

Industry Outlook

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PEB MANUFACTURERS

NOVEMBER, 2022



Devam Shah,
Executive Director

Ketan Shah,
Chairman & MD

**SHREE PREFAB
STEELS** | PEB INFRASTRUCTURAL
SOLUTIONS DRIVEN BY
INNOVATION



Shivam S. Garg,
Director

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SOLUTIONS**
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Shivank Garg,
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Director

KAIZEN STEEL BUILDING SOLUTIONS

DELIVERING HIGH GRADE PEB INFRASTRUCTURES
WITH QUALITY-CENTRICITY

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EDITOR'S NOTE



Fulfilling the Structural & Aesthetic Requirements

Pre-engineered building market is growing rapidly, driven by factors such as rising demand for green buildings and the need for cutting the construction cost and time, while making buildings more and more lightweight. Seeing the fast adoption of PEBs in the construction segment, we have come up with this special issue focusing exclusively on it. The cover story of this issue features Kaizen Steel Building Solutions which has grown by leaps and bounds, and is one of the most preferred companies in the nation today. In its four decades of existence, Kaizen has gathered an all-round domain knowledge that has time and again proved to be a significant asset for its clients. Along with experience and undivided dedication towards quality, the other factors such as honest business approach and time bound delivery are highly appreciated by its clients. Also featuring in the issue is Shree Prefab Steels which is an associate entity of Devam Enterprise and the business development partner of Tata Structura since three decades. With implementation of forward integration, Shree provides turnkey solutions with design, fabrication, erection and material supply. Shree's robust foundation has been built with efficient design team and their manufacturing facility to handle projects irrespective of size and complexity. Shree delivers various industrial and architectural solutions such as pre-engineered buildings and steel building components. Reading on you will find more such stories.

In addition, the issue also acquaints you with the other top companies in this domain. After studying the industry landscape in-depth, we have zeroed in on the top 10 companies that have excelled in this field with their meticulous approach. Having proven their dedication to efficiency in order to meet the customer expectations in an end-to-end manner, these companies have stood out from the crowd.

We look forward to receiving your feedback and suggestions.

Sudhakar Singh

Sudhakar Singh
Managing Editor
editor@theindustryoutlook.com



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Executive Director

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Shivank Garg,
Director

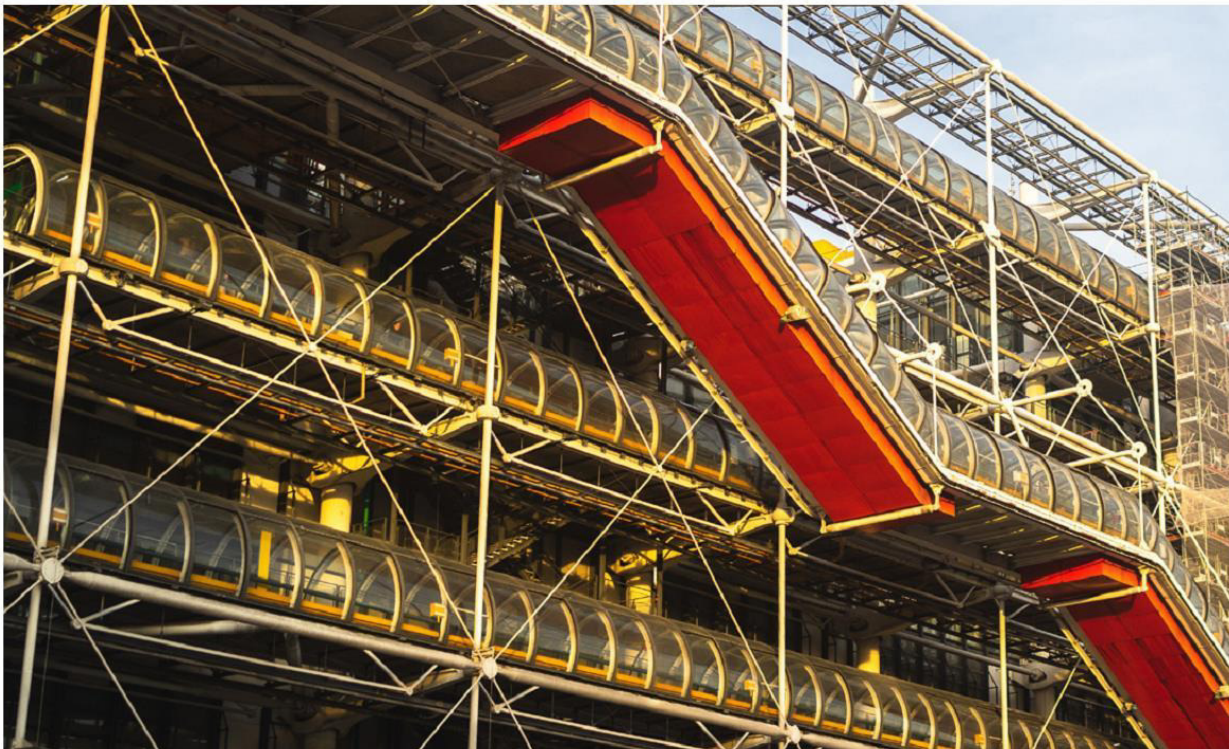
Shivam S. Garg,
Director

KAIZEN STEEL BUILDING SOLUTIONS

DELIVERING HIGH GRADE PEB INFRASTRUCTURES WITH QUALITY-CENTRICITY



PEBs DRIVING THE DEMAND FOR STRUCTURAL STEEL



With the surge in construction activity and a shift towards pre-engineered buildings, the demand for structured steel design and detailing is increasing rapidly. As per a research by Mordor Intelligence, the Indian

structural steel fabrication market is expected to grow at a CAGR of 5.5 percent till 2024.

If we look at the growth drivers for the market, they primarily include the increasing demand from manufacturing sector, rising popularity of pre-engineered buildings, and steps taken by the government to boost infrastructure development through various policies and measures. The



WITH THE INCREASING COST OF COKING COAL WHICH IS THE MAIN RAW MATERIAL CURRENTLY USED IN INDIA TO MANUFACTURE STEEL, THE PRICE OF STEEL IS BOUND TO GO UP



structural steel fabrication market in particular is going to see a rapid growth with the impact of several initiatives taken by the government pertaining to construction of green buildings. Government schemes that are already underway such as Smart City projects and Make in India scheme are giving a fillip to the structural steel fabrication market in India.

Notwithstanding the growth factors, there are a few impedances in the way of faster adoption and steady growth. With the increasing cost of coking coal which is the main raw material currently used in India to manufacture steel, the price of steel is bound to go up. Adding to the woes are the government regulations with regard to steel production that are aimed at reducing the harm to the environment.

GROWTH DESPITE ALL ODDS

Although a necessary step, it is proving to be counter-productive as the change which is needed at the energy source is not being done and other stages of manufacturing have to bear the burden of environmental concerns. Considering the fact that structural steel is the primary raw material for any pre-engineered building, as the real estate sector moves towards PEBs, the demand of structural steel is going to increase exponentially.

“Due to its high strength-to-weight ratio, less steel is needed in a single support or beam, reducing material costs and improving its sustainable nature. It can withstand strong physical impacts and forces, keeping building occupants safe, but won’t wear away or need to be replaced afterwards”, says Harry Steel, Marketing Coordinator for Baileigh Industrial designers.



CONSIDERING THE FACT THAT STRUCTURAL STEEL IS THE PRIMARY RAW MATERIAL FOR ANY PRE-ENGINEERED BUILDING, AS THE REAL ESTATE SECTOR MOVES TOWARDS PEBs, THE DEMAND OF STRUCTURAL STEEL IS GOING TO INCREASE EXPONENTIALLY

The conspicuous benefits of pre-engineered buildings are helping drive the growth of this market further and as a result, there is an increasing demand from all sectors. Leading the demand front is the end user segment which includes automotive, logistics, and retail, to name a few. The growth of PEB market is going to have a direct and immediate effect on the structural steel market, boosting its growth considerably. ||

► INDUSTRY INSIGHTS

INDIAN MANUFACTURING INDUSTRY'S PATH TOWARDS GREEN FUTURE

By Ravichandran Purushothaman, President, Danfoss India

Ravi is a member of Danfoss Global management team, Board member & Global mentor since 2013, who is working actively in energy, water, food & agri technology space supporting & mentoring several early stage startups.



Ravichandran Purushothaman,
President

Energy efficiency, value chain mobilization, and sustainable alternatives can help achieve Net Zero Emissions. The world economy is battling inflation accentuated by the energy crisis. There was a period of oil shocks and soaring inflation in the 1970s and early 1990s when the world was in this situation before. But this is a rude shock to the globe as it was just overcoming the nightmares of the pandemic. Should this be a wake-up call for India? India can use this situation as a blueprint and set the foundation for a cleaner, cheaper, more resilient, and self-sufficient energy infrastructure.

Fortunately for India, the government began advocating the goal of 'Net Zero' emissions well before the energy crisis, not as a reaction to it but for the sake of the greater good of humanity. India pledged to cut greenhouse gas emissions by

45 percent from 2010 by 2030 to achieve net-zero emissions by 2070. At the COP26 conference in Glasgow, Prime Minister Narendra Modi unveiled the 'Panchamrit' five-pronged strategy to combat climate change. The pledge to meet 50 percent of its energy needs from renewable sources by 2030 is one of this policy draft's standout elements.

India's path towards 'Net Zero' would be challenging as India's GHG (Greenhouse Gas) emissions would be peaking by 2040s. Further Mitigation required to become Net Zero by 2070 will be exponentially higher than historic performance on this count. Despite several efforts by the government and industry players, India faces several pressing near-term challenges.

INTERVENTIONS FOR ACCELERATING DECARBONIZATION FOR THE INDIAN MANUFACTURING INDUSTRY:

1. Energy efficiency- Energy Efficiency will play a major role by contributing 44 percent in BAU (Business as Usual) and 32 percent in Deep Decarbonization Scenario for the Indian Industry. To achieve the nation's goal of improvement in energy intensity per unit of GDP, the industry will have to invest in technologies, processes, and end-use. This will require a rate of progress more than double what it has been in the past. For example, standards and labeling by the Bureau of Energy Efficiency (BEE), Energy Conservation Building Codes (ECBC) by the Ministry of Power, and the Promotion of Electric vehicle: - National Electric Mobility Mission Plan (NEMMP), among others, all contribute to achieving energy efficiency goals.

2. Use of the Renewables and Clean Technologies- The emphasis laid by the government on green energy has opened the floodgates. The industry is geared up to leverage tremendous opportunities available in the energy transition field.



Advancement in technologies is enabling corporates to procure round-the-clock green power. RE deployment is expected to double (or even triple), and more than 30 percent of industrial emission mitigation depends on EE measures. Renewable electricity is growing fast in India, with new capacity additions doubling by 2026. The share of solar and wind in India's energy mix have grown phenomenally.

3. Circular Economy or Value Chain Mobilization- Circularity is about the five Rs: Reduce, Repair, Resell, Refurbish and Recycle. Value chain emissions constitute more than a company's total carbon footprint. The transition can be based on the redesign of the supply chain. Innovations in logistics is a key enabler to drive circularity when it comes to optimizing production volumes, enhancing the life cycles of the products, and devising end-of-life recycling.

4. Biomass, Hydrogen & Other Zero Carbon Fuels- Many futuristic technologies like Hydrogen, CCUS, Fuel Cells, and many are still nascent and have high-cost implications. India is one of the world's largest producers of modern bioenergy. Hydrogen has the potential to decarbonize transportation, heating systems, and industrial operations, which are currently challenging to decarbonize through renewable energy. On the one hand, these technologies require a huge push on the policy front, but industry leaders also need to come forward and demonstrate their commitment to adopting the same.

5. Carbon Capture Utilization and Storage (CCUS)- With CCUS, carbon can be captured from large point sources and en-

ergy facilities that burn fossil fuels or biomass. According to the IEA, the role of CCUS in achieving net zero emissions is crucial, since without it, options for tackling heavy industry emissions would be limited or nonexistent.

WAY AHEAD – International Energy Agency (IEA), in its report on achieving Net Zero for Heavy Industry Sectors recommends:

- **Foster innovation and green finance in heavy industry** | Near-zero emission technologies should be funded with grants and low-interest loans. These funds would benefit industrial plants, logistics, storage, and related areas.

- **Promote demand for near-zero technologies** | By encouraging the use of materials with near-zero emissions, the government can help boost demand. Long-term public-sector procurement is an example of government support.

- **Uniform industry standards and tools** | Measurements are being developed to assess carbon emissions across industries and nations. As a result, governments can agree on a common reporting framework.

- **Clarity in the taxonomy** | Existing efforts undertaken by the industry and the governments; IEA suggests can be termed as 'low emission production'. This way, it can be differentiated from net zero emissions.

A shift to green energy is a huge economic opportunity. As a large developing economy with over 1.3 billion people, India's energy ambitions are not just transformational for India but the entire planet. ||

COVER STORY



**Shivank Garg,
Director**

**Shivam S. Garg,
Director**

Industry Outlook TOP 10
PEB MANUFACTURERS
2022

KAIZEN STEEL BUILDING SOLUTIONS

DELIVERING HIGH GRADE PEB INFRASTRUCTURES WITH QUALITY-CENTRICITY

Over the years, several technological advancements have contributed to the growth of the Indian construction industry. Pre-engineered or prefab buildings (PEBs) are among the solutions that have had a significant impact. PEBs entered the Indian construction scenario in the late 1990s and have since emerged as a strong alternative to conventional concrete construction. Having said that, the longevity and quality of the PEB infrastructure often takes the centre stage as a major point of concern. Meanwhile, timely delivery of projects is another challenge looming large in front of the industry today. Attaining quality within a comfortable price has been a roadblock for most of the service providers, but it's not the case with Kaizen Steel Building Solutions.

Established in 1982, Kaizen Steel Building Solutions has grown by leaps and bounds, now being

one of the most preferred companies in the nation. In its four decades of existence, Kaizen has gathered an all-round domain knowledge that has time and again proved to be a significant asset for its clients. Along with experience and undivided dedication towards quality, the other factors such as honest business approach and time bound delivery is highly cherished and appreciated by its clients. Owing to this, big entities such as — L&T, JWS, PVR cinemas, Polywell, Jaquar, and more, have been amongst its esteemed clients.

“Quality and ethics are the building blocks of Kaizen Steel Building Solutions. Thanks to the extraordinary vision of our founding members, Kaizen today is not a profit seeking but a customer focused entity. For us, customer satisfaction is the key for which we left no stones unturned”, states Sanjeev Garg, Chairman at Kaizen Steel Building Solutions.



Quality as Top Priority

Developing a PEB infrastructure is often a long and complicated process that requires complete quality control and advanced monitoring. As a quality driven entity, Kaizen has put out stringent checkpoints that guarantees the quality of the infrastructure with no defect leakage.

The quality checks at Kaizen accounts on two possible grounds of - process control and product parameter check. With regard to process control, the Kaizen team has created a special set of processes that begin with the design of the entire project and continue through fabrication. When the project is further along, the team works with its customers to organize the construction of the structure and handover of the same. During the project lifecycle, each step is carefully tracked and scrutinized by the quality control team to guarantee optimum quality of project.

In the product parameter check, the products go through multiple checkpoints that starts with procurement of the raw materials; wherein the products are checked on the basis of

visual appearance, dimension and also other specifications. Moreover, during the development and fabrication of PEB's they are passed through — DPT test, dimensional tests, Non Destructive testing and visual testing. Lastly, in the final stage, the quality check team at Kaizen also conducts multiple tests like — paint test, visual test and final stage inspection.

“At Kaizen, each step is coated and covered with stringent PDCA (Plan-do-check-act) quality checks; that plays an effective role to control and ensure continuous improvement of processes & products. At Kaizen, we consider it as an effective tool which has improved our product & procedure for manufacturing it via continuous feedback from client and inter departments”, states Garg.

State-of-the-art Manufacturing Facility

The state-of-the-art, 2,50,000 Sq.Ft., smart manufacturing unit of Kaizen is indispensable to produce the finest steel structure. Currently the manufacturing facility of the company is equipped with the most advanced and cutting



edge machineries that includes CNC Plasma Cutting Machine, PTW Machine, Automatic Shot Blasting, Painting Room, Standing Seam Machine, Shearing Machine, Deck Sheet Machine, CNC Forming Machine, CNC Drilling Machine, Stud Welding, CNC Bending Machine and more.

"To develop the best-in-class pre-engineered building possible, we source all the machines, tools, and tackles from the finest supplier across the globe. We have a complete line of equipment to make built-up sections, cold-formed sections, and roll-formed steel", states Garg

Along with an impeccable manufacturing facility, the management team of Kaizen has also carefully developed a proficient workforce. "Our workforce consists of numerous skilled engineers, technicians, management personnel and other technical and non technical workers who give us an added edge over others", adds Garg.

Moreover, the top management team of Kaizen consists of highly skilled professionals, holding degrees from Indian Institute of Technology (IIT). For example Shivank Garg, Co-chairman of Kaizen is a B.tech from IIT, Kanpur, Whereas Er. Ajay Agarwal, the structural designing associate had obtained His B.tech From IIT Kanpur-1994.

Apart from them, the team also consists of extremely talented and skilled professionals like – Shivam S Garg, Co-chairman who holds B.tech degree from MAIT, DELHI. On the other hand, the design experts at Kaizen Dr. Sadanand Ojha, Er. Kingsuk Mitra and Er. Ajay Agarwal comes with extensive domain knowledge of more than two decades.

The Journey So Far

Kaizen started its journey in 1982, with its first manufacturing facility being set up in Haiderpur industrial area in Delhi. Having started its operations with steel fabrication, the company slowly spread its roots into multiple domains. It was in 2015, that Kaizen ventured into the field of Pre Engineered Buildings and laid the stone of Kaizen Steel Building Solutions. That being said, the company got two major boosts in the year 2017 and 2018 with the arrival of Shivank Garg and Shivam S. Garg. The two co-chairmans played a significant role in upgrading the overall internal production process.

With valuable guidance of the chairman, the company started its production activities in a 40,000 sqft Plant located

RESPONSIBLE COMPANY DRIVEN BY GREEN INITIATIVES

With the globe pleading to attain net zero, the businesses and industries across the world have a major role to play. As a responsible company, Kaizen Steel Building Solutions is actively playing their role to gradually transform themselves into a green organization.

Thanks to the valuable direction delivered by the management team, Kaizen has been proactive in taking significant steps to protect the globe. Starting with the smartbuild units developed by the company, it now uses metal roof panels that have a high solar reflectance index (SRI). It reflects the major portion of sunlight resulting in less energy consumption.

Moreover, with unique designing skills, the PEB's developed allows natural light to enter the building that can provide adequate illumination to every part of the building during the day; thereby saving electricity. Also, Kaizen Building enables the installation of electrical solar panels and solar water heaters on the rooftops helping customers in meeting their power requirement and results in less emission.

in Mundka Industrial Area, Delhi; thereby attaining an annual capacity of 4000 MT. The company continued to thrive on its values and delivered 100 percent Customer satisfaction. Moreover, owing to its internal policies, business ethics and quality workmanship; Kaizen earned multiple repetitive orders and the 'KAIZEN' name started gaining popularity in the market.

The undivided attention towards quality and customer satisfaction, led the company towards an impeccable growth journey and in no time it planted the seeds for a 2,50,000 Sqft. large state of the Art facility equipped with the most advanced machineries from all over the world. "Dedication, unshaken commitment and sleepless nights of hundreds of KAIZEN FAMILY members fulfilled this dream in 2022. This facility is located in Sonapat, Haryana and boasts of annual capacity of 24000 MT", points Garg.

KAIZEN is now working to establish a company grip over the international market and has inaugurated its first international office in 2022 in RAK Economic Zone, Dubai, UAE with an aim to satisfy the PEB demands around the globe. The management team of the company inow looks forward to expanding into African Countries and Middle East. [ln](#)

► **INDUSTRY INSIGHTS**

INNOVATIONS IN THE WIRES & CABLES INDUSTRY TO MEET THE CHANGING CUSTOMER REQUIREMENTS

By **Anil Gupta**, Founder & Chairman, KEI Industries

Anil is dynamic leader and a recognised name in the Indian cable and wire Industries, he is a firm believer of technology, his customer-centric approach blended with a futuristic vision has ensured the production of cable and wire products of the highest quality.

In interaction with Industry Outlook, Anil shares his views on how the wires and cables industry is evolving currently and how is the industry innovating to meet the changing requirements of diverse industrial clients.

RISING URBANIZATION AND GROWING INFRASTRUCTURE WORLDWIDE ARE CREATING A SURGE IN DEMAND FOR WIRES AND CABLES. HOW DO YOU SEE THE WIRE AND CABLE INDUSTRY DEVELOPING CURRENTLY?

In an emerging economy like India, where there is huge scope for growth in the construction and infrastructure sector and increasing demand for real estate and other infrastructures such as hotels, hospitals, and residential houses, the demand for the wire and cable industry is also increasing to a great extent. While we know that other projects such as railways, metros, power transmission & distribution,

and power generation have been there for quite some decades, the demand for wire and cables is robust, especially in India, and it will continue to grow significantly year after year.

WITH THE EVER-CHANGING PRODUCT PREFERENCES OF THE CLIENTS, STAYING ON PAR WITH THE CHANGING DEMAND PATTERN HAS BEEN A MAJOR CHALLENGE FOR THE CABLE AND WIRE INDUSTRY. HOW IS THE CABLE AND WIRE INDUSTRY INNOVATING TO MEET THE CHANGING REQUIREMENTS OF DIFFERENT INDUSTRIAL CLIENTS?

The changing needs of the wire and cable industry are due to the changing specifications of the end uses of the cable. Usually, the power cable specifications remain constant but in the case of special cables such as instrumentation cables or specialty cables, which go into some systems, the demand specifications change.

The pattern in the construction industry is changing now as the trend is towards using flame retardant low smoke and halogen power cables or low smoke zero halogen products, owing to their better fire safety and better fire-resistant properties. The other changes are mainly due to the end user

specifications that include solar cables for solar power or cables used in wind power, thermal power station, oil & gas project, or petrochemical project. Therefore, the project specifications are usually prepared by the electrical consultants and the project developers and the cable industry has to manufacture or develop cables according to those specifications. The specifications often differ in terms of the properties of the insulation and outer sheath materials, but the metals remain the same, there is not much difference in the metal specifications.

IN ORDER TO REUSE THE METALS FROM CABLES AND WIRES, BURNING THE OUTER LAYER BECOMES NECESSARY. THIS IN TURN LEADS TO THE EMISSION OF POLLUTANTS LIKE BROMINATED AND CHLORINATED DIOXINS AS WELL AS CARCINOGENS INTO THE ENVIRONMENT. HOW IS THE WIRE AND CABLE INDUSTRY SOLVING THIS ISSUE?

At present, the trends have changed and today cables are not burned to take out the metal for recycling. There are machines developed by companies that help in separating the insulating and sheathing materials of the metal. Therefore, the metals are taken

out separately and the insulating and sheathing materials are taken out separately. Furthermore, these insulating and sheathing materials are also reprocessed in order to use in some cheaper products and some non-critical items, which can be made from reprocessed or recycled plastics. Therefore, the issue of burning plastic materials is very less now, and it is almost non-existent.

“
NO CONSTRUCTION OR INFRASTRUCTURE PROJECTS CAN BE COMPLETED WITHOUT USING WIRES AND CABLES AS EVERY PIECE OF EQUIPMENT IN EVERY HOUSE, FACTORY, AND INFRASTRUCTURE NEEDS ELECTRICITY, WHICH CAN BE TRANSMITTED ONLY THROUGH INSULATED WIRES AND CABLES

AS PER STATISTICS AVAILABLE ON FIRE ACCIDENTS IN BUILDINGS, 40 PERCENT OF THE ACCIDENTS ARE ATTRIBUTED TO ELECTRICAL ISSUES. HOW ARE THE INDIAN MANUFACTURERS WORKING TO DEVELOP SAFER CABLES AND WIRES?

40 percent of the fire accidents in buildings are indeed attributed to electrical products or electrical issues. However, the truth is that these accidents do not occur due to the failure of electric products, but mainly because of poor workmanship of the electrical contractor or electrician in jointing the cables or terminating the cables within the building which leads to these accidents. Therefore, there are failures in



the execution of the job in the houses or at the sites which leads to fire accidents while it is very difficult to point out the exact reason that caused a fire accident, it is always said that it occurred due to a short circuit. However, the reason for a short circuit is really difficult to define, and mostly wherever we have witnessed it, it has been due to poor workmanship on the part of the electrical contractor.

THE PRICE HIKE OF THE CRITICAL RAW MATERIALS, SUCH AS ZINC, ALUMINIUM, AND COPPER, HAS CREATED A LASTING IMPACT ON THE INDUSTRY. HOW IS THE INDUSTRY INNOVATING TO PASS MINIMUM IMPACT TO THE CLIENT?

It is very difficult to reduce the impact of price rise in these critical inputs because the cable industry has standard specifications that are approved by the Bureau of Indian standards, IEC, or any standard specifications prevailing in any country. Therefore, we cannot reduce the specification parameters to reduce the cost. However, the only way is to improve the efficiencies of the plant or other costs such as overhead

costs and transportation costs. One can reduce the impact by one or one and a half percent, but it is not possible to reduce the impact of the input prices increasing.

HOW DO YOU SEE THE WIRES & CABLES INDUSTRY EVOLVING IN THE FUTURE?

The electric wire and cable industry is an essential part of the economy of every country. No work or construction or infrastructure projects can be completed without using Wires and Cables because every piece of equipment in every house, factory, and infrastructure needs electricity, and it can be transmitted only through insulated wires and cables. Therefore, in the developing economies, we can witness good growth in the requirement for new products and a surge in replacement demand for the old infrastructure as well. There are two types of demands. The first is the new capital expenditure for the new projects and the second is the replacement demand for the old infrastructure or old houses. Hence, the demand for wire and cables will always be bullish and growing. ||



Cover
Story

SHREE PREFAB STEELS

PEB INFRASTRUCTURAL SOLUTIONS DRIVEN BY INNOVATION

The Indian pre-engineered building market was valued at \$18.1 billion in 2021 and is projected to be worth \$48.4 billion by 2030, growing at a CAGR of 11.66 percent during 2022 to 2030, according to a Market Research Future report. Rapid industrialization, development of smart cities, SEZ's and rising government investments along with introduction of policies like Aatmanirbhar Bharat, Make-in-India & PLI scheme in the infrastructure sector have propelled the adoption of pre-engineered structural solutions. Due to its durable nature, recyclability of steel and the ability

to withstand the adversities of global warming, strength to weight ratio along with wide application scope, PEB has become more popular construction alternative over conventional construction with rapidly increase in consumer demand for products of global standards with lower cost and short execution span of time. The PEB sector is quite fragmented in India, a lack of efficient engineers and skilled manpower poses a hindrance to meeting the ever changing consumer expectations comprehensively. That is how Shree Prefab Steels, by delivering PEB solutions through innovation and state-of-the-art technology has become a pioneer and a leading player in the industry.

Industry Outlook TOP 10
PEB MANUFACTURERS
2022



Ketan Shah,
Chairman & MD

Devam Shah,
Executive Director



Shree Prefab Steels, an associate entity of Devam Enterprise is the business development partner of Tata Structura since 3 decades. With implementation of forward integration, Shree provides turnkey solutions with design, fabrication, erection and material supply. Shree's robust foundation has been built with efficient designed team capacitating their manufacturing facility to handle projects irrespective of size and complexity.

Shree delivers various industrial and architectural solutions such as pre-engineered buildings and Steel building components. Shree is dedicated to cater project specific consumer needs with Innovative construction solutions.

Staircase to Growth

Consistency is the route to success and when it is combined with skill and creative mind, the journey of success turns into a process of continuous innovation. Shree through such road towards excellence with their skilled workforce and avant-garde facility, is dedicated to provide PEB solutions of international repute. Shree entered into PEB solutions in 2008 and started their plant in Gujarat. Since inception, their focus is on constant quality upgradation. Along with applying PEB globally, Shree operates Pan India with the same efficiency. They have been recording a growth rate of 19 percent on YoY basis in terms of revenue. Shree, now has a vision of robust growth of more than 30 percent in the upcoming years. Shree

is one of the few PEB companies that offer a very wide range of structural solutions.



Ketan Shah - Chairman & MD and Devam Shah -Executive Director of Shree Prefab Steel states, "We are a professionally driven company with experienced, dynamic & young workforce in each and every operation. With our robust network that has been built over the years and the experience of the workforce in their functions, we have been witnessing the consistent growth that is functional towards elevating customer experience. Delightful Customer experience is very important to our organization considering our products having a longer life cycle of association with the customers. We always strive to maintain transparency during the course of the project while engaging with our customers. Our team is

dedicated to put best maximum to ensure the best customer Satisfaction”.

Spectrum of Structural Solutions

Shree offers a single-point service unit that provides engineering and designing, manufacturing, project management, logistics and construction. In order to serve a comprehensive construction service to the customers, Shree has enabled solutions beyond supply and erection of pre-engineered metal buildings. From factories, warehouses, commercial complex, sports stadium, schools, offices to car parks and cold storages, Shree builds cost-effective, earthquake resistant, maintenance free PEB Structures with energy efficient roofing and wall system.



Shree Delivered projects across two continents & 10+ countries along with the all major states of India. Shree phenomenal numbers in steel consumption are more than two lakh MT along with the covering area of more than 45 million SQFT till 31st March 2022. Shree has successfully delivered more than 650 building projects and more than 1200 metal buildings tell Shree glorious story. Shree has successfully delivered more than 10,000 MT projects using synergy between PEB and conventional structures. Shree is delivering overseas volume of more than 10,000 MT per annum and has more than 40 percent repeat clients. It performs 3rd party inspection at plant & construction site to meet the QA requirements on regular basis and is committed to offer Pre-monsoon checkup every year before the start of the monsoon season. The company's commitments to quality standard are recognized with ISO-9001-2015, ISO-14001-2018 & ISO-45001-2018 certifications. Shree successfully delivered more than 60 mtr clear span building, 100 MT EOT crane buildings, more than 45 mtr height buildings and more than 2000 MT Pipe rack systems.

Aspects of Manufacturing Facility

Shree set up state of the art manufacturing facility having annual installed capacity of 55000 MT & Operative capacity of 36000 MT at Matoda Industrial area of Sanand, Gujarat with its facility located on Ahmedabad - Rajkot Highway. “Our key objective for project completion is to be on time & every time along with leaving delightful experience for our clients during the journey of association. Shree uses all the latest software's for design and engineering required as per industry norms.

Shree has most innovative manufacturing facility with the latest automotive machinery with Computerized Numeric Control functions, plasma arc cutting, Submerged Arc welding, and more”.

Shree has a dedicated internal QA/QC team. Their automated process is equipped with software that keeps track of every stage of their products development. Shree follows stringed quality control protocol to adhere to the ethical practice and cater to the consumer expectation. All their products involve lower maintenance cost and durability. Their team understands the specific preferences of individual clients and studies the problems carefully in order to develop suitable solutions. They offer solutions for existing structures as well and provide insights to strengthen the longevity of the existing building along with fixing the problem.



Shree Prefab Steels is committed towards customer delight with adherence to the highest level of transparency. Nurturing relationships with the clients and Creating a flourishing eco-system of vendors, consumers, and employees who participate in celebrating cultural diversity and hybridization

Future Endeavours

Shree takes the approach of staying committed towards attaining customer delight and adherence to highest level of transparency. They believe in nurturing their relationship with the clients in order to take up the future ventures. Therefore, Shree aims to create a flourishing eco-system of vendors, consumers and their employees who participate in celebrating cultural diversity and hybridization. “We have projects going on across India. We are executing one of our largest projects in Rajasthan, a two lakh square meters single building of more than 10,000 tonnes for a government of India enterprise. We have planned to double our current capacity by the end of next financial year”, Shah's further state. [li](#)

► **INDUSTRY INSIGHTS**

ELECTRIFICATION OF THE INDIAN AUTOMOTIVE INDUSTRY

By **Jeffry Jacob**, Partner, KPMG

Four megatrends are today continuously disrupting the automotive industry, both globally and in India. At Roland Berger, we call them MADE – Mobility, Autonomous Driving, Digitalization and Electrification. Electrification is one of the most disruptive amongst these, as it impacts the entire format of the automotive industry that has operated since inception. It also has consequent impacts on business models, supplier ecosystems, and distribution structures, amongst others.

Most Governments everywhere are today enacting their own emission and xEV targets. Some examples include London's 2020 Ultra Low Emission Zone which will assess daily fines for high-emission vehicles and Paris' proclamation of banning all diesel cars by 2020. In China, Beijing has plans to convert all its taxis to xEVs, while Munich & Stuttgart in Germany are contemplating outright ban of diesel vehicles within city limits. In certain cases, these actions have even been in the nature of outright bans, such as China's target of 20 percent PHEV/BEV sales by 2025 and UK/France Government's plans to enforce ban on all non-xEV cars by 2040. Similarly, Netherland's parliament is also proposing a law to end sale of ICE cars by 2025.

Driven by the aim for sustainable transportation and emission reduction, strong growth is expected in all geographies globally for xEVs going forward. Declining costs of Li-Ion batteries would further increase the attractiveness of xEV for customers, while development of charging infrastructure would be critical to sustain the demand in the market. Globally, China is expected to remain the leader in xEV sales by 2025 with over six million units. xEV sales in Europe are projected to reach 4.8 million, with BEVs accounting for 61 percent, while in US, it is expected to reach 4.6 million with PHEV/BEV



Jeffry Jacob,
Partner,
KPMG

accounting for 92 percent of xEV volumes. Most countries have traditionally used hybrids as the stepping stone in the shift to pure EVs. This slow transition allowed time gap for development of charging infrastructure across the countries, while OEMs also got time to make each stage commercially viable and make consequent investments. In India, the Govt. is planning to leapfrog directly to EVs bypassing hybrids. Accordingly, hybrids are no longer eligible for incentives under the recently announced FAME2 schemes.



ONLY WITH A COLLABORATIVE APPROACH OF ALL STAKEHOLDERS AND AN ALIGNED, PRAGMATIC POLICY WE CAN SUCCESSFULLY MOVE TO A FOSSIL FUEL FREE FUTURE

We see four potential scenarios for EV penetration in India depending on the extent of push/regulatory support from the Government, as well as the increasing TCO attractiveness of EVs. In case of neither sufficient Govt. support nor TCO attractiveness, it may be as low as two percent, whereas on the other hand, with Govt. support and significantly improved TCO attractiveness, it could reach as high as 25 percent. In the most likely scenarios however, we expect xEV penetration of 15-18 percent by 2025.

Electrification though comes with its own set of challenges and disruptions to the ecosystem. For example, with 80 percent fewer moving parts vs. ICE, xEV components will undergo less wear & tear and hence negatively impact aftersales business, potentially to the tune of 58 percent. As for components, engine & exhaust systems would become obsolete, and transmission would undergo significant changes. At the same time, the electronics complexity is much higher in a battery vehicle as the semiconductor content in BEV is 6-10 times more than that in a traditional ICE vehicle. If local suppliers of traditional ICE components do not adapt their portfolio to compete in the new scenario, they would end-up losing this opportunity to Chinese OEMs

and component manufacturers. Chinese players today have a significant share of the global market and several of them already have plans for the Indian market.

India's AMP (Automotive Mission Plan) targets 14 percent YOY increased employment in the auto-component sector to reach 9.4 million direct & indirect jobs by 2026 with cumulative investment of over \$43 billion. This is under direct threat if we do not ensure the domestic manufacturing component in our transition to electric mobility. The Government and industry associations therefore have an important part to play in terms of nurturing and guiding the industry on its path to electrification, or else the country faces a massive risk of losing investments and jobs.

Adoption of EVs in India will depend critically on two parameters: the sufficiently rapid decrease of xEV component cost and the consistency and effectiveness of Government support. The Government needs to define a long-term, consistent, technology agnostic and phased plan with targets for xEV in India. It would need to incentivize consumers, OEMs, and suppliers through a combination of financial & non-financial incentives to develop this space. It should support the industry in technology transfers, as well as capability building. Clear standards need to be also defined for charging infrastructure, battery swapping, and testing & validation, in line with global standards.

The onus of preparing the nation for the xEV transition is however not on the Government alone. Auto-component suppliers need to swiftly catch-up on xEV technology and business readiness by technology acquisitions, collaborations and capability demonstrations. They should de-risk their current businesses by pivoting towards future-ready opportunities that leverage their current capabilities. Tie-ups with international partners need to be explored to complement their world-class technology with our own frugal engineering approach. Ecosystems, including research institutions, should be leveraged for non-competitive R&D. OEMs, in turn, need to define an agile xEV powertrain strategy that takes the opportunities and challenges of the Indian environment into account. They should actively collaborate on pre-competitive research for the development or acquisition of xEV technologies. Industry associations need to create awareness among stakeholders regarding the immense challenges that the xEV transition brings, and enable information exchange and collaborations to ensure that the domestic auto-component industry continues to be seen as a high quality partner for Indian and global OEMs. Only with a collaborative approach of all stakeholders and an aligned, pragmatic policy, we can successfully move to a fossil fuel free future. [ii](#)



THE SHIFTING PARADIGM OF INFRASTRUCTURE ENGINEERING



As Infrastructure projects and systems become more complicated, today, engineers have to work on multidisciplinary teams where members are geographically dispersed and in different time zones. As a result, they must be comfortable using collaborative tools, working in a virtual environment, and remotely assessing design and construction. With changing times, infrastructure engineers and designers have resorted to various new trends and technologies in order to

reduce change orders, boost efficiency, improve their return on investment, and improve the quality of their projects. Having said that, in this article let's look at some of the important areas where infrastructure engineering is changing with shifting market demand.

DIGITAL TWIN

With the help of a digital twin, companies can test and validate a product before it even exists in the real world. The

digital twin solution allows engineers to spot any process faults before the product is put into production by building a duplicate of the intended manufacturing process. Engineers can disrupt the system to create unexpected circumstances, analyze the system's response, and come up with mitigation solutions. This new capacity improves risk assessment, speeds the creation of new goods, and increases the dependability of the manufacturing line. Furthermore, the IoT sensors in a digital twin system create big data in real-time; with this the businesses may analyze their data to detect any flaws in the system ahead of time. This capability allows firms to schedule predictive maintenance more precisely, resulting in increased production line efficiency and decreased maintenance costs. Financial data, such as material and labor costs, can be included in a virtual depiction of a real thing. Businesses can make better and faster choices on whether or not changes to a manufacturing value chain are financially viable because of the availability of enormous amounts of real-time data and powerful analytics.

AI & BUILDING INFORMATION MODELING

AI is already beginning to change the way buildings are designed and built, as well as the completion of repetitive site work jobs such as bricklaying. In the coming days, AI can enhance Building Information Modeling. It is the digital process that follows the life of a project in all of its aspects. AI can use images generated by drones and data gathered by lasers to create models that match those made by BIM for purposes of comparison. These applications would dramatically reduce decision-making cycles in a construction project from a monthly basis to a daily basis.

GREEN INFRASTRUCTURE

Today, there is a greater emphasis on building natural structures that provide both stability and environmental advantages. Engineers are reconsidering how their designs might contribute to storm water and mitigation activities without jeopardizing the project's performance as concerns about runoff and floods rise. Earth retention structures, which are routinely utilized in civil construction projects, have migrated to locations with uneven terrain, particularly in the context of road upgrades. The severity of the grade change, as well as the availability or cost of land within the project site, influences the necessity of retention walls over simple earth slopes.

CONNECTED CONSTRUCTION METHODOLOGY

The face of infrastructure engineering is changing as engineering firms, contractors, and other value chain

participants discover the benefits of connected construction technologies and progressively adopt them. These technologies can help put assets, people, processes, and job sites onto one platform, allowing everyone and everything to work smarter. They can also help minimize downtime, improve asset utilization and efficiency, and gain more visibility into operations. Emerging technologies, as well as the data and sophisticated analytics that these new capabilities might enable, are at the heart of the linked building. Developing data, analytics, and user-based insights skills might be crucial as the construction sector evolves toward linked construction. By 2022, linked construction will almost certainly be a catch-all term for substantial digital expenditures aimed at connecting, integrating, and automating activities, as well as bringing the whole value chain onto a secure, intelligent infrastructure.



IN THE COMING DAYS, AI CAN ENHANCE BUILDING INFORMATION MODELING. IT IS THE DIGITAL PROCESS THAT FOLLOWS THE LIFE OF A PROJECT IN ALL OF ITS ASPECTS

CHALLENGES AHEAD

According to a recent study by India today, lack of skilled professionals has been identified as the major problem limiting the growth of the sector. Despite the heritage of infrastructure engineering in India and the significant demand for trained individuals to fill the gaps in infrastructure and real estate, this subject of study hasn't thrived, with a recent poll showing a 6.27 percent drop in employment in the construction industry. Raising skill levels, appropriately equipping the workforce, improving welfare, and guaranteeing higher site safety will all encourage and empower workers to increase production. With the introduction of new mechanisms, the opportunities that infrastructure authorities will face in the coming year will have a long-term impact on the global order. Technology is allowing for dramatically different infrastructural solutions, which are typically considerably more cost-effective. In other circumstances, the solution may not even need civil engineering or construction. [ln](#)



Industry Outlook TOP 10 PEB MANUFACTURERS 2022

Quicker and economical creation of warehousing and storage infrastructure is needed urgently across Industries. Looking at the huge task, PEBs (pre-engineered buildings) can definitely emerge as the best possible solution. A pre-engineered building is a structure created by a manufacturer and constructed with a previously agreed upon inventory of materials and fabrications. They differ from conventional buildings but are still able to provide custom-built features and unique architectural designs in less time, and often at a better price point, than a typical conventional built facility, hence becoming popular in today's world. It plays an important role in creating new warehousing infrastructure because of its inherent advantages, i.e. they are cost-effective, time saving, versatile and offer architectural options, durable, demands low-maintenance and sustainable. Usually PEBs are low-rise and mainly used for commercial builds and it's commercial markets include manufacturing, industrial, fitness centers, gyms, warehouses, hangars, and agriculture, and becoming the preferred choice for warehouses, workshop, cold storage, industrial sheds, metro stations, multi storey buildings, hospital, schools, bridges, complexes, hangers and many more. Design flexibility and recyclability are the most attracting features in PEB shed, if need to extend the area of industrial

shed then easily can be done but traditional construction does not allow for this type of features. If need to dismantle the due to some reason then all material are reusable to somewhere else but if need to dismantle the traditional building then the most material are wastage, rarely can be reused. Hence PEB is not only preferred choice for industrial shed but it also suitable for all type of construction in the world.

According to a recent market report, India is the fastest-growing market at 9.5 percent ahead of China, which has been reported to grow at 8.5 percent. Also, the PEB market in India is estimated to be worth \$48.4 Billion by 2030, registering a CAGR of 11.66 percent during 2022 to 2030. To cope with the industry demands, PEB vendors are also using the latest technology trends to ensure a swift and sustainable means in developing new structures.

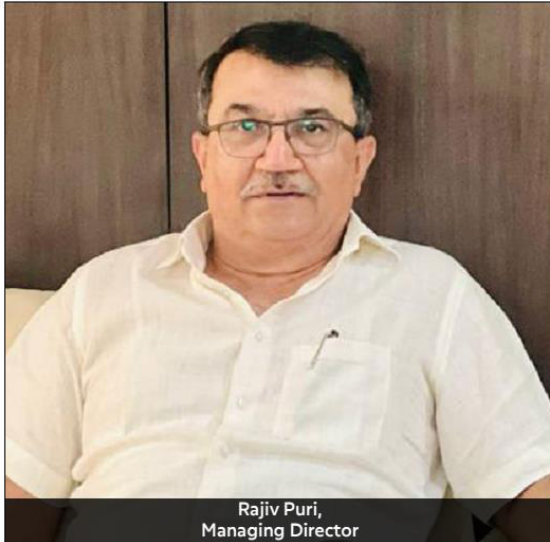
Industry Outlook in this issue brings a list of 'Top 10 PEB Manufacturers- 2022'. The following list has been prepared after being closely scrutinized by a distinguished panel of judges including CXOs, analysts and our editorial board. We recognize their valuable contribution to the ever expanding and competitive market and their ability to sustain themselves and emerge as top contestants through their reliable product and services.

TOP 10 PEB MANUFACTURERS - 2022

COMPANY	MANAGEMENT	DESCRIPTION
Alfa PEB Bangalore alfapebltd.com	Sadiya Shabbeer, Director	Manufacturers of Pre-Engineered Buildings, state of the art manufacturing facility Producing, Pre-Engineered Steel Buildings, Steel Decking Sheet and many more
Ghaziabad Mechfab Ghaziabad gmfpfeb.com	Renu Rani, Director	PEB products providers with customized different structural additions like trusses, mezzanine floors, fascias, canopies and crane systems
Interarch Building Products Noida interarchbuildings.com	Vishal Sharma, Director	Delivers PEB systems, PEB steel building systems, Turnkey Project Execution, Multi-Storey Steel Buildings for Hospitals and more
Kaizen Steel Building Solutions Delhi kaizenpeb.com	Shivank Garg & Shivam S. Garg, Directors	Offers comprehensive building solutions, including foundation design, pre-engineered steel structures, roofing & cladding, complete accessories & installation
Meking Buildtec India Chennai mekingconstruction.business.site	Archana Shah, Director	Offers services in design, engineering and product development with products of PEB steel buildings, space frame structures, heavy steel structures, light gauge framing system and more
Nipani Infra & Industries Jabalpur nipaniindustries.com	Rajiv Puri, Managing Director	Steel building products manufacturers and integrated structural steel construction solution providers in India
Polygon Steel Buildings Visakhapatnam polygonsteel.com	Sateesh Addanki, Managing Director	Offers precision-engineered pre-engineered steel building solutions to custom-designed steel frame structures that support brick, rock, block, stucco, and concrete exteriors
Shree Prefab Steels Ahmedabad shreeprefabsteels.com	Devam Shah, Executive Director & Ketan Shah, Chairman & MD	The company offers a single-point service unit that provides engineering & designing, manufacturing, project management, logistics and construction
Wootz Buildsys Faridabad wootz.in	Anurag Agarwal, Founder	Provides complete building construction solutions using latest & innovative techniques in the industry including Light Gauge Steel Frames & Mild Steel construction and Pre Engineered Building (PEB)
Zamil Steel Buildings India Bangalore zamilsteel.co.in	Akilan Sankara, Director	They offers PEB products which includes basic building parameters, primary framing, secondary framing, steel intensive construction and more

NIPANI INFRA & INDUSTRIES

SPECIALIZED SOLUTION PROVIDER FOR LIGHT GAUGE STEEL PEB & OTHER STRUCTURAL STEEL PROJECTS



Rajiv Puri,
Managing Director

According to a report published by Allied Market Research, the global pre-engineered buildings market size is projected to reach \$37.807.3 million by the end of 2026 with a CAGR of 14.5 percent. When it comes to a country like India where industrialization is on the rise, the demand for solution providers in this domain has grown considerably. However, there are certain problems that clients face while availing solutions from providers because subject specific applied knowledge and expertise is compulsory for any project in this sector. Nipani Infra and Industries is one of the companies that has been working in this sector for more than two decades and has grown by adapting to the changing trends of the industry.

Nipani Infra & Industries has become one of the prominent identities in Light Gauge Steel Frame construction in India. It has constructed building of more than 5,00,000 Square Feet using this technology. "Today, the company has a pan-India presence working in North India, Orissa Madhya Pradesh, North East & South India", mentions Rajiv Puri, MD, Nipani Infra and Industries.

Aiming for Excellence

The company has introduced ground breaking building system, referred to as Light Gauge Framing Systems. It is the ultimate union of design, materials, machinery and manufactur-

ing of standard stud and track profiles which are produced automatically by combining latest software and machine control system. The software and machinery specifically are designed for high volume manufacturing operations, Nipani Infra & Industries Smart Green Light Gauge Steel Buildings is ideal for situations where speed, reliability and flexibility are critical in delivering a project. Every output is accurately formed, cut, punched, dimpled and individually labelled and ready to screw together for assembly. Once at the site they can be further assembled as per architectural drawings, in no time by simply snapping the wall frames and floor joists together and fixing them with self-tapping screws.

The company's state of the art technology is one of the fastest for manufacturing and erecting buildings. Using the core strength of high tensile steel, its Light Gauge Steel Frame system allows multiple application across Commercial and Residential sectors. Nipani Infra & Industries offers design, strong financial background and allows architects/interior designers to choose from a large variety of external and internal finishes, assurance of being a reputed home-grown Indian company with an excellent track record. "I always believe that growing together with customers, employees, partners and communities is the essence of being a good corporate citizen. The company has been in the structural steel business for more than 20 years and has executed complex projects in difficult areas", says the MD.

The company has been successfully providing turnkey solutions right from concept to commissioning and its team of designers can put together any client's most complex requirements on to the drawing board. It consists of 20 dedicated professionals and senior structural designers who are very well equipped to work in accordance with all Indian and International codes, using extensive manufacturing and automated machinery, keeping in minds the time and cost targets.

Nipani approaches each project keeping in mind four points namely sustainability, user comfort, cost effective and fast turn around.

Looking at the Future

Nipani is on a mission to build the reputation of amongst all stakeholders as a respected and influential leader in the construction and Infrastructure domain with global presence and local expertise backed with a sustained focus on attributes of sustainability, profitability, employee engagement and pride. [li](#)

► **INDUSTRY INSIGHTS**

SELF-DISINFECTANTS THE NEW SENSATION. WHAT DOES IT HOLD FOR INDIAN STARTUP ECOSYSTEM?

By Paras Arora, Co-Founder & CEO, 3R Scientific Solutions

- Virus associated infections remain as the major causes of human morbidity.
- Surfaces and poor public hygiene are one of the major factors contributing to these patterns.
- Self-disinfecting surfaces are an emergent technology to control infection.
- Indian startups raised \$7.67 billion in the nine months.

Virus associated infectious diseases remain as the major causes of human morbidity and mortality, and leads to a significant healthcare cost in India. Recent example is COVID pandemic. Unusual aspects of human-animal interaction pose a threat and add to challenges with respect to the emergence of infectious diseases. Estimates indicate that the majority of infectious diseases and emerging infections of humans are zoonotic in origin, and mostly originating in wildlife.

In times like these it became necessary to tackle the situation that was slipping from our hands and all thanks to the companies in India who showed mettle and geared up their manufacturing units to make huge quantities of sanitizers and disinfectants, otherwise the situation could have gone worse. In this article we will elaborate on the

Self-Disinfectants that have become the new sensation worldwide and in India. What's the future of this industry and what does it hold for the startup ecosystem.

India's surface disinfectant market is anticipated to grow significantly over the coming years. Owing its success to the sensitized general public, which is now more cautious about health & hygiene. Surface disinfectants are chemical compositions that can be applied to surfaces like wood, plastic, micas and more, to make them microbe safe. Further, keeping surroundings clean is the utmost priority of the people more than ever, when the outbreak of diseases and infections has become frequent. All this complements the overall growth of the surface disinfectant market in India. The industry is about to witness its peak in coming years. Among many countries in the Asia Pacific region India holds the highest shares of the market followed



Paras Arora,
Co-Founder & CEO

China. Various market research estimates the Asia Pacific disinfectant market to be worth \$235.57 million by 2024 from \$153.59 million in 2019. Growing at a CAGR of 8.9 percent and capturing 25 percent of global market share.

New entrants and homegrown startups are now dominating this category after the outbreak. In a report released by Nielsen India astonishing figures come from the 'sanitizer' industry a total of 152 new manufacturers started making sanitizers in March. The figures show a promising future for the Indian startups that are trying to foray in the personal and public hygiene market.

In this category a new product self-disinfecting coating has been making a great noise lately. Though the surface coating technology is a decade old technology but it gained recent success when the Singapore government recently announced that it will disinfect the public places including Changi Airport by using self-disinfecting surface coatings. Self-disinfecting surfaces are an emergent technology to control infection. Surfaces and poor public hygiene are one of the major factors contrib-



GOVERNMENT PLANNING TO INVEST IN HEALTHCARE INFRASTRUCTURE WILL PUT DIRECT IMPACT ON THIS SEGMENT WITH A SUDDEN INCREASE IN DEMAND FOR SURFACE DISINFECTANTS AND COATINGS TO PROVIDE THE PUBLIC WITH A SAFE ENVIRONMENT AND PREVENT ANY HOSPITAL ACQUIRED INFECTIONS (HAIS)

uting to infection patterns. The product is quite promising as it stays on the surface for months with the help of molecular level bonding that binds on almost any surface, nano patches of needle like structures rupture the membrane of the pathogens thereby leaving it ineffective. The technology arrived in India and was welcomed. The entrepreneurs in India looked

at it as an opportunity to tap the market and provide a rather permanent solution for public hygiene and safety. As handwash and sanitizers are a temporary solution and are products of personal hygiene.

India is now the third-largest startup ecosystem in the world, after the US and China. According to a nine-month funding report, homegrown Indian startups managed to raise \$7.67 billion in the nine months that ended on September 30, 2019.

RECENTLY A CHALLENGE, 'SUBMIT SOLUTIONS TO COMBAT COVID-19' WAS LAUNCHED ON THE

Startup India Portal. Which was aimed at scouting innovative technologies and solutions for precautionary as well as treatment-related interventions to fight the pandemic. The solutions were invited under Large area sanitization and sterilization, PPE, Testing equipment. The challenge received an overwhelming response and many ideas received initial help from the government. PM's call for 'Atmanirbhar Bharat' (self-reliant India) has added new energy to the startup ecosystem. One such startup '3R Scientific Solutions' in technology partnership with Bacti Barrier India incubated with CSIR-IITR has come up with innovative and no less than permanent solution for the public hygiene and safety with their product which is a self-disinfecting surface coating in a spray form. In another news recently doing rounds on the internet is about Science and Technology Park, a Pune-based company that has developed a disinfect-technology to reduce the viral load of infected areas within a room, received government funding recently. The enterprising Indians have also developed AI based models for contactless entry, crowd management to name a few. This shows that the Indian startup ecosystem though slow but picking up pace and is heading in the right direction. While an economic slump has subdued the fundings in startups and global slowdown has made the investors a bit susceptible, this has not stopped Indian entrepreneurs from chasing their dreams. A fact that can't be ignored is that, this particular category of providing sustainable solutions for the public and personal hygiene will make exponential growth because of booming healthcare demands of India. Government planning to invest in healthcare infrastructure will put direct impact on this segment with a sudden increase in demand for surface disinfectants and coatings to provide the public with a safe environment and prevent any hospital acquired infections (HAIs) As always it's the end users that decide the fate of any industry. As of now we witness a marked increase in startup activities in this particular segment with the emergence of nascent startups across India. We hope to see an emergent market segment that works as a mutual beneficial ground for all the stakeholders. [ii](#)

POLYGON STEEL BUILDINGS

COMMITTED TO PROVIDING CUSTOMERS WITH FINEST METAL BUILDING AT THE LOWEST COST



Sateesh Addanki,
Managing Director

Technological developments and precise engineering have greatly improved lives and reshaped the face of progress in every discipline and industry. Construction has witnessed remarkable innovations. Pre-engineered steel construction technology is one of the most important revolutions driving the economy and prosperity. Infrastructure, logistical, and industrial development investments boost the market for Single-Storey and Multi-Storey pre-engineered structures. Growth in non-residential construction, such as healthcare, education, recreational and social infrastructure, and retail, is driving demand for Single-Storey and Multi-Storey pre-engineered structures. Polygon Steel Building Systems is happy to take this invention to the next level of perfection by incorporating speed, agility, accuracy, safety, cost-effectiveness, and high-quality requirements.

Polygon Steel Building Systems, founded in 2015, has established itself as a reliable Pre-engineered Steel Building (PEB) OEM manufacturer among prominent infrastructure promoters, property developers, architects, engineers, contractors, and a variety of company owners. Polygon is India's fastest-growing PEB solutions supplier, focused on offering end-to-end building solutions with

short turnaround times. Polygon was founded to enable companies to succeed by providing hassle-free and cost-effective infrastructure goods. Polygon has expanded steadily and quickly established itself as one of the top Turnkey Firms with integrity, transparency, and corporate excellence. Polygon's experience is in three areas: pre-engineered steel building solutions, civil engineering on turnkey and engineering procurement construction (EPC) models, and interior design.

Polygon's production factory is outfitted with cutting-edge technology and gear to develop, plan, and execute any construction project. Its specialized team of specialists, composed of planners, designers, engineers, and project managers, provides its clients with creative and durable engineering solutions on a national and worldwide scale. Their knowledge and dedication to providing high-quality service provide value from the beginning to end. Polygon Steel Construction Systems provides full building solutions, from adapting engineering plans to generating precise drawings, from aiding successful project planning to manufacture, and from quality systems to meeting deadlines. Polygon maintains the highest levels of quality, professionalism, and perfection from bespoke designing, planning, manufacturing, shipping, and engineering to completion, using the finest raw materials of hot and cold rolled steel, and galvanized steel. Polygon offers precision-engineered pre-engineered steel building solutions that satisfy the needs of a wide range of steel buildings, from conventional steel structures to custom-designed steel frame structures that support brick, rock, block, stucco, and concrete exteriors.

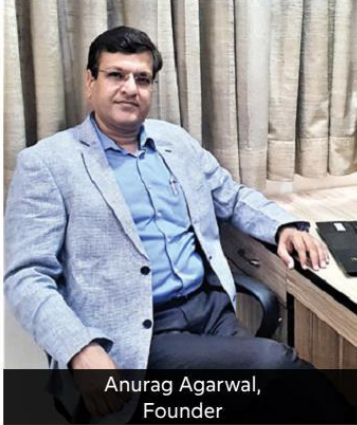
Polygon delivers important components to expedite building in an efficient, effective, and exact manner. The mainframe, columns, and rafters are the primary components. Purlins, grits, and eave struts are supplementary structural components that provide support to walls and roof panels.

Sheeting/Cladding: Extras: Bolts, turbo ventilators, skylights, louvers, doors and windows, roof curbs, and fasteners are examples of pre-engineered steel structure accessories. Polygon gives the most adaptable PEB systems, as well as integrated construction solutions with significant advantages. Polygon ensures that your business and residential spaces appear equally stunning with efficient space management solutions and useful designs. Everything, from workstations to planning rooms to cafeterias, requires a rigorous design approach. Polygon goes above and above by working with architects and structural engineers to plan and design your interiors. It enables consumers to obtain all services from a single reliable service provider.

Today's building owners' strict state-of-the-art requirements demand that their building system not only utilize modern designs, but also provide flexibility, energy efficiency, and quick construction timelines. "Our Steel Building Systems have evolved from India's reputed PEB solutions provider to India's fastest growing Engineering Firm with vast expertise and rich experience in executing mega construction projects under its Turnkey portfolio on the Engineering Procurement Construction (EPC) business model. we have completed numerous notable projects in India that attest to the company's rise", concludes Sateesh Addanki, Managing Director, Polygon Steel Buildings. [ln](#)

WOOTZ BUILDSYS

HERALDING THE ERA OF GREEN BUILDINGS & STEEL BUILDINGS USING INNOVATIVE TECHNIQUES



Anurag Agarwal,
Founder

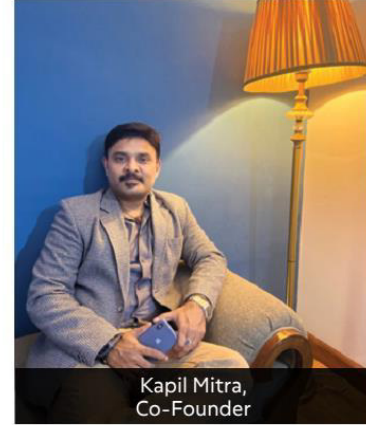
The PEB or steel building industry has been growing at an impressive rate in the recent past. As an alternate technology of construction, the sustainable and green building arena, which is at the core of steel building, is gaining a lot of traction. The Government of India has been a great ally of this technology and its acceptance by Government departments has propelled the momentum of this technology and market even further, with a growth rate of 35% annually.

Uniquely positioned in this space is Wootz Buildsys, a company that provides complete building construction solutions using the latest and innovative techniques in the industry. They use Light Gauge Steel Frames (LGSF) and Mild Steel construction, Pre Engineered Building (PEB) along with other prefabricated and green materials for building construction. The system is totally engineered and backed by design reports which can be vetted by premium agencies like IITs/ NITs. According to Ar. Anurag Agarwal and Kapil Mitra, Founding partners, "We at Wootz adopt the consultative approach for every project. We have detailed discussions with clients

about all limitations and commercial implications for that project using this technology. We ensure that customers take informed decisions while adopting this technology".

The application of this technology can be for a variety of buildings like residential houses, farmhouses, multi-storied apartments, schools & universities, hospitals, factory buildings, office buildings and other commercial buildings, site offices, labor accommodations, and toilet blocks. The Light Gauge steel system makes use of steel strength to weight ratio. Therefore by using high tensile steel they are able to achieve less thickness of steel to make it a structural member. A unique forming technique converts the steel into a more stable form of a structural element which is designed based on Dead Load, Live Load, Seismic Load, and Wind Load.

Within a span of seven years, Wootz Buildsys has established itself as a complete solution provider using these alternative construction methodologies and has delivered 70+ projects pan India. They now assist top architects and Government departments in framing the best project specification and methodology for the best outcomes. With an army of architects, project managers, engineers, and Structure designers, with a collective experience of 100+ years, they create green buildings of formidable strength and at the end of each project, have every client as their brand ambassador. Their working methodology starts from preparing architectural drawings to completing structure design and vetting by IITs, manufacturing, installation of complete projects at the site, and completing project management to get work executed in time. Using the latest software like CAD, REVIT, STAAD, and FRAMECAD apart from project manage-



Kapil Mitra,
Co-Founder

ment software like MS projects, all projects are seamlessly streamlined.

Wootz Buildsys started its journey from Faridabad and expanded to the states of Uttarakhand, Himachal Pradesh, Uttar Pradesh, Haryana, Jharkhand, Manipur, Sikkim, Mizoram, Gujarat, and more. It has an impressive clientele including L&T, CPWD, PWD, TATA Steel, Center Vista, National High-Speed Rail, and Sikkim Tourism to name a few. As one of the best associates to partner with, to deliver the best quality in the steel building industry, coupled with their professional approach, clear intent, and ethical way of working, Wootz Buildsys will be performing a key role in revolutionizing the construction methods in the country. "We at Wootz are capable of delivering projects anywhere in the country and abroad. Our latest venture is getting started in Bhutan as we are installing our first sample house in Thimpu. We are one of the best associates to partner with to deliver the best quality in steel building industry. With Professional approach, clear intent and ethical way of working we shall be performing the key role in revolutionizing the constructions methods in the country", conclude both the partners. ||

► **INDUSTRY INSIGHTS**

WHAT STARTUPS SHOULD DO WHEN THEY ARE NOT LEGALLY FIT?

By **Himanshu Gupta**, Founder & CEO, *Lawyered*

Practicing legal hygiene is critical for any company's success. Many entrepreneurs work day and night to make their startup or venture a success but overlook the company's legal needs. This can put them at the risk of legal backlash. Having a company's legal health in check makes sure it is in control of the legal risks and safe from a lawsuit.

As a startup owner, entrepreneurs work on a tight budget and have even lesser resources to spend on legal needs. However, it is significant for startups to appoint or consult a lawyer in the initial stage to avoid any sort of legal crisis in the later stage. Investing in a professional legal consultation saves not only a startup but also well-established companies from getting shut or sued. One of the most popular legal incidents happened in 2013 when the Swedish telecom giant Ericsson sued a lot of smaller telecom companies from India and China. Some of the Indian companies such as Micromax, Intex and Lava mobiles were highly affected because these companies were using Ericsson's patented products.

Several legal issues can affect a startup's legal performance and overall business health. Many startups have already started using online legal toolkits to customize legal documents and save their business from legal pitfalls. Some of the common legal issues that a startup might face are:

REGISTERING A BUSINESS ENTITY

Adopting a legal route in the registration of a business entity is vital. Whether it is a sole proprietorship or a partnership, legal documents of business registration should be made to avoid legal disputes or failure of the venture. For instance, three partners started a café without entering into any agreement in the initial stage. After a few months, the café started yielding profits but resulted in disputes



Himanshu Gupta,
Founder & CEO

between the co-founders regarding their role and share in the business. This further led to legal disputes that enforced the partners to dissolve the partnership and exit from the business. Thus, a cofounders agreement defining the role and responsibilities of each partner including equity ownership, non-disclosure agreement and dissolution of the partnership is needed for smoother operations of the business.

EMPLOYMENT CONTRACTS

Employers are the asset of any startup or any company. The relationship between an employer and its employees should always be amiable and free from disputes and disagreements. In this regard, employment contracts play a crucial role to avoid problematic situations in the company. It is proof of the employer and employee relationship. It also clearly defines the path of the employee's journey in the organization.



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 CRISIS IN THE LATER STAGE**

Furthermore, it makes the employee and its employer aware of the roles, responsibilities and remuneration of the employee and makes both the parties bound by the law. Based on the nature of the work, companies can make different types of employment contracts such as Fixed-Term Employment Contract, Casual Employment Contract, Zero-Hours Workers Contract and ESOPS – Employee Stock Ownership Plan.

REAL ESTATE AGREEMENTS & CONTRACTS

There are different types of real estate agreements that are signed and executed between two or more parties. This facilitates a smoother exchange of any property or performing a real estate transaction. Sunil started a clothing manufacturing company by taking a property on lease from his friend and he purchased different machines on hire-purchase arrangement. Sunil failed to make the payment of the machines even after several reminders by the bank. After failing to make the payment for a long time, banks auctioned his machines which further led to the closing of his factory. To avoid such situations in starting up a business, both parties can seek professional legal help and enter into a real estate agreement or contract. The different types of real estate agreements involve – Hire-Purchase Agreement, Lease Agreement and Power of Attorney.

COMPLIANCES OF A COMPANY

Every company needs to have a proper legal structure which will prescribe certain rules and regulations for its

effective functioning. There are mainly two types of legal compliance regulations. Statutory compliance and Audit Compliance that ensure the proper functioning of an organization. Statutory compliance mainly refers to a number of corporate labour and taxation laws prevalent in the country. The non-compliance of these results in heavy penalties and fines. A case happened in 2012 with a construction company that was initially following all the regulations of the government regarding taxation and treatment to the employees. Later it started neglecting its employees and it led to an increased attrition rate in the company. Further, due to evasion of tax, an enquiry was done by the Income Tax Department which asked the company to pay heavy fines because of which it faced huge losses.

In the same way, a company needs to stay in compliance with external rules, regulations or internal guidelines like corporate bylaws, controls and policies and procedures to prevent future deficiencies.

BOTTOMLINE

Following legal processes and compliances is an ongoing process for a business. It can get very difficult for startup founders to gain knowledge about all kinds of corporate law. Thus, the imperative is to appoint a professional lawyer or a consultant for the successful setup and rise of the business. Additionally, specialized lawyers help the founders engage in healthy legal practices that further ensure the startup is running proactively on a safe path and can stay away from all possible legal risks. [ii](#)



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► AFTERWORD



THE SUBSTANTIAL SUSTAINABILITY BENEFITS OF SMART METERS

By IC Inderpreet Kaur, IEEE Senior Member

The electrical grid is a marvel of modern engineering that underpins nearly every aspect of society – a complex interconnection that spans the tiniest LED light bulb and the largest power plants. But as electricity use grows, which it does exponentially, the grid strains. The use of renewable energy sources and new regulations can add to the complexity and strain.

Without the implementation of new technologies and models, we'll be stuck with an unreliable power system, where technical as well as non-technical parameters will be neglected. It can lead to significant chaos, harming the interests of various stakeholders. That type of neglect could make commonplace incidents like a 2012 blackout in India that left 230 million without power. Smart grids are, undoubtedly, the definitive solution for managing electricity distribution in a world dependent on renewable energy.



BUT WHAT MAKES THEM SMARTER? WHY DO WE NEED THEM?

At a core level, the challenges of the grid come down to a simple fact. It needs to produce exactly as much electricity as is demanded. If demand exceeds supply, brown- or black-outs are possible. When supply exceeds demand, power plants may be forced offline to help stabilize frequency and voltage.

Demand fluctuates all the time, from day to night, and from hour to hour. Those demand shifts can be largely predicted based on historical data. Power plants may go on and offline in response to demand. But renewable energy sources change the calculus. They produce power based on factors like weather, which may not match demand.

That's where smart grids come-in. As the smart grid is a two-way system, it will act as a safeguard, automatically rerouting power in case of equipment failure and power outages. They integrate information technologies with

renewable energy sources, creating a two-way conversation between suppliers and consumers. This conversation is enabled with smart metering devices, which accurately monitor power consumption at a granular level.

Smart grids enable the efficient transmission of electricity, better restoration of electricity after fluctuations, lower peak demand & power costs for consumers, provide better integration of renewable energy systems with the power grid, improved security and much more.

SMART ARCHITECTURE FOR A COMPLEX WORLD

Smart metering offers substantial benefits like reduced commercial losses, effective monitoring of energy (real-time or near real-time), energy theft detection, enhancements in grid reliability and better revenue management. Furthermore, it enables customers to keep track of their energy consumption, allowing them to adjust their usage as required.

Presently, researchers are more focused on the deployment of more complicated information, communication technologies and control in a multi-layered architecture. The two-way communication between a smart meter and the grid may allow an automated building, for example, to detect when consumption is high. It could, for example, turn-off power to uninhabited parts of the building in response, or adjust heating and cooling settings in response. But that two-way communication adds another layer of complexity, because demand may shift again because of reactions from smart meters, just as the grid brings more power sources online.

Power generated by renewable sources and corresponding action taken by business layers is not predictable. So, it's imperative that the latest controls are leveraged in the service of smart grids. As the smart grid evolves, it will undoubtedly transform grid operations in the same way the internet did.

The smart grid shows an unmatched scope to move the electrical energy industry into a new milestone of reliability and efficiency that will enhance our environment's health. Undeniably, this transition period is crucial. The adoption of sophisticated testing and control technologies, raising consumer awareness and implementing regulations and standards for the same would require robust engineering and management protocols. [li](#)

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