices are transforming water treatment plants by enhancing real-time monitoring of water quality and system performance. These devices significantly improve process efficiency and optimize machinery like PLC and SCADA systems.

With IoT integration, we see faster response times, allowing operators to tackle issues quickly. Real-time monitoring ensures that water quality remains compliant with safety standards. Integrated alerts within SCADA systems help detect anomalies promptly, while remote monitoring enables continuous oversight without needing on-site personnel.

Additionally, IoT devices aid in predicting failures, allowing for proactive maintenance and reducing downtime. Timely notifications keep operators informed, ensuring swift action can be taken when necessary. Overall, these advancements lead to better operational efficiency and enhanced water quality management in our facilities.

What recent advancements in automation technologies, such as robotic process automation or automated filtration systems, have led to significant improvements in throughput and energy efficiency in water treatment operations?

Recent advancements in automation technologies have led to notable improvements in energy efficiency within water

treatment operations. Smart sensors, combined with cloud computing and AI-driven SCADA systems, are now integral to optimizing plant performance which processes large amounts of data in real time, predicts equipment failures, optimizes energy usage, and reduces environmental impacts.

Automatic filtration systems, such as Automatic Variable Filtration (AVF) technology, require up to 70 percent less compressed air compared to traditional self-cleaning filters, thereby reducing energy consumption

Automatic filtration systems, such as Automatic Variable Filtration (AVF) technology, require up to 70 percent less compressed air compared to traditional self-cleaning filters, thereby reducing energy consumption. This technology allows for continuous cleaning of filter media which not only improves operational efficiency but also minimizes downtime.

Additionally, the adoption of decentralized monitoring systems enables real-time, localized data collection allowing for precise adjustments to treatment processes, leading to optimized resource utilization and reduced energy consumption. This implementation not only streamlines operations but also promotes sustainable practices by ensuring compliance with water quality standards while minimizing environmental impact.

How are specific smart technologies, like real-time energy consumption monitoring or advanced recycling systems, contributing to the sustainability goals of water treatment facilities and aiding compliance with stricter environmental regulations?

Smart technologies significantly contribute to the sustainability goals of water treatment facilities by enabling energy reductions of nearly 30 percent, thereby lowering carbon emissions and the overall carbon footprint of utilities. These advancements also decrease operational costs, minimize water and chemical wastage, and facilitate strict vigilance through regular data collection.

Additionally, these technologies help predict the treatment needed for varying water quality, optimizing resource utilization in the process. Automated dosing systems ensure that treatment facilities remain compliant with permissible limits for chemical by-products.

Moreover, recycling and reusing wastewater generated from the water & wastewater treatment plants, such as sludge and backwash water, alleviates pressure on natural water sources like rivers and ponds, enhancing the sustainability of these vital resources.

Finally, which emerging technologies, like blockchain for supply chain transparency or AI for autonomous decision-making, will be crucial for enhancing the efficiency of water treatment plants in the next five to ten years?

Emerging technologies, particularly AI for autonomous decision-making, will be crucial in enhancing the efficiency of water treatment plants over the next five to ten years. While both AI and blockchain offer distinct advantages, AI's ability to optimize processes and facilitate rapid decision-making makes it particularly valuable in addressing the complexities of modern water treatment.

As new and complex pollutants continue to emerge, AI can significantly improve efficiency through its predictive and forecasting capabilities. To maximize the potential of AI, fostering data sharing among plant operators, government departments, and research institutions is essential for developing robust, indigenous tools that enhance operational effectiveness.

Sagar Group®
Building Nation
EDUCATION • REAL ESTATE • INDUSTRY • HEALTH CARE
www.thesagar.in

SPINNING *Relationships*
KNITTING *Partnerships!*

INTEGRATED TEXTILE INDUSTRY
SMPL
THE NAME TO TRUST
Sagar Manufacturers Pvt. Ltd.
www.sagarmanufacturers.com

SPINNING

A. 100% Cotton Yarns
Knitting & Weaving

100% Cotton Combed Yarns
Count Range starting Ne 24/1 to Ne 32/1.

100% Cotton Combed Compact Yarns
Count range starting Ne 18/1 to Ne 44/1.

Slub Yarns
100% Cotton Combed Slub yarns starting Ne 24/1 to Ne 32/1.
Contamination Free Cotton Yarns Ne 18/1 to Ne 44/1

B. Cotton/Polyester Blended Yarns
Knitting & Weaving
Capability to offer various cotton-rich blends;
100% Blow Room Blending
Count Range - Ne 20/1 to Ne 40/1 in Combed
Count Range - Ne 28/1 to Ne 45/1 in Combed Compact
Popular Blends - 52/48 CVC, 60/40 CVC, 80/20 CVC and any other blend against customization

C. Two Ply Yarns - 100% Cotton
Knitting and Weaving in the count range of Ne 20/1 to Ne 40/2 in Combed and Combed Compact Yarns.

D. Core Spun Yarn (CSY)
Count Range - Ne 12/1 to Ne 20/1 in Carded, Combed Weaving

E. Eli Twist Yarn
Ne 40/2 Combed Compact Yarn

KNITTING

Greige Knitted Fabric in 100% Combed Cotton, Combed Compact Cotton, P/C Combed Compact Blends
(100% Blow Room Blend) with or without Spandex.

Ring Spun Yarn is produced at SMPL Integrated Textile Industry. Spandex from Croera is castoff to manufacture best-quality fabric in roll form packaging.

OPEN & TUBULAR
- **Jersey (34" Diameter)**
  Piloteli Make
- **Jersey (30" Diameter)**
  Piloteli Make

TUBULAR
- **Rib Fabric (34" & 30" Diameter)**
  Terrot Make
- **Interlock Fabrics (34" & 30" Diameter)**
  Terrot Make

OUR CERTIFICATIONS

INDITEX ISO 9001:2015 Com4 intertek BCI FAIRTRADE OEKO TEX®

For queries, E-mail
smplqueries@thesagar.in

Corporate Office : 'The Sagar' E-2/4, Arera Colony, Opp. Rani Kamlapati Railway Station, Bhopal - 462016 (M.P.), India, Contact : 0755-2460107, 2460108
Industry Address : Village Tamot, Tehsil Goharganj, Obedullaganj to Jabalpur Road (NH-12) Dist. Raisen 464993 (M.P.), India, Contact : +91 77730-04803

INTERCEDE ENGINEERING

Transforming Industries with Advanced Engineering Expertise

Anupam Khanrah, Director

The engineering industry is witnessing a significant shift toward sustainability, efficiency, and technological integration, particularly in sectors like edible oil, biodiesel, and power. Companies prioritise energy-efficient systems such as heat recovery, advanced automation, and automated monitoring to boost productivity and cut operational costs. There is a growing demand for zero-waste processing, biogas plants, and solar power integration, reflecting the push for greener technologies. However, customers often face challenges such as maintaining compliance with evolving regulations, managing project timelines and costs, ensuring high-quality standards, navigating complex supply chain logistics, and integrating advanced technologies while balancing sustainability and innovation demands. Intercede Engineering Pvt. Ltd. specializes in comprehensive engineering solutions across industries like Oil & Fats, and Biodiesel. With a team of experts and advanced technology, the company delivers efficient, cost-effective, and globally compliant solutions from conceptualization to commissioning.

Innovative Engineering for a Sustainable Future

Intercede Engineering began its journey with a mission to redefine precision and innovation in engineering and project management. The company has successfully executed 18+ projects in industries such as edible oil, biodiesel, soap manufacturing, and chemical processing located in India and global countries such as Egypt, Kenya, Uganda, DRC, Tanzania, Ivory Coast, Zambia. Leveraging cutting-edge tools like AutoCAD, PDMS, and CAESAR II, the firm has consistently delivered tailored, high-quality solutions, earning recognition for its adherence to global standards like ASTM, IS, and BS EN. Intercede Engineering's commitment to innovation and seamless project management has positioned it as a trusted partner for clients worldwide.

Intercede Engineering's core services encompass detailed engineering, project management, and turnkey solutions, covering every stage from design and procurement to installation and commissioning. In the edible oil sector, the firm delivers scalable processing plants and by-product recovery systems, focusing on cost-effectiveness and operational efficiency. Its expertise extends to environmental engineering, providing Zero Liquid Discharge (ZLD) systems, effluent treatment plants (ETPs), and emission control solutions that meet global sustainability standards. Their commitment to innovation is evident in their smart infrastructure solutions, renewable energy projects, and automation services, designed to enhance productivity and minimize environmental impact. "By combining technical expertise with customized solutions, Intercede Engineering positions itself as a reliable partner for complex industrial projects", says Anupam Khanrah, Director, Intercede Engineering.

Intercede Engineering stands out in the industry due to its unwavering commitment to delivering innovative, cost-effective engineering solutions. The company distinguishes itself by its deep integration of technology, employing advanced tools like modeling software, data analytics, and 3D visualization to optimize designs, enhance plant performance, and predict potential challenges. Intercede Engineering's focus on lifecycle cost analysis ensures that projects are designed for maximum efficiency, minimal maintenance, and long-term sustainability. The firm's hands-on approach, with active on-site involvement during construction and a detailed feasibility study phase, ensures smooth execution and quick adaptability to site-specific challenges. The team's expertise spans across multiple sectors, allowing the company to tailor solutions that meet diverse client needs. Additionally, the firm employs comprehensive project management tools like Primavera and MS Project, ensuring seamless and timely project execution.

> Intercede Engineering specializes in delivering innovative, sustainable engineering solutions across diverse sectors, focusing on quality and precision

Intercede Engineering aims to invest in advanced automation and digital transformation, enhancing project efficiency and sustainability. Its plans include diversifying into new sectors, such as renewable energy and advanced waste management solutions. The firm also seeks to strengthen global partnerships and explore international markets. By prioritizing R&D and adopting emerging technologies, the company is committed to delivering innovative, eco-friendly engineering solutions that set new industry benchmarks.

THE ROLE OF INDIAN CEMENT INDUSTRY IN ACHIEVING INDIA'S CLIMATE GOALS

● *Vinita Singhania, Chairperson & MD, JK Lakshmi Cement*

In an exclusive interview with Industry Outlook, Vinita Singhania shared her thoughts on achieving sustainability by reducing carbon emissions and oriented strategies for driving the cement industry towards a sustainable path. She is a seasoned businesswoman and industrialist and boasts nearly three decades of diverse experience. Throughout her journey, she has led the company to unparalleled growth, elevating its brand value and spearheading innovative initiatives. Recognized with numerous awards, her visionary leadership extends to impactful CSR endeavors and significant industry roles.

Vinita Singhania,
Chairperson & MD

Concrete is the most ubiquitous material on this earth which makes it indispensable for modern society. Cement, being an important component of it, is consumed globally, and India is the second largest producer of it in the world. It is integral to our civilization and an essential material for the infrastructural development of the nation's economy. The whole construction industry plays a paramount role in paving a sustainable future for all of us and meeting the climate goals. As India commits to achieving net-zero carbon emissions by 2070, the cement industry must embrace green technologies and sustainable practices to reduce its carbon footprint.

Progress in Reducing Carbon Emissions

Cement manufacturing is an emission-intensive process. The production processes are energy-intensive and significantly impact the environment. However, India's cement industry has already made commendable strides in reducing its carbon footprint as compared to global standards. This progress is because of the industry's proactive adoption of energy-efficient technologies, waste heat recovery systems, and an increasing use of alternative fuels. Nevertheless, to align with India's ambitious climate goals, continuous innovation and technological advancements are imperative.

One significant advancement has been the increased use of blended cements which include supplementary cementitious materials such as fly ash, slag, and limestone. Raw materials from one stage of the economic chain, like fly ash from thermal power plants are used to make cement. The cement industry presently uses up to 25 percent of all fly ash produced in the nation. In a similar vein, cement manufacture fully utilizes steel industry slag.

By doing so, the demand for clinkers, which is the most carbon-intensive component of cement, is reduced. Among these, Limestone Calcined Clay Cement (LC3) stands out because of its lower carbon emissions. LC3 cement can reduce CO2 emissions by up to 40 percent as compared to the traditional Portland cement. The use of SCMs not only lowers CO2 emissions but also enhances the durability and performance of the final product. This makes it a promising solution for sustainable construction. Its adoption can significantly mitigate the environmental impact of cement production, aligning with India's climate objectives.

Strategies for Future Sustainability Transitioning to Alternative Fuels & Raw materials

The use of alternative fuels and raw materials is a pivotal strategy for decarbonizing the cement industry. This approach involves substituting conventional fossil fuels with renewable sources of energy and alternative fuels such as biomass and municipal solid waste. A study by the Council on Energy, Environment and Water (CEEW) found that adopting energy efficiency measures can reduce emissions by 9 percent while using renewable energy and alternative fuels can reduce emissions by 13percent.

> **The path to net-zero emissions by 2070 is challenging, but the Indian cement industry's efforts in using alternative fuels and CCSU and other promising new technologies demonstrate its commitment to this goal**

Energy Efficiency & Comprehensive Carbon Management

An essential component of sustainable cement production is energy efficiency. The industry has been making significant investments in energy-efficient technologies in an effort to reduce energy usage and optimize processes. Energy efficiency and clinker substitution material can reduce the average emissions intensity of cement by 32 percent without any cost increase. Preheaters, waste heat recovery systems, and advanced kiln systems are being used to absorb and use excess heat, which lowers the requirement for further energy inputs. Significant energy savings have also been achieved through the precise control and optimization of energy usage made possible by the integration of artificial intelligence and machine learning algorithms. A lot of efforts have been made to shift from coal power to solar/wind power, thereby reducing the effect of CO2 emissions.

Additionally, comprehensive carbon management strategies are essential for mitigating emissions in the cement industry. These strategies include carbon capture, storage, and utilization (CCSU), which collect CO2 emissions from industrial processes. These technologies either store them underground or repurpose them into various industrial applications. While there are significant challenges to overcome, the potential environmental and economic benefits make it a vital component of a comprehensive climate strategy. With continued innovation, policy support, and investment, CCSU can play a crucial role in achieving a sustainable and low-carbon future.

The PAT Scheme

The successful implementation of the Perform, Achieve, and Trade (PAT) scheme has been instrumental in driving energy efficiency within the cement industry. This market-based mechanism incentivizes energy-saving measures, encouraging the adoption of cutting-edge technologies and best practices.

Towards Net-Zero Emissions

By aiming for a circular economy and adapting to sustainable practices, the industry aligns itself with India's broader goal of transitioning to a net-zero economy. This will not only enhance the cement sector's waste management challenges but will also enhance their resource efficiency. Simultaneously, collaborative efforts are paramount in this journey. Constructive partnerships among policymakers, regulators, industry stakeholders, and academic institutions are critical in driving innovation and developing effective policies. The Indian government has also launched initiatives like the National Infrastructure Pipeline and the SMART Cities mission, which are expected to drive demand for cement. However, these projects must be designed with sustainability in mind to ensure that they do not compromise India's climate commitments.

As India continues to urbanize and expand its infrastructure, adopting the circular economy approach across various industries will be crucial for reducing environmental impact and promoting sustainable development. The path to net-zero emissions by 2070 is challenging, but the Indian cement industry's efforts in using alternative fuels and CCSU and other promising new technologies demonstrate its commitment to this goal. By setting a benchmark in sustainability and efficiency, the cement industry is not only reducing its carbon footprint but also serving as a model for other sectors to emulate.

The Indian cement industry has a vital role in achieving India's climate goals. By adopting advanced technologies, enhancing energy efficiency, utilizing alternative materials and fuels, and complying with supportive policy frameworks, the industry can significantly reduce its carbon footprint. Collaboration and innovation will be key to transforming the cement industry into a more sustainable sector, contributing to India's broader climate change mitigation efforts and sustainable development objectives.


TRUST
THE EXPERTS
INDO MARINE: LEADING THE WAY IN SHIP REPAIRS
OUR SERVICES
• Steel renewal
• Mechanical Works
• Electrical Works
• Fire Fighting Appliances
• Life Saving Appliances
• Load and Bollard Pull Test
• Calibration/Testing

SHIV SULPHURIC SOLUTIONS

DRIVING SUSTAINABLE GROWTH IN SULPHURIC ACID ENGINEERING AND TECHNOLOGY

Shiv Shukla,
Founder & CEO

The plant engineering services market is witnessing significant growth, driven by government policies and investments in manufacturing infrastructure. Initiatives like Make in India have fueled the growth of companies like Shiv Sulphuric Solutions (OPC). Founded in December 2016 by Shiv Shukla, the company leverages his 30+ years of expertise in chemicals, solar, energy, and water, including two decades in top management and CXO roles. The company, headquartered in Mumbai, has established itself as a key player in the EPC sector.

"In the fertilizer sector, there has been a shift from a focus on nitrogen-based fertilizers like urea to phosphate fertilizers due to policy changes promoting self-reliance and reducing imports. As manufacturing expands, the demand for plant engineering services has risen, with companies like ours playing a key role in supporting this growth through technology and engineering solutions", says Shiv Shukla, Founder & CEO, Shiv Sulphuric Solutions.

Engineering Excellence

Shiv Sulphuric Solutions specializes in consulting and engineering services for managing quality and engineering challenges, with a collective expertise of 100 man-years in the design and execution of sulphur-based chemical plants. As the leading provider of Sulphuric acid production technology, it has strategically positioned itself as a niche player, focusing on high-value expertise rather than commodity engineering. They have developed an ecosystem that leverages partnerships with larger engineering firms for detailed bulk work, enabling them to concentrate on specialized roles like technology selection and project execution for major clients such as IFFCO, Coromandel International, and the Birla Group's Paradeep Phosphates.

Drawing parallels with industry giants like EIL and PDIL, the company plays a pivotal role as a technical advisor in the sulphuric acid and phosphoric acid sectors. Their expertise extends to pollution control, waste-to-value solutions like fluorosilicic acid production, and specialized phosphoric acid processes. This targeted approach allows the company to maintain a lean team of specialists while delivering high-impact solutions to the fertilizer and chemicals industries.

The company's USP lies in its deep technological expertise and extensive knowledge of technical systems, setting it apart from competitors in the Sulphuric acid industry. Unlike rivals that evolved from capital goods manufacturing units, this company is led by technocrats with years of experience designing and executing projects for major U.S. firms. Their team, trained in leading global companies, brings a nuanced understanding of technology and cultural integrity.

They focus on open-source technologies for processes like Sulphuric acid production, adhering to IP norms, and guiding clients to licensed IP holders when necessary. The company has also developed its proprietary simulator software and unique design methodologies, adding value to its solutions. Competitors often struggle with scalability and troubleshooting complex configurations, which this company excels in due to its technological depth. Operating in a niche market specialized for large companies, the company thrives by providing tailored services for plant design and technical solutions without competing with industry giants.

> Shiv Sulphuric Solutions operates in a rapidly growing market where increased industrial capacity has created significant demand for capital goods and specialized engineering services

The company adopts a deliberate growth strategy, prioritizing quality and brand integrity over rapid expansion. It emphasizes controlled growth by introducing new products or services to existing clients and offering proven solutions in new geographies. For example, leveraging its expertise in pollution control technologies for Sulphuric acid plants, the company has expanded its presence to international markets, including Africa and the Middle East. "Despite challenges like managing a dispersed client base and adapting to remote work during the pandemic, we have tripled our turnover over the past five to six years. We remain committed to steady, sustainable growth, ensuring exceptional service delivery while exploring strategic markets and expanding our offerings within our domain expertise", concludes Shiv Shukla.

SPECIALITY LUBRICANT STRATEGIES FOR ENHANCING EV EFFICIENCY AND PERFORMANCE

● *Kushal Desai, Chairman & Managing Director, APAR Industries*

In an interaction with Industry Outlook, Kushal Desai, Chairman & Managing Director of APAR Industries Limited, discusses how the specialty lubricants industry is evolving with advancements in base oils, additive technologies, and low-viscosity formulations to enhance efficiency, performance, and sustainability. He also emphasizes the growing demand for specialized lubricants in EVs and how companies are addressing supply chain challenges through diversification, predictive analytics, and regulatory compliance. With over two decades of expertise, Kushal Desai blends technical knowledge with strategic leadership, having co-founded APAR Infotech, led global expansions, and contributed to industry bodies and philanthropic initiatives.

