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# Buildings 2021 & Beyond

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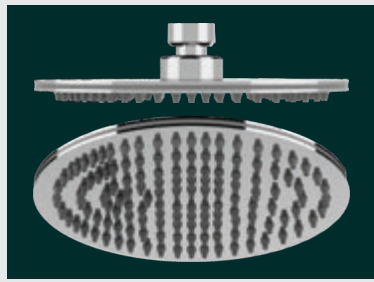
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## Buildings 2021 & Beyond

**M**GS Architecture celebrates its 16<sup>th</sup> Anniversary along with architects, interior designers, and the real estate fraternity. In this issue, we invite them to share their thoughts on what the built environment should be, what should change, and what should be taken from India's eco-sensitive architecture of the past. The unanimous belief is that designing and constructing buildings should be for the long term, with a people-centric design approach; and increased interconnectedness with the help of technology; in fact, a more holistic approach to design is required in order to meet all the criteria, as mentioned below, for experiencing a fulfilling lifestyle.

**Townships and Community living:** Spaces that demarcate the private from the public are blurring as technology is making cities more interconnected. The concept of work from home and walk to office is becoming a reality. Creating inclusive spaces such as parks with clubs, playgrounds, and gyms etc within the premises are enabling interaction amongst residents of all age groups, fostering communication and mutually enjoyable functions.

**Smart Cities:** The concept of a Smart City envisages enhancing the lives of its residents by enabling improved efficiencies through modern infrastructure, systems, and services, along with safety, and affordability. Digitisation is influencing the designing and construction of Smart Cities, along with their anticipated high performance.

**Sustainable Architecture:** There is a call for increased focus on creating green buildings that are energy-efficient, consume minimum building materials and other resources, reduce wastage, and are sustainable. These buildings bring added value by way of healthier and more economical living.

**Precast / modular construction:** These new building technologies enable faster construction and build more economical and better quality structures. Forward-looking developers are opting for these proven techniques to save time, money and precious resources.

We thank all of you for taking the time out to pen your views on these current topics, and look forward to your participation in our upcoming issues.

Happy Reading!





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## Ar. Brinda Somaya **Somaya & Kalappa Consultants**



I believe there is a need for professional concern with the environment and an improved quality of human life for all Indians. We have to go beyond buildings and work with programs that transform society.

An architect's role and responsibility go beyond buildings. We have to think about many issues when we design and

build. We have to protect the built environment as well as the unbuilt environment, whether it is open spaces or the natural landscape. I believe that India already has a huge number of existing buildings that we have to recycle, we need to retrofit and we should restore. We cannot always build everything anew because of the embodied energy that exists in these buildings, even in the most ordinary ones. So, that's why I say that we, as architects, are guardians for the built and the unbuilt environment.

Our ancient scriptures have always told us to tread the land lightly, and that is a belief which I have had from the very first building I designed over 40 years ago. This was long before 'green' became such an important word in an architect's practice. The architectural vocabulary should determine sustainability. The relationship between architecture and the environment has historically been (and continues to be) a complex interaction of site, technology, climate, and other natural forces, building materials and the human presence. For instance, we built a school spread over 12 acres without any air conditioning, by designing courtyards, using double walls, and planting trees strategically. I feel that responding to the context is the most appropriate way. The word 'appropriate' is more apt for a practice like ours.

India is changing, the scale of projects is changing, with more ambitious and larger projects. Lifestyles are evolving, and people have higher aspirations. Educational campuses are being constructed, IT campuses, institutional buildings, recreational buildings, shopping complexes, hospitals, and many new cities as well. Availability of new materials and technologies, and more money in the country, have resulted in this growth. Knowledge with the internet has revolutionised every profession.



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## Ar. Prem Nath Prem Nath And Associates



Consistent application of sustainable architecture can bring ground-breaking changes.

With climate change and global warming depleting the resources of our planet, practicing sustainable architecture is the need of the hour. Sustainable construction is not just about the creation of a building that has a low environmental impact, rather, it is a new approach that improves the way people build and live.



Sustainable construction is developing day by day and opportunities are opening up for the industry.

Architects should implement design strategies that reduce energy consumption and minimize damage to the environment. Green architecture reduces the negative impact and improves building performance. It involves use of renewable and recyclable resources to protect the natural environment, and materials that minimize the structure's environmental footprint. Sustainable buildings manage water efficiently by collecting rainwater, and preserve natural energy such as solar or wind, for reuse. Use of eco-friendly materials also help with purification of the air.

Sustainability starts from the beginning: from using non-polluting construction techniques to using local building materials.

We have designed many gold and platinum award-winning green buildings as we believe that sustainable architecture is a simple style based on common sense architecture. Deep projections, roof insulations, concrete, etc are simple features that can be incorporated to enhance a building. I was also awarded the Hudco Design Award 2015 under the Green Building category.