With the increasing demand for high-performance lubricants in the automotive and industrial sectors, how can innovation be managed without compromising cost efficiency?

The specialty lubricants industry is continuously evolving, with efficiency, performance, and sustainability driving new developments. Innovation must be guided by industry trends—whether it's meeting stringent emission norms, improving equipment longevity, or reducing the total cost of ownership. Manufacturers must adopt advanced base oils and additive technologies to ensure products that enhance efficiency while remaining cost-effective.

One approach that has gained traction is the use of highly refined hydrocracked base oils, which improve oxidation stability and reduce volatility, leading to better lubricant longevity and reduced consumption. At APAR, we integrate these advancements into our Eni and POWEROIL lubricant formulations to ensure maximum efficiency and cost-effectiveness for industrial applications. The shift towards lower-viscosity lubricants is also helping industries optimize fuel efficiency while maintaining protection for modern machinery.

As machinery complexity grows, how do specialty lubricants address the evolving needs for enhanced wear resistance and reduced maintenance costs in modern equipment?

The industry is seeing a growing need for lubricants tailored to high-precision machinery and evolving material compositions, particularly in high-load applications. Innovations in synthetic and semi-synthetic lubricants are

Kushal Desai,
Chairman & Managing Director

enabling greater protection against wear, oxidation, and extreme operating conditions.

For example, our biodegradable metalworking fluids, such as POWEROIL Ultra Edge and Ultra Grind series, are being increasingly adopted to reduce environmental impact while maintaining high-performance machining standards. The rise of electric vehicles has also led to the development of specialized cooling and transmission fluids designed to handle the unique thermal and frictional demands of EV components.

Considering the pressure to optimize fuel consumption, how are specialty lubricants adapting to help industries meet energy efficiency targets without sacrificing performance?

Energy efficiency is a critical focus across industrial sectors, from automotive to manufacturing. Advanced

lubricant formulations with low-friction properties are playing a key role in reducing energy losses in mechanical systems. The latest innovations include lubricants that lower internal drag enhances thermal stability, and extend drain intervals—helping industries cut down on operational costs while meeting regulatory requirements.

> **Manufacturers must adopt advanced base oils and additive technologies to ensure products that enhance efficiency while remaining cost-effective**

With the increasing regulatory push for carbon reduction, fuel-efficient lubricants designed to lower CO2 emissions are becoming the industry standard. APAR's Eni I-Sint Levo Ultra and POWEROIL Cruise Sonic LS are prime examples of lubricants that help improve fuel efficiency while ensuring wear protection, aligning with global API SP and ILSAC GF-6 standards.

In light of the rising demand for electric vehicles, how do specialty lubricants specifically address the unique needs of EVs, especially regarding battery cooling and drivetrain optimization?

The electrification of mobility brings new challenges for lubrication and thermal management. Unlike traditional internal combustion engines, EVs require specialized fluids for battery cooling, e-motor lubrication, and transmission efficiency. The transition to electric mobility demands a fresh approach to lubrication. Thermal management fluids are critical for maintaining battery efficiency and preventing overheating, while specialized driveline lubricants help reduce frictional losses in high-speed electric motors. Industry-wide, we are seeing a shift toward low-viscosity, high-dielectric strength lubricants that improve energy efficiency and extend component life. We are staying abreast with this shift, working on next-generation e-mobility lubricants tailored to these evolving demands.

As global supply chains face disruptions, how can companies ensure a steady supply of critical raw materials for specialty lubricants while maintaining product consistency and quality?

In an increasingly volatile supply chain environment, companies are prioritizing risk mitigation through diversified sourcing, advanced inventory management, and digital demand forecasting.

The specialty lubricants sector is deeply connected to global supply chains, making resilience and flexibility essential. Companies are integrating predictive analytics to anticipate demand fluctuations and implementing robust supplier diversification strategies. Additionally, investments in localized manufacturing and sustainable sourcing practices are helping stabilize supply chains while maintaining product quality.

The specialty lubricants industry is evolving rapidly, driven by advancements in technology, sustainability initiatives, and regulatory pressures. Keeping a pulse on these trends is essential for staying ahead. We are staying engaged and listening to the industry's evolving needs to continuously refine our solutions to meet the demands of the future.

PRECISION FAST TECH INDIA

Committed to Quality. Committed to You.

Precision Fast Tech India is a leading manufacturer and supplier of fasteners, precision turned components, and CNC machined parts. The company was established in 1986 and is managed by the second generation of the founding family. Over the years, Precision Fast Tech India has become a trusted name in the industry, known for its high-quality products, timely delivery, and excellent customer service.

The company's manufacturing facility is located in the industrial city of Jamnagar, in the western state of Gujarat. The state-of-the-art facility is equipped with the latest technology and machinery, which enables the company to produce a wide range of fasteners and precision turned components. With over three decades of experience, the company has established itself as a reliable and trusted partner to a diverse range of customers across industries. including automotive, construction, and aerospace.

SERVICES

- **Contract Manufacturing**
- **Logistic**
- **OEM Manufacturing**

PRODUCTS

- **Machine Screws**
- **Self Tapping Screws**
- **Sems Screws**
- **Customized Fasteners**
- **Bolt**
- **Grub Screws**
- **Nut**
- **Rivets**

Plot No. 3917 W Road G.I.D.C Phase III Dared
Jamnagar - 361 004, Gujarat, India.

91 99046 94260

info@precisionfasttech.com

exports@precisionfasttech.com

TECHNIZON CONSULTING

DELIVERING TECHNICAL SOLUTIONS FROM CONCEPT TO COMMISSIONING WITH SUSTAINABILITY ACROSS INDUSTRIAL SECTORS

India's booming industrial sectors including power, mining, steel, cement and more, demand increasingly sophisticated engineering solutions to meet environmental norms, optimize efficiency, and seamlessly integrate diverse disciplines. To achieve this, organizations must synchronize civil, structural, mechanical, electrical, and instrumentation workflows, adhere to evolving client-specific standards, navigate tight project timelines, and address a chronic shortage of specialized manpower. Furthermore, industries are under heightened scrutiny to balance operational efficiency with sustainability while driving innovation in emission controls and energy-efficient designs. Amid these complexities, Technizon Consulting is a leading name which offers end-to-end engineering and project management solutions tailored to meet the evolving needs of these high-demand sectors.

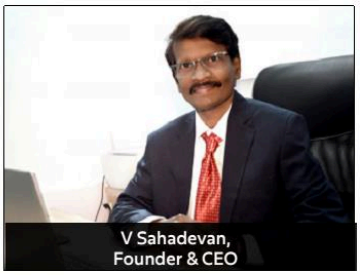
Founded in 2017 by a technocrat with a team over three decades of experience in EPC projects, Technizon Consulting emerged with a singular objective, which is to deliver end-to-end engineering and project management solutions for complex material handling systems, ash handling systems, flue gas desulfurization, and other balance-of-plants. Driven by a shared passion for engineering excellence, the team sought to leverage their extensive EPC experience in public sector & multinational companies to help clients optimize project execution while creating a distinctive niche in an underserved market. "We specialize in bulk material handling systems, offering comprehensive engineering solutions that encompass civil, structural, mechanical, electrical, and C&I disciplines for our clients", says V Sahadevan, Founder & CEO, Technizon Consulting.

Proactive Solutions

Few players in the industry can rival the company's ability to integrate diverse disciplines without interface issues. This advantage, coupled with meticulous planning, regular reviews, and project-specific customization, positions the company as one of the trusted partners for clients navigating the challenges of tight schedules, evolving standards, and specialized manpower shortages. Its extensive portfolio includes projects for various capacities executed for esteemed clients in power, mining, cement and more. In recent years, responding to increasing environmental regulations, the company has also ventured into Flue Gas Desulfurization (FGD) systems, addressing critical needs in reducing sulfur emissions from power plants.

Its work spans engineering, project management, procurement support and construction management, showcasing its ability to manage complex projects across all stages. A notable example of the company's innovative approach involved a project requiring material transportation over a one-kilometer stretch downhill pipe conveyor in forest area with a 300-meter elevation difference. During the planning phase, prior to forest clearances, leveraging modern GPS systems, the team conducted a provisional ground survey and initiated preliminary engineering. Once final site surveys were approved after forest clearance, they made minor adjustments to the initial designs, saving approximately four months of engineering time for the client.

In the FGD sector, Technizon Consulting provided comprehensive engineering support to a leading Indian bidder, enabling the client to secure contracts from major power plant owners. Its contribution included pre-bid engineering solutions during the bid stage, ensuring seamless project execution post-award. The ability to anticipate challenges and deliver tailored solutions underscores the company's commitment to excellence and customer satisfaction in the evolving energy and infrastructure landscape.


V Sahadevan,
Founder & CEO

From Five to Thirty

Starting with a modest team of five engineers, it now boasts a workforce of 30 professionals and executes five projects concurrently. Its client base has expanded from two to eight plant operators/major EPC contractors, including industry leaders like L&T Power, Kalpataru Power Transmission and ELECON. With India's industrial sectors like power, steel, cement, and mining on the rise, the company aims to scale its operations, tap into overseas markets, and strengthen its position as a leading engineering and project management consultant. By actively participating in industrial exhibitions, leveraging digital platforms, and fostering client partnerships, Technizon Consulting envisions becoming a frontrunner in the industry within the next five years.

BUILDING TOMORROW'S COMMUNITIES WITH SUSTAINABLE LIVING AT THE CORE

● *Rakesh Reddy, Director, Aparna Constructions*

In an exclusive interview with Industry Outlook Magazine, Rakesh Reddy, Director of Aparna Constructions, shares how the future of construction is sustainable and enumerates how the industry can execute it without compromising integrity and innovation. He is a leading real estate player in South India. With 14 years of experience, he has been instrumental in establishing and stimulating the growth of ACEPL in India. He has completed his Masters in Solence from Nanyang Technology University, Singapore. He is a recipient of 'The Minister's Innovation Award 2010 by the Ministry of Transportation, Singapore and was nominated for Microsoft's Innovation Award in 2008.

Rakesh Reddy,
Director

Sustainable building materials such as recycled or low-carbon options are often hard to source, or lack scalability. How can the construction industry overcome the challenges of sourcing and scaling sustainable building materials?

Overcoming the challenges of sourcing and scaling sustainable building materials in the construction industry requires a multi-faceted approach, combining innovation, collaboration, and policy interventions. As sustainable building materials gain traction, their economies of scale will improve, helping them become more accessible and mainstream.

There is a need for ongoing research and development to discover new sustainable materials that are cost-effective, scalable, and high-performance. Bio-based materials, recycled plastics, and carbon-sequestering concrete alternatives are promising, but they need further innovation to compete with traditional materials.

Digital platforms can track and monitor the availability, demand, and sourcing of sustainable materials in real time. Technologies like blockchain can provide transparency in material provenance, ensuring they meet sustainability criteria. New construction technology like 3D printing allows for the creation of customized, resource-efficient materials on demand. Prefabrication reduces material waste and can be optimized for sustainability.

Creating local production facilities for sustainable materials reduces transport emissions and makes sourcing easier and more cost-effective. It also creates local jobs and encourages regional supply chains. Moreover, encouraging the development of circular supply chains, where materials are reused, recycled, and repurposed, helps to create an ongoing supply of sustainable materials. For example, developers can use reclaimed wood, recycled steel, or recycled aggregates from demolition sites.

Governments can offer tax incentives, subsidies, or grants to encourage the adoption and production of sustainable materials. Carbon pricing mechanisms, where companies pay for emissions, can drive the demand for low-carbon alternatives.

Governments can also introduce stricter environmental regulations that push companies to adopt sustainable practices

Integrating energy-efficient designs and renewable energy systems in real estate projects can lead to higher upfront costs. How can developers incorporate sustainable energy solutions into real estate projects without significantly increasing initial costs?

Integrating energy-efficient designs and renewable energy systems into real estate projects without significantly increasing initial costs requires strategic planning, innovative financing, and design optimization. Long-term cost savings, along with potential increases in property value, make sustainable energy investments more financially attractive over time, mitigating the impact of higher upfront costs.

Incorporating sustainable energy solutions from the beginning of the design process avoids the costs of retrofitting or adjusting late-stage designs. Early collaboration between architects, engineers, and sustainability consultants ensures that energy-efficient systems are seamlessly integrated into the overall project.

Developers can prioritize the installation of cost-effective, high-efficiency appliances such as LED lighting, energy-efficient HVAC systems, and low-flow water fixtures. These relatively low-cost measures offer significant energy savings and reduce long-term operating expenses. Additionally, developers can minimize the need for active heating, cooling, and lighting by optimizing building orientation, insulation, natural ventilation, and daylighting. Passive solar design and high-performance building envelopes reduce the energy load, cutting operational energy costs without requiring expensive upfront investments.

In multi-unit residential or commercial projects, developers can install renewable energy systems that serve common areas or multiple units. This reduces the cost per unit while delivering the benefits of renewable energy across the entire building. Installing energy management systems that monitor and optimize energy use in common areas, such as lobbies, corridors, and parking lots, helps cut operational costs without adding substantial upfront costs. These systems can automatically adjust lighting, heating, and cooling based on occupancy and weather conditions.

Prefabrication allows for energy-efficient building components to be mass-produced and installed with greater precision, reducing waste and labor costs. These methods can lower construction timelines and overall expenses while improving energy performance. Developers can source prefabricated energy-efficient components or modules, which are designed to optimize energy usage. This method reduces both upfront construction costs and long-term energy expenses.

Existing building codes and regulations may not fully support or incentivize sustainable construction practices. What changes are needed in regulatory and policy frameworks to facilitate more sustainable construction practices?

To facilitate more sustainable construction practices, building codes and regulatory frameworks need to be updated and aligned with environmental goals. These changes should incentivize the adoption of sustainable technologies, materials, and designs, while also ensuring that sustainability becomes a key consideration in the construction industry. As consumer preferences increasingly gravitate towards health and wellness, the trend towards sustainable buildings is poised to persist and grow.

Traditional building codes often focus on prescriptive requirements, such as specifying material types or construction methods. Shifting to performance-based codes would allow for greater flexibility by focusing on outcomes like energy efficiency, emissions reductions, and resource use. Accordingly, buildings would be required to meet specific energy performance targets rather than rigid material specifications.

Furthermore, mandating regular energy performance benchmarking and audits for all buildings, both new and existing, can help track progress and identify areas for improvement. Developers should conduct Life-Cycle Assessments of materials and designs, ensuring that the total environmental impact of a project is considered. These benchmarks can be tied to penalties or incentives, pushing developers and property owners to prioritize energy efficiency.

Construction processes can be resource-intensive, consuming significant energy and water resources. How can construction firms reduce the environmental impact of their processes and operations?

To reduce environmental impact, real estate developers must consider all stages of a building's lifecycle. This includes minimizing environmental impact and optimizing value across the stages of design, construction, operation, maintenance, renovation, and ultimately, demolition.

Installing renewable energy systems, such as solar panels or portable wind turbines, on construction sites can help power tools and equipment using clean energy. This reduces reliance on diesel generators or grid electricity from non-renewable sources.

Construction firms can set up systems to collect and reuse water on-site. Installing rainwater collection systems can provide a sustainable water source for non-potable uses such as site cleaning, dust control, and irrigation of landscape areas. Using water-efficient equipment, such as high-pressure, low-volume washers, can reduce water usage during construction activities.

Employing design strategies that minimize material waste is crucial. This includes optimizing the design to reduce off-cuts

and excess materials, adopting modular designs, and using 3D modeling to ensure accurate material requirements. On-site waste management systems can ensure that materials such as wood, metal, concrete, and plastics are sorted and sent for recycling rather than going to landfills. Construction firms can collaborate with local recycling facilities to recycle construction waste efficiently.

The industry must expedite the integration of advanced technologies to ensure the effective management of green buildings across their entire lifecycle. Embracing automation, artificial intelligence, and big data analytics is essential for enhancing operational efficiency and reducing associated risks. By leveraging these innovative tools, developers can optimize standard procedures, lower maintenance costs throughout the lifecycle, and boost workforce productivity.

> **Smart building technology plays a crucial role in enhancing sustainability and operational efficiency**

Sustainable real estate developments may carry higher initial costs, but they also offer potential long-term benefits such as energy savings. How can the long-term financial benefits be effectively communicated?

Although the upfront investment may be higher, integrating sustainable features into a property significantly increases its long-term value. The demand for environmentally-friendly features in buildings is on the rise, primarily due to the resulting reduction in maintenance costs. This characteristic is particularly attractive to potential homebuyers. Moreover, projections indicate that within five to seven years of purchase, the savings on utility and energy bills will likely compensate for the initial acquisition costs.

Sustainable and energy-efficient real estate projects yield significant cost benefits for residents. Enhanced insulation materials significantly minimize heat transfer into the building. The installation of solar panels can lead to substantial monthly energy cost reductions. Substituting conventional light bulbs with LED and CFL options, along with the incorporation of energy-efficient fixtures, contributes to lower electricity expenses. Leveraging natural light and solar energy systems effectively decreases carbon emissions associated with residential properties. By treating and re-using on-site wastewater for landscaping and other purposes, potable water consumption is reduced, thereby saving additional costs.

While smart building technologies can improve resource efficiency, they can also introduce complexities in maintenance and higher initial costs for installation. How can smart building technologies be integrated into construction projects to promote sustainability?

The impact of smart building technology on the future of real estate is significant. Projections indicate that the global count of Internet of Things (IoT) devices will increase from 15 billion in 2020 to around 30 billion by 2030. This surge in IoT-driven automation is poised to enhance both comfort and convenience while also promoting sustainability and cost savings.

Smart building technology plays a crucial role in enhancing sustainability and operational efficiency. By leveraging an IoT framework, these systems enable real-time problem identification and resolution through advanced sensor technology. IoT sensors not only contribute to improved living conditions but also streamline routine maintenance tasks. Features such as intelligent temperature management, energy-efficient devices, and remote control of lighting and other property elements are now readily accessible. Furthermore, customizable settings in areas like kitchens, bathrooms, and gardens allow for greater control and personalization. Additionally, connected appliances can be effectively monitored for any malfunctions or maintenance needs, ensuring optimal performance and longevity.

Technology-enabled buildings have the potential to address and resolve issues in real-time through the utilization of sensor technology. These projects can gather data from maintenance facilities, including sewage treatment plants, water treatment facilities, and rainwater harvesting systems directly on-site. By monitoring resource consumption and waste generation, these initiatives can continuously refine their designs and operational procedures, leading to cost savings while simultaneously conserving natural resources.

V. V. SAPRE CONSULTANTS

LEGACY IN BESPOKE ENGINEERING CONSULTING FOR LARGE INDUSTRIAL PROJECTS

The Engineering Services Market size is estimated at $1.74 trillion in 2025 and is expected to reach $2.14 trillion by 2030, according to Mordor Intelligence. In a developing country like India, plant engineering services are facing great demand owing to the growth of infrastructure across industries all over the country. A technology transition has also taken place, where flawless engineering designs are being visualized using advanced software to serve design accuracy and preventive maintenance purposes.

However, several departments must work in coordination with one another to bring a project to fruition. Clients often face difficulties in delegating with multiple vendors to develop the desired infrastructure. V.V. Sapre Consultants eliminates these challenges by providing bespoke plant engineering consultancy and constantly monitoring all kinds of cross-functional coordination to provide the ultimate customer satisfaction. "Our services are exclusively designed for large-scale industrial projects. We are serving many clients across India and also have a presence abroad in Nepal, Bangladesh, Thailand, Indonesia, Abu Dhabi and some of the African countries. We have successfully served several MNCs, steel plants, and Aluminum plants until now", mentions V. V. Sapre, Founder & Managing Director, V. V. Sapre Consultants.

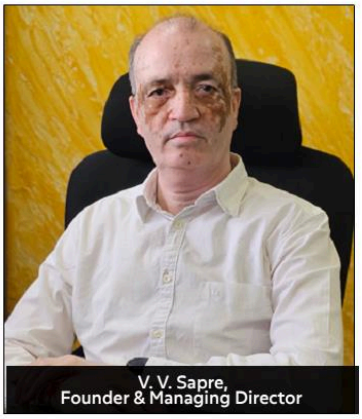
Transparent Approach

The company deeply believes that honesty and transparency are the two best practices while conducting business. Having been established way back in 1991, when engineering designs were done manually, the company has witnessed the evolving requirements and technology in the industry and created a definitive process that takes care of all possible aspects. A transparent process is followed by the company from the first meeting and a contract is signed. Here, V. V. Sapre Consultants strictly follows the decided timeline for the project and has made it a habit to deliver on time. It also makes it a point to handle all kinds of stakeholder collaborations and eliminate delegation challenges for clients.

> Our company maintains a robust quality management system, incorporating regular audits, thorough design data reviews, and continuous quality checks at every stage of our processes

"We are also equipped with a pre-cast design facility to develop accurate drawings of projects which provides us with both onsite and offsite expertise. Added to this, our representative is present on-site during the execution and ensures that accurate designs are implemented", says V. V. Sapre.

Quality assurance is something that makes the company stand out in the market. It is an ISO 9001:2015 certified and CRiSiL-rated company and has been providing engineering



V. V. Sapre,
Founder & Managing Director

consultancy services for more than 34 years. Most of the clients currently working with the company have been with it for a long time and have been coming again and again with their requirements. Most of the new clients that have been added over the years have been because of word of mouth, which has also helped the company create an image for itself in the industry. "We have a quality management system in place and timely audits are done in our facility. There is a process for checking and cross-checking of design data and a quality check at every step of the process", he adds.

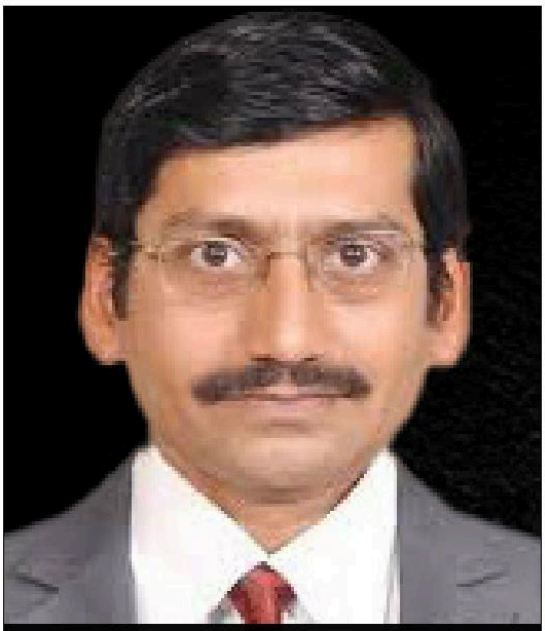
The Road Ahead

Since inception in 1991, the company has gained significant trust and recognition in the market as a trusted plant engineering consultancy in the country. Looking ahead, it wants to carry on with the good work and acquire more large scale industrial projects in the coming years. "Technology is rapidly evolving and we are also trying to evolve along with it", concludes V. V. Sapre.

ENERGY EFFICIENT WELDING: ENHANCING PERFORMANCE AND USABILITY

● *Sachin Dobhada, Head of Research, Development & Quality (Equipment), Ador Welding*

In an interaction with Industry Outlook, Sachin Dobhada, Head of Research, Development & Quality (Equipment), Ador Welding Ltd. shares his insights on the increasing emphasis on sustainability and environmental concerns in the welding equipment market, key challenges facing the market, the role automation and robotics play in the welding industry and more.



Sachin Dobhada,
Head of ResearchDevelopment & Quality (Equipment)

What are the key challenges facing the welding equipment market, and how can manufacturers address them to enhance product performance and reliability?

Nowadays, welding equipment is primarily equipped with Inverter-based technology which is assembled using electronic components. An important factor for any electronic component is its reliability and the selection of the right components for product performance. Another challenge facing the welding equipment market is voltage fluctuations in input power supply lines. The reliability of equipment comes through adhering to standard manufacturing processes and tools, like using standard torque-controlled tools for assembly, handling the electronic components in antistatic environment, and assembling the entire welding equipment preferably in a dust free and temperature/humidity-controlled environment. Regarding voltage fluctuations, Electronic Protections are included to protect the equipment from it.

With the increasing emphasis on sustainability and environmental concerns, what challenges does the welding equipment market face in terms of developing eco-friendly and energy-efficient welding processes and machinery?

Equipment with inverter-based technology is 30% more energy efficient than old thyristor-based and transformer-based equipment. Hence, the market has shifted to this latest technology-based equipment. To protect the environment, the electronic components and parts used in machines comply with ROHS compliance, where restricted materials like Lead, Mercury, Cadmium and other similar 10 elements which are not safe for health as well as difficult to dispose are not used. Recyclable plastic materials are being used. Engine driven welding machines are required to comply with the noise and pollution emission norms set by the Central pollution board.

What role do automation and robotics play in the welding industry, and what challenges arise when integrating these advanced technologies into traditional welding processes and equipment?

In jobs involving long welding runs and high-volume repeated processes, automation in welding helps to maintain consistent throughput. The automobile industry

and similar industries, where welding on irregular shapes of fabrication are required in mass production, benefit from robotic welding which provides aesthetic, consistent and efficient welding output. For automation and robotic welding, the power source needs to be capable of interfacing with automation/robotic controllers. The interface communication between the welding power source and robotic controller utilizes standard digital protocols. Since traditional welding equipment typically have analogue circuits, they cannot be used for such integration.

> **The path to net-zero emissions by 2070 is challenging, but the Indian cement industry's efforts in using alternative fuels and CCSU and other promising new technologies demonstrate its commitment to this goal**

In an era of skilled labour shortages, what challenges does the welding equipment market face in terms of designing user-friendly and accessible equipment that can be operated by a broader range of workers, including those with limited welding expertise?

More attention is given to the usability and user-friendliness of the machine so that deskilling of welding processes can occur. Digitally controlled arc dynamics have been designed where arc waveforms dynamics are controlled by software in the welding power source controller. This gives more flexibility to the user for handling the welding torches while welding. In a power source with single-point synergic control, users can set the welding parameters by just adjusting one knob on the front panel. This has simplified the setting of the machine and does not require any expertise. Technology can also play a role when skilled labour shortages are prevalent, such as apps and software that help laborers do a better job with minimum training.

What are the safety and health challenges associated with welding equipment, and how are manufacturers innovating to reduce occupational hazards and improve worker protection in welding environments?

Protection against electrical shock and mechanical hazards associated with welding machines is taken care of by designing the machine to comply with the International IEC 60974-1 standard or equivalent BIS standard. This allows users to use the machine in hostile environments without any electrical shock hazards. By using ROHS components/ parts, manufacturers can restrict the use of health-hazardous materials. The welding equipment industry is attempting to use batteries to reduce noise and pollution when working is required in remote locations where utility power is not available.

As industries like aerospace and automotive demand higher precision and quality in welding, what challenges exist in terms of developing welding equipment capable of meeting these stringent requirements while maintaining cost-effectiveness?

More and more stringent requirements are arising as we aim for precise and high-quality welding jobs. There are many challenges involved in such processes where on one side, one needs to minimize the heat-affected zone (HAZ) low and on the other side, achieve the necessary penetration. Sometimes, very thin metal welding requires keeping the HAZ low without any spatters. Regular and standard analogue circuit-based equipment cannot provide this flexibility. Machines with new welding process like Pulse MIG and Pulse TIG where welding current waveforms are controlled digitally with software, are being developed. More and more development work is being conducted to achieve the flexibility in welding arc waveforms to meet these requirements. This is accomplished with machines using a digital platform with the help of embedded software designing.

PMAX

Philippines Manufacturing & Automation Expo 2025

CO-LOCATED WITH:

PHILIPPINES EMAX Electronics Manufacturing Expo 2025

03 ▸ 05 DECEMBER 2025

SMX CONVENTION CENTER MANILA,
MALL OF ASIA COMPLEX,
PASAY CITY, PHILIPPINES

ENABLING SMART MANUFACTURING THROUGH DIGITALIZATION!

Hosted by:

AUTOMATIONSG
For a better world

Organized by:

FIREWORKS®
EXHIBITIONS AND CONFERENCES
Since 2008

Fireworks Trade Exhibitions & Conferences Philippines, Inc.

www.pmax-ph.com

TEXTILE EXPORT – CHALLENGES & STRATEGIES

● **Partik Munjal**, *CEO, Pika Exports*

An active angel investor across e-Commerce and fashion industries, Partik joined Pika Exports in 2016 and since then has been instrumental in formulating efficient business strategies for the company.

Partik Munjal,
CEO

The textile industry most often has a variety of supply chain networks in order to diversify the suppliers worldwide. This is because today, the Indian textile industry is not based on any specific country. After the Modi government's launch of Atmanirbhar Bharat Abhiyaan, 90 percent of the textile industry is now based in India itself, wherein both the raw materials sourcing and machinery manufacturing are done domestically. As a result, there are very less chances of global supply chain disruptions hindering the Indian textile industry. DGCA - the global Director General of exports gives us weekly updates on the current global exports situation and even offers information on things that might happen in the global export supply chain in the upcoming days. This has also been very helpful for us in having a clear forecast of the global export and supply chain scenario. Additionally, since we are having a very flexible production nowadays, the chances of withholding the manufacturing process due to any reason is close to zero.

Partnerships within the textile industry with domestic as well as overseas companies are very important in today's dynamic business landscape. Since maintaining a competitive pricing is critical for every business, we do a lot of partnership with manufacturers in China, Indonesia, Sri Lanka and many other countries where the cost of raw materials is very cheap compared to the availability in our country.

> **AI/ML are not only automating many manual, repetitive tasks, but are also reducing errors to a great extent by even taking care of critical processes where chances of human error is more**

Tech Advancements Enhancing Quality & Efficiency

AI/ML will no doubt be the most disruptive technologies for the export industry in 2024. These technologies will specially be helpful in quality assurance, supply chain management and many others. AI/ML are not only automating many manual, repetitive tasks, but are also reducing errors to a great extent by even taking care of critical processes where chances of human error is more. Additionally, we can also implement blockchain into our ERP systems to get real time updates on the production process. Furthermore, digitization has disrupted the entire global business fraternity, wherein every company irrespective of its size or industry has a social media presence. As a result, digitization has opened-up massive avenues of business opportunities for export companies.

Compliance with International Standards & Regulations

Today, most of the countries in the west lay a very strong emphasis on the compliance of factories in India because of the numerous regulations that are mandatory to be followed in the EU. As a result, certifications such as QMS, SA8000 and OEKO-TEX are today more important than ever before. Since it is now mandatory to have a QMS in every manufacturing unit, we have implemented an efficient QMS in terms of having a detailed attendance register with in-out details of each employee, clear drinking water, fire alarms & extinguishers on every floor and many others. We are also ISO 9001: 2015 certified, which gives a complete picture about the quality of our products. Additionally, we do a quarterly reassessment of this and even have periodic audits under SA8000 management system. It is mainly through these certifications that we convince our overseas buyers about the quality of our products. These practices have helped us gain widespread recognition in the industry as one of the most compliance-specific companies in the textile market today.

FOODBEE™

Food Technology Solutions

About us

The food and beverage (F&B) industry is a fast-paced and ever-evolving sector driven by shifting consumer demands, technological innovations, and a growing emphasis on sustainability. Businesses face constant pressure to adapt and thrive while balancing profitability with modern market expectations. In this complex landscape, FOODBEE, based in Pune, emerges as a leader in the food industry, offering specialized consulting services that address product development, regulatory compliance, and supply chain management. Led by Sonali Pawar MTech Food Technologist with her team, committed to authenticity, innovation and quality, the firm leverages science and technology to provide exceptional products. Through hard work, sincerity, and professionalism, the firm focuses on viable technical solutions, empowering clients to achieve consistent growth while navigating the dynamic challenges of the F&B sector.

Excellence in Food Technology

FOODBEE is a leading consultancy firm specializing in food technology, supported by a team of over 10 Masters in food technology professionals. The company operates a state-of-the-art in-house R&D Lab equipped with instruments for comprehensive analysis of various parameters.

Our Services

- New Product Development
- Product Shelf Life Improvement
- Quality Control Lab Establishment
- Product Labelling & Manner Of Declaration
- Machine suggestions for manufacturing
- Process & Productivity Improvement Work

Our Vision

Our Vision is to provide innovative, convenient end to end Solutions to the Food Industries, QSR, franchise models. Our Honesty, trustworthy, Transparency and professional experience to our clients to become a numero uno in their segments.

CONTACT US

Nyati Estate,
Mohammad wadi, pune

+91-7387899927

vtsenterprises17@gmail.com

Visit www.foodbeesolutions.com

GUTENBERG WESENTLICH

Trusted Partner in Global Trade

Extensive Product Range

- From agricultural commodities to industrial machinery, we offer a wide array of products to meet your requirements.

Quality Assurance

- We ensure that all our products meet the highest standards of quality and safety, sourced from reputed manufacturers and suppliers.

Timely Delivery

- Our streamlined logistics system guarantees that your orders are delivered on time, every time.

Competitive Pricing

- Enjoy the best value for your investment with our competitively priced offerings.

GUTENBERG WESENTLICH PRIVATE LIMITED

At Gutenberg Wesentlich, we specialize in delivering high-quality products from India to the world. As a leading merchant exporter, we cater to diverse industries with bespoke solutions tailored to your unique needs.

For More Information

www.gutenwesen.com
dipan.mewada@gutenwesen.com
+91 9067667711

Merchant trading
Commission agency
International trade consultancy
Logistics & customs clearing