Construction of sustainable buildings comes with lower operational costs because fewer resources are required. Precast concrete construction is more economical and practical for producing large numbers of building components. Modular construction that involves construction of the components off-site, under controlled plant conditions and then assembled on site, generates less waste, creates fewer site disturbances, and enables completion of projects in half the time compared to traditional building methods.



## Prof. Charanjit Shah **Creative Group**



**Steel and concrete are the materials of the future.**

Building materials and construction techniques keep on changing with new technologies, innovations, and greater understanding of their application potential. Steel and concrete were initially being used in isolation but in the current times we are using both these versatile materials together, and with a composite dialogue between them, their performance has been highlighted even more.



Chennai Airport



Kongu Engineering College

When steel and concrete are put together, they can work on modulation basis, and since now-a-days, 90% of project execution is being done at the site, including the fabrication and assembly of the building components, the two materials are enabling precast / prefabricated construction. With the use of precast concrete, prefabricated concrete, and post-tension concrete, the construction is faster, more economical and of superior quality.

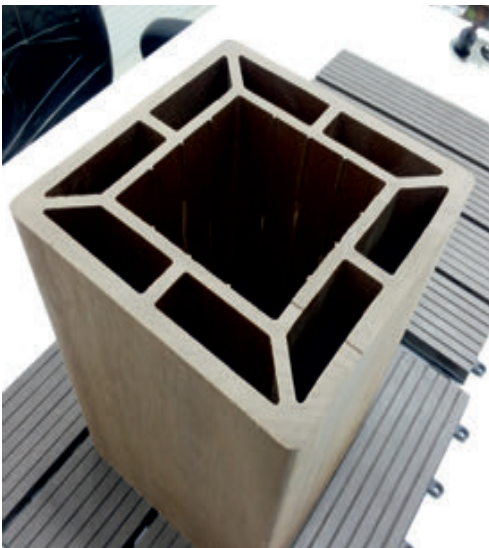
**Technological innovations and engineering are adding new dimensions to construction and are enabling the creation of architecture as engineering marvels.**

Steel and concrete are especially desirable for constructing large scale projects with large spans, and using the latest technology for creating column-less open spaces, such as in railway stations, airports, metro stations, stadiums, large office complexes, etc. About 15 years ago, in our first global project – the Chennai Airport - we had the largest cantilever of 25 meters and large steel trusses in the terminal building, and half a meter diameter pipe of 16mm thickness that was hot bent, for the first time in India. We are using steel and concrete girders in flyovers, the thinnest girders of about 400 mm thickness with 80 mm wafers, hollow girders, and box sections in steel cured concrete.

A combination of steel and concrete can give rise to many creative ideas and solutions. These materials are extremely effective and maintenance free, and the challenge lies in looking into their various technical aspects during application and for building structures with long lifespans.



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Pergolas are popularly known locally as 'Gazebo'. For villas, gardens, colony plots, restaurants, tea posts, road side refreshment areas Pergolas are becoming favorite because of its woody look. Made with wood and polymer with different surfaces like 'sanded' or 'brushed' or 'embossed' pergolas are perfect replacement of conventional wooden structures. It is available in customized wood alike colors.

## Ar. Ponni M. Concessao **Oscar & Ponni Architects**



The concept of Smart Cities in India has become a reality amidst shifting technological trends and is pegged for tremendous growth.

As cities compete globally, the Smart City has been touted as an important new strategic driver for regeneration and growth. With consistent efforts to integrate technology in all aspects of public life in addition to focusing on a sustainable ecosystem, Smart Cities are set to witness progress and receive support for faster implementation. Smart Cities are employing information and communication technologies in the quest for sustainable economic development and the fostering of new forms of collective life. This has made the Smart City an essential focus for engineers, architects, urban

designers, urban planners, and politicians, as well as businesses. Sectors such as healthcare, public sector, utilities, and transport are set to be revolutionized with an equal stress on security systems to ensure a safe environment alongside a seamless one. The COVID-19 pandemic, mounting sustainability commitments, resource constraints and continued urban growth are making a new case for investment. It has never been more crucial to make cities smarter, more efficient, and sustainable for their residents.

With all buildings required to be net-zero carbon by 2050 to meet the goals of the Paris agreement, the demand for smart buildings is increasing.

Decarbonising the sector is one of the most cost-effective ways to mitigate climate change. Commercial buildings account for 20% of energy use in the US, 30% of which is wasted. Smart solutions can transform them into energy-efficient buildings whilst also automating the way they are managed. Government policies, teamed with financial incentives for companies to invest in smart buildings, are crucial to help transition toward accessing major energy savings whilst improving energy services.

Access to clean water and the ability to treat wastewater are growing concerns for cities, along with how to better manage waste. Water losses and flooding are also an increasing threat, with the impacts of climate change and rapid urbanization. Urban planners are being forced into upgrading ageing drainage systems - a need which is bringing smart solutions to the fore, including leakage and pollution detection and predictive maintenance planning.



## Ar. Reza Kabul **ARK Reza Kabul Architects**



Projects are being designed keeping in mind the social dependency, with spaces that encourage community interaction.

The past year has highlighted the necessity for social and communal interaction. We have, as humans, always been social and inter-dependent by nature. And during the months spent in the confines of our homes, we have realised the importance of basic liberties which we take for granted. It has also taught us the need for neutral spaces that allow people to interact.



Courtyard by Marriott Nashik



Courtyard by Marriott Nashik

Apartment sizes in metropolitan cities like Mumbai are occupied by multiple users, be it families or flat mates. The common social spaces allow you to entertain and interact with those around you. Open foyer layouts and terrace gardens are made accessible to all the residents. These open multi-functional areas can be used privately or to interact with guests and neighbours without putting the home at risk of direct contamination.

**Gated townships have become one-stop solutions in dense cities where open spaces are scarce.**

While several townships are envisioned to accommodate functionality and services under one roof, a common design philosophy ties the entire concept together. This also adds a sense of uniqueness to the habitat. Township designs can range from cultural architectural influences such as Spanish, Greek, and Mediterranean, to interest-related inspirations such as sports, arts, or even something as necessary as open spaces. As a design philosophy, we often emphasise on the value of open spaces as they help in creating a physically and mentally healthier and a holistically productive lifestyle.

We designed one of the first organized developments in Ulhasnagar – the Regency Antilia as a gated-community with a holiday home vibe. The 65-acre development has about 25% landscaped and public spaces. The advantages of a gated township include additional security, amenities, access to public spaces; etc, but the main advantage, we believe, is the open landscape.



## Ar. Nirmal Mangal **M Moser Associates**



Sustainable construction is primed for a paradigm shift in how we view and manage sustainability, which includes wellness and resiliency.

Architects and designers are the agents and leaders of change. The design industry, working with the construction industry, should collaborate more proactively to provide solutions for the environmental crisis, respond effectively to the call for climate action, and help create a net zero, positive built environment. One possible approach would be to increase use of modular fabrication which reduces waste and abortive work in traditional construction.

New building technologies like precast / modular construction offer viable alternatives.

The aim of modular, precast, and prefab technology is to create viable alternatives and options for the design and construction industry to explore and experience innovation, new methods, and technologies. This knowledge base will enhance productivity, attract potential projects, and be more profitable. Although precast construction has been in India for a couple of decades, the focus of the precast industry has been

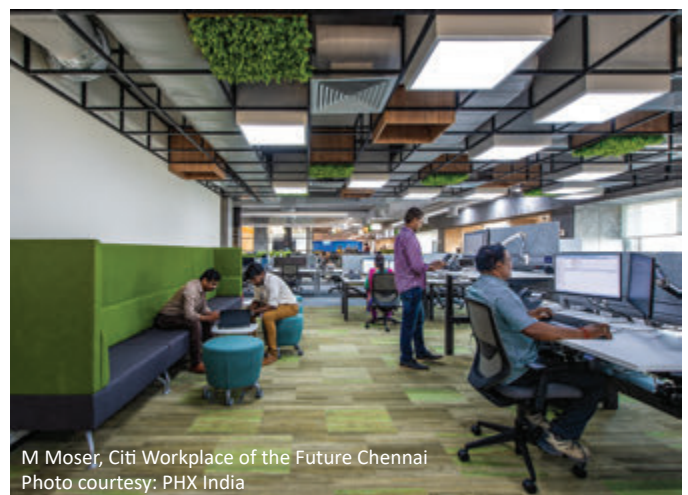
bridges, elevated metro rail systems, electric poles, and limited components of utility building systems. However, the precast industry holds a lot of potential for the construction industry as precast building systems would be ideal for building car garages, long span structures, structural and architectural façade systems for both low- and high-rise structures.

Globally, Computer Aided Manufacturing and BIM technology have reduced fabrication time, provided the ability to scale up production, and produce higher quality structures and façades. Even with unfavourable manufacturing related taxes and transportation costs, the precast building systems are more economical, plus they achieve a higher level of quality, and require little or no maintenance.

Modular construction consists of many parts of building systems like precast structures, façade systems, curtain walls, stone cladding, millwork, and plumbing stacks for hospitality systems. Many of these components and assemblies are fabricated/ manufactured by automated/semi-automated machines, resulting in better quality and shorter fabrication time.

The smart city infrastructure should be based on sustainability and minimize carbon footprint.

The Indian Government has instituted the Smart Cities program for many cities in India with marginal success. The new understanding of Smart Cities includes not only a robust IT infrastructure but also well-designed utility infrastructures like roads and highways, transportation, water, sewer, drainage, and power. Such efforts will reduce loss of productive time in traffic congestions, reduce air pollution by minimizing use of diesel generators, provide incentives for solar and wind power generation, and for recycling and efficient reuse of water.



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# Ar. Dinesh Verma **ACE Group Architects**



The year 2021 should see us moving towards net zero where we bridge the gap between the utilities consumed and those produced. We should be looking at technology which helps in reducing the consumption of water for construction and save it for drinking and other important uses.

The design of environments, especially for learning bestows an extra responsibility on architects to design spaces that encourage exchange of knowledge in varied scales.

The sharing of knowledge between various facets of design and construction includes spaces for academics, recreational, administrative, residential and transportation.

Time is also a critical factor in assembling these modules together as one project and making it a whole university or an educational campus.

Sustainability is the key factor. The knowledge compiled and applied in such constructions is not only restricted to power saving and generation, but it treats the campus as a whole - moving towards an overall sustainable environment, one that provides clean air, recycled water self-produced power, green and interactive movement spaces, etc.

**In 2021 we look forward to precast technology growing past just wall panels.**

Time and cost being a major factor, technologies help in achieving this goal. Precast panels are being used as dividers in place of walls as they provide freedom of change. Post tensioning of long span elements has become common, but in 2021 we look forward to precast technology growing past just wall panels. Large spans are the need of the day; a shift to pre-tensioned construction would save time and be more efficient. With more numbers of precast units coming up at different locations, we expect the time and cost of precast construction to reduce.

**Recycle and Upcycle will be the norm while selecting materials.**

Materials used for construction are getting a new definition; we need materials that are dependable and last to the age required, and they should be recyclable. 2021 will see more buildings with fluid requirements, since requirements change with time, and we need materials that will adapt to such changes.

**Design will incorporate even more forested green covers, courtyards between buildings, informal amphitheatres etc.**

Social spaces boost morale and foster a sense of freedom. They allow interaction between the occupants, irrespective of age or community. The importance of such spaces is trendsetting into 2021 where they will increase as the pandemic has made us realize that open spaces are safer for humans.

**2021 will see a spurt in technologies and gadgets for safety and protection against viruses etc.**

Gated communities like universities and institutions are depending largely on automation for security and safety. Till now, building design focused only on physical safety, but now, design will focus on safety from pandemics with gadgets that kill viruses and bacteria in enclosed spaces. Such technologies and gadgets will be incorporated as regular building elements.

Overall 2021 could become a trendsetting year in architecture and design, where technology will introduce newer parameters in building construction.



Spectra Convention Hall - Mysuru



Dhruv Global School - Pune

## Ar. Babu Cherian **BCA Architecture**



In an age where climate conversations are running high with global warming casting its shadows world over, sustainable construction would be a topic of special emphasis in the architectural realm in 2021.

With the construction industry being a key contributor of about 36% of the worldwide energy usage and 40% of the carbon dioxide emissions, it is high time we buckle up and embrace the benefits of converting to sustainability.

With benefits ranging from environmental, financial as well as social, being sustainable further helps conserve and reduce the overall wastage of resources.

The advent of sustainable buildings has also unlocked many possibilities with scope for experimentation in the use of innovative techniques and technologies.

With housing demand being an all-time high, the use of techniques such as pre-cast construction would pave the way in creating habitats in a faster, more efficient and sustainable manner. This provides opportunities to create acceptable housing units within a reasonable time frame, while being well within the budget, thus providing a foundation for a reasonable lifestyle for all future homeowners.

At the end of the day, any form of construction would imperatively need to fulfil and feed the requirements of a community. Living in a technologically driven era, the basis of human interaction and connection has definitely lost its importance, which has been further solidified with the advent of Covid-19 and the adaptation of a socially distanced life style. But for any community to thrive, it necessitates the coming together of its people and architecture, which is one such field that has what it takes to support community development through the creation of safe, social interactions.

It would be apt to say 2021 would definitely be the year we try to reclaim our social spaces, but in a more safe and healthier manner.

From promoting social cohesion and social justice to overcoming the stark reality of mental health issues, architecture has a profound ability to nurture the shortcomings of a society by creating spaces that have a positive influence on the overall growth of a community. After all, a community is all about its people, and as architects, 2021 should be the year we create for the community while respecting and giving back to our environment one step at a time.



Dr. KT Mathew Residence, Calicut

## Ar. Dikshu C. Kukreja **CP Kukreja Architects**



*It is imperative that we raise our standards, and with a sense of urgency, rethink our architectural approach.*

While the entire world has gotten busy with innovating techniques, materials, elements, in present day India, the idea of a sustainable design appears to be ambiguous. We can find

a trend of looking at the West for inspiration catching up with the architects. Historically, our country has been a pioneer of green design. From the stepwells in Gujarat and Rajasthan to preserve water, to use of elements such as chhajjas and jaalis to help regulate daylight and wind, our ancestors designed structures as an extension of one's living. Diverse material selection in different climatological regions also helped define a unique design language.

Air and water are two essential elements for our survival. And as we look around, we realize that more and more cities across India are very soon going to be unlivable. Through careful study, the succeeding generation can find inspiration and design keeping in mind their environment, availability of resources, and minimal waste generation.

*It is important to incorporate a multidisciplinary view to generate a more comprehensive outlook with regard to the Smart City concept.*

The term 'Smart Cities' is in vogue, and everyone is using it. Yet, the very definition of a smart city is still to be comprehended to its fullest, even by experts. People from different educational and professional backgrounds would explain this concept in different ways.

To me, a Smart City is one that is high on efficiency in every way. From sustainability and low carbon footprints to the incorporation of technology, every facet of the city is geared towards complete productivity. I have always believed that a city can only be 'Smart' if its citizens are so. Therefore, the atom of this compound called 'Smart City', rests with the Smart Citizens and that cultural evolutions needs to take place amongst all of us in order to create a more livable, a more memorable, and a more sustainable city, which we can call 'smart'.



Human Resources Development Centre, Greater Noida, Uttar Pradesh



Vallabh Bhawan Secretariat, Bhopal, Madhya Pradesh

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## Ar. Rahul Kadri **IMK Architects**



With rising concerns over climate change, increasing temperatures and pollution, the need for sustainable development is relevant now more than ever.

In contemporary times, there is an urgent need to broaden our understanding of green or sustainable buildings beyond their traditional mandate of environmental response or energy efficiency to how they interact with their inhabitants. As several studies of biophilia have pointed out, natural light and connections to nature have a significant positive impact on the health and productivity of humans.

Sustainable design should be approached through the lens of the local context of the region, and the design for the built and the open taken from indigenous building

materials, architectural language and climatic considerations. For example, when we used Compressed Earth Brick (CEB), a naturally compressed, sundried earthen block, it proved to be an extremely environment-friendly material as it was manufactured on-site using a block-making machine, achieving net-zero carbon dioxide emissions.

**Ideally, all our cities and towns should be more walkable.**

As we build for the future, we need to work on developing high-density, mixed-use neighbourhoods where one could access all essentials within a 500-metre radius from the doorstep: self-sufficient units with all public facilities and amenities available locally — from schools and hospitals to gardens to spaces for weekly farmer markets and waste segregation and recycling; units that could be administered with ease and where inhabitants would be able to walk or cycle to work, to school, to shop, and to play.

Such 'smart neighbourhoods' would reduce travel times and the need for regular inter-neighbourhood journeys, and by corollary, the high levels of carbon emissions and pollution in our cities.

**Within large-scale master-planning and housing projects, the understanding of the intricate relationship between man and environment assumes critical relevance.**

As we look ahead, we should aim to design communities that are dense enough to not only utilize resources and infrastructure effectively but allow people to be close to each other. To that end, we should consciously design open, interactive spaces of varying sizes and scales for all kinds of users across age groups — from casual sit-outs and smaller spaces for children to play, to larger open grounds for sports and other recreational activities. This fosters community interaction and relations between neighbours and their families, leading to a sense of ownership and belonging and creating neighbourhoods that are filled with energy.



Auric Hall, Aurangabad (Photo credits-Rajesh Vora)



Symbiosis International University, Pune (Photo credits- rajesh Vora)

## Sangeet Sharma **SD Sharma & Associates**



It is propagating social responsibility in architectural design when the concerns of radical participation including aesthetics is explored, that will enhance the experience of the people.

The socially responsible designs were always a part of large-scale designs and architecture for town planning and public health etc, and were primarily intended for the larger engagement of the society and the social issues. This trend of taking forward the socially responsible design is being carried forward. In fact, socio spatial planning principles is the hallmark of any futuristic and worthy planning.

In my designs, I have been fiercely approaching design to accommodate social amalgamation. For example, in my design of the engineering college of PSG in Coimbatore, the central court is not merely a unit of microclimate; the space can transform into a concert hall, and the space also fosters interactions and movements within the student community. These kinds of spaces are always accomplished by deliberate attempts to ensure human participation, besides providing a landscaped area for breathing fresh air and greenery.

**It is the responsibility of architects to be socially responsible.**

In a college hostel block in Jalandhar, I made a central open air theatre on the third floor, almost free of cost. It is a great place for students to gather for entertainment and concerts, besides studying under the sun in winter. The playfulness of the students is very contagious in this area.



NIT-Aerial View of the Hostel in Jalandhar



## Ar. Sanjay Goel **Designex Architects**



During 2021 and in the coming years, we will see many projects being executed under the Smart City Mission.

Of the hundred upcoming smart cities, many have been completed but most are either in progress or will be starting. Projects that cover the entire city will be more useful for everyone as compared to projects that are being executed under the area-based development (ABD) scheme, as the latter will provide smart solutions in one locality only.

In Ludhiana, many projects have either been completed or are in the pipeline. Ludhiana was the first city to have an IIA-Architect member/chairman as Director in SPV. The current chairman, Ar. Sanjay Goel of Designex, is contributing a lot on behalf of the architect fraternity in Ludhiana, where many projects have either been completed or are in the pipeline.

One of the best Smart City projects dedicated to the public in Ludhiana is the Water Front Development (WFD) along the famous Sidhwan Canal that passes through the city. Phase-1 was completed and dedicated to the public in Sarabha Nagar under ABD. The riverfront has a canal on one side and a leisure valley on the other with landscaping, cycle tracks, spaces for walking and exercising, an open-air gymnasium and recreational activities. Solar panels create an energy efficient environment, while beautiful lamp-posts for street lighting enhance the night view of the valley.





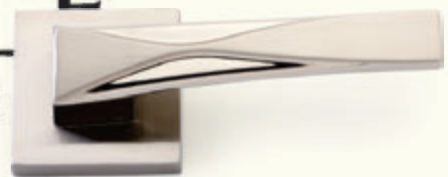
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## Manish Kumat **Manish Kumat Design Cell**



**Use of the right materials and their application during construction of a building will become even more crucial.**

Selection of glass should be done strategically, keeping in mind the directions and the play of sunlight. Double glazed units cut down heat transmittance in the built blocks. Glass can be designed to reduce heat gain and increase light transmittance; this would reduce the air conditioning needs of the building.

Bringing in maximum natural light from the right directions and at the same time intelligently planning the artificial light source is crucial when designing a building. One should have the maximum number and bigger openings in the north side for cool daylight throughout the day. Occupancy sensors can be used to help minimize energy consumption. As regards the building's HVAC system, the VRV with 30% fresh air is the best way to conserve energy and retain good indoor air quality.

Installation of solar panels will become more widespread with major state governments promoting use of solar energy for electricity generation, by giving subsidies. Rooftop solar panels along with net metering will become the trend. With the focus



on sustainability, use of low VOC paints will become more widespread. These paints are environmentally friendly as they help reduce the building's carbon footprint.

The root zone treatment plant is a natural substitute for the sewage treatment plant. Projects with open land around, such as townships and large housing colonies, can plan an in-house water treatment plant to treat the grey water. Specialized filters are available for filtration of rooftop rainwater, which is then collected in storm water tanks and can be used for landscaping and for flushing toilets. The overflow of storm water tanks goes to water harvesting pits. Storm water tanks are different from the underground water storage tanks. Many fixtures are available in the market for reducing water usage. These fixtures use aerators (mixing of air and water) and advanced technologies to reduce water consumption.



# Ar. Maninder Kaur, Ar. Mohanbir Singh Ar. Ravideep Singh **CDA**



**Resilience and Flexibility will bring about the shift in the most critical dimensions of architecture and design.**

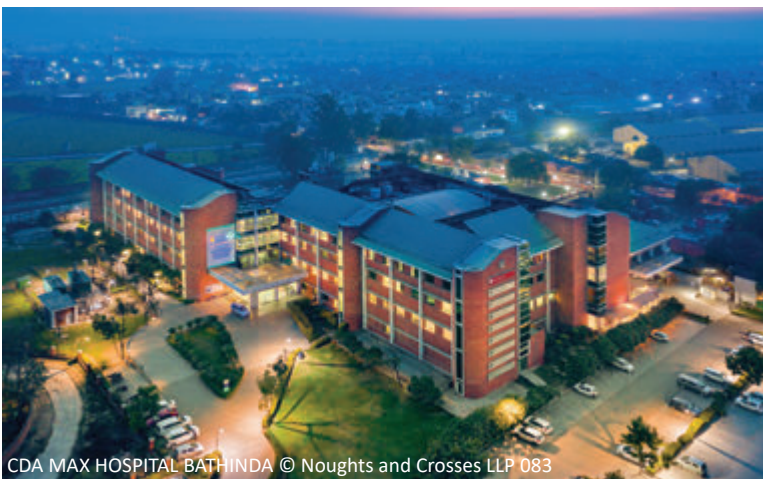
Buildings that can adapt to alternate functions, capacities, and scenarios will gain precedence over merely utilitarian buildings. For instance, hospital designs will have to account for a surge in the number of beds at the time of unprecedented situations. Critical public buildings, like healthcare facilities, should be designed to accommodate future needs and adapt to varying degrees of social distancing. Technology and tools like Digital Twin are likely to become a fundamental resource for making our buildings future-ready.

**2021 will reinforce sustainable practices, not only for our planet but also for the inhabitants of our buildings.**

With technology advancing at an unstoppable pace, the prevalence and enforcement of Green Building norms like LEED, GRIHA, LBC and others will become mandatory. The goal will be to go above and beyond designing a net-zero building. Architects and developers should consider going carbon negative, carefully factoring in the embodied energy component and operational energy consumption while selecting materials and finishes. Technology will play a key role in achieving sustainable solutions for the built environment.

**Creating congregational and interaction spaces through activity generators will assume greater importance.**

The Covid-19 pandemic and its consequences on the way we interact with each other has compelled us to re-learn the significance of spaces that encourage community engagements. Community interaction is paramount for human culture and its existence. Thus, as designers, it is critical to thoughtfully design spaces that enhance the user experience through the built environment. The driving factors for the design and development of infrastructure will shift to location, efficiency, and the spatial quality of interaction zones.



CDA MAX HOSPITAL BATHINDA © Noughts and Crosses LLP 083

## Ar. Nilanjan Bhowal **Design Consortium India**



Sustainability has to be seen as a moral responsibility by each one of us. It is a big question on our own existence and the action has to be reversed.

Consciously designing buildings should have been a staple for architects from a long time. Talks initiated during the CIAM moulded the conversation about architecture being responsible. It was a long journey from the early whispers to being acknowledged at a level that it is today. Ever since I have known architecture I have always been interested in its impact. Every project that we have worked on has had a courtyard, a well-planned ventilation system, while respecting the site and its natural setting.

Environment friendly architecture and courses on sustainability are mandatory in architecture schools, making young architects aware and well equipped. I have full faith that the architecture of tomorrow is in good hands. We can see a brighter and a carbon negative future.

As an architect, creating a sense of community is the key to a good building.

Even though, formally, we have just started to highlight theme-based gated townships, but if we dig deeper, the concept has always been there. This is because, as humans, we tend to stay closer to like-minded people - who make us widen our horizon and open our vision to a broader space. As an architect, this is my ideology behind making a built environment that inspires and make its residents explore their potential.

Within the concrete jungles of the city, we often tend to forget the community. A house that brings the family closer, an office that unites its employees and employers, a garden that brings joy, these are all success stories. An architectural sketch without humans is way less interesting and is even difficult to relate to. In all of my projects and the projects of different architects that I have admired over the years, a plaza, a small nook, a courtyard, a common space has always been a prominent and a very important ingredient. Architects have embraced it and today I see an increased focus on the quality of these spaces as well.



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## Ar. Kiran Yadav **Morphogenesis**



Multi-use of expansive spaces that are large enough to safely accommodate many functions and people while social distancing could be a game-changer and could shape the community in a more fruitful way.

These unprecedented times have allowed us to think outside of the box and creatively look at how we view and utilize the public realm. Therefore, it is time to reconfigure cities into more ecological and equitable spaces and create more recreational avenues that people can enjoy at ease.

Social Spaces serve as a strong catalyst in building social cohesion in the community. These spaces have their physical characteristics and various intensity of activities. We need to reassess how we live in our city squares and on our streets. Retail and commercial leisure activities dominate the city centres. The culture of a place depends on how these spaces are planned and used.

Shops along the streets, which give people a sense of outdoor space with easy access, will be preferred. We will need to relook at the width of lanes in front of shops and create paths for walkers, bikers, and other vehicles, emphasizing on better



circulations and connections of inner lanes for improved walkability on these streets. The outdoor plazas shall be designed with more green divisions in the landscape to exercise social distancing whilst creating small intermediate bays for families and kids to play and be one with nature.

**It's time to look afresh at cityscapes.**

One may consider converting large parks into interactive plazas, dining spaces, picnic hubs and small shopping markets towards the later part of the evenings, giving people of different age groups an opportunity to enjoy the outdoors and engage in various activities. Additionally, there are therapeutic benefits of quiet time spent on a park bench for the elderly. Picnic hubs would involve young people and children to communicate, encourage learning of different cultures and identities, and develop bonds that form the very essence of a community.



Gran Carmen © Shimroth J Thomas

## Ar Anurag & Ar. Pallavi Pashine Salankar Pashine & Associates



The concept of immersive user experience has given way to one of the most glamorous trends in Real Estate today - theme-based gated townships.

Some structures are designed to stand out from among the rest, while other designs give users an experience beyond their imagination. Theme-based gated townships built around Mediterranean, Singaporean, or Roman etc designs that replicate the classical architecture from the respective cultures, fabricate an experience that is aesthetically unique and dreamlike for the buyer.

The main motive behind developing smart cities is streamlining the infrastructure and public facilities in the concerned area.

The development of smart cities will help in creating a sustainable environment by preventing wastage of natural resources with use of technology, and help citizens live a hassle-free life with a lower cost escalation. They will uplift the standard of living, improve business opportunities, and bring in investors.



But is India ready to include Smart Cities? To answer this question, the country needs advanced technologies coupled with basic governance and modern infrastructure in order to cultivate and sustain a viable smart city module. But the challenge remains that in developing countries like India a huge percentage of the population is still dependent on unskilled labour and daily wages.

Introducing social spaces in a community brings defined physical aspects in a neighbourhood.

The inception of parks, kiosks, sidewalks promote social interactions and neighbourhood security. Practical references can be seen in the book "Death and Life of Great American Cities" by Jane Jacobs. Bus stops establish everyday interactions among people and make the streets more lively and safer. Parks become gathering spaces for parents with children to meet for walks and spending time outdoors, which results in higher community interchange. Small businesses that flourish in a community neighbourhood become highly used main spots for social interactions while creating a sense of familiarity with the shop owners.





# Ar. Debaditya Goswami & Ar. Shivani Khanna Studio Crypt



Numerous 3D printing solutions for construction are being foreseen.

Architects and Planners envision sustainability taking two very different dimensions, where one direction is technology and software-based pertaining to robotics, machinery and engineering operatives at sites. The other dimension is going back to our roots - leading to a reinvention of vernacular and passive technologies to aid sustainable solutions and create net-zero environments. We have already started seeing the influences of vernacular takeover in the architecture industry in the last two years.

Artificial intelligence-based construction activities have become a new go-to today for infrastructural development of smart cities.

New Delhi is already considered to be a smart city wherein the citizens are provided with CCTVs and other security systems, free wifi, and decent



infrastructure amenities, using which, the traffic, population movement etc is easily tapped. The authorities now envisage a similar infrastructure for tier-II cities.

This construction method is mostly dependent on comprehensive and efficient project management systems for seamless planning of construction. For instance, the SPOT robot, that can self-record and analyse daily site progress is undergoing vigorous testing and initial applications. This new-age technology, coupled with carbon neutral infrastructure amenities using large scale solar PV and mandatory recycled water, will take over the future development of new cities in India as well.

As far as social spaces that encourage community living are concerned, the pandemic has largely affected the way they used to be designed.

At least for the next half-decade, people at large look forward to more outdoor-based well-ventilated spaces like pavilions and sit-out areas like outdoor cafes. The idea is to avoid staying in improperly ventilated, unhygienic indoors, which further dictates the design language for outdoor and community spaces.

India has intrinsically been an outdoor-based community where all 'grams' were found with 'chabutras' under a banyan tree, or windy oriels facing street alleys, serving as interactive spaces in villages and towns. With the introduction of air conditioning systems, people began living in an artificially controlled environment. The global outbreak has transformed lifestyles teaching us once again the significance of fresh air, wherein the local city parks are seeing a major revival. The notion is to outline social spaces which are safe and at the same time, not controlled by suffocating building environments.



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## Ar. Ekta Ahuja **Tejomaya Architects**



The world of design is experiencing a growing interest in sustainable trends such as recycling, upcycling and repurposing.

Architects and Interior designers should always be guided by sustainable and biophilic approaches. Heating and lighting are the two most crucial factors. Since most of the buildings heat escapes through windows, it's important that the installed windows are of high quality and provide good insulation.

Instead of discarding 'old-fashioned' objects while they are still functional, creative ways to reuse them will give them a new life. In one of my projects, we reused the scaffolding bamboos to create roofing on the terrace, which not only keeps the area cool, but also adds a rustic vibe to the space.

Social spaces encourage spontaneous interaction amongst the residents and where they can experience a deeper connectedness.

The clubhouse/pool area is the most recognized public gathering space in a community. It is usually a central feature, hosting birthdays, celebrations, and movie nights. It often helps define



the character of a neighborhood. Indoor play areas also should be planned where people can meet and enjoy a game together.

A city will be truly smart when every citizen can use automation as a necessity and not as a luxury.

Leaving aside the infrastructure planning for creating smart cities, I think automation can play a bigger role in making the citizens live the concept of smart cities in their everyday lives. Features like controlling lights, air conditioners, door access etc are already being used well, and can be upgraded further. Home automation helps to control electricity usage in a big way, which is the need of the hour. Nevertheless, we are all awaiting the new reality of connected vehicles and autonomous cars and Amazon deliveries by drones, which are being geared in and will certainly gain traction in 2021.



## Ar. Tripat Girdhar **The Design Studio**



Due to rapid urbanisation and increase in the city's economy, business, and population, the concept of integrated townships is set to become more common.

Integrated townships are necessary to relieve pressure on the existing city's infrastructure such as the roads, water supply, sewage, garbage disposal, and pollution. Integrated Townships have been described as a possible response to this problem, with metropolitan areas becoming increasingly crowded and unable to meet future growth potential. As a result, a clear identity must be established for the city's potential growth to be successful.

In addition to green and open spaces, an integrated township offers a strong mix of residential and commercial spaces, well-developed modern facilities, and recreational amenities.

The evolution of a healthy township will promote a wholesome life without pollution.

With some key principles, the focus of a township creation should be on ensuring safety and protection. It promotes walkability, connectivity, mixed use and diversity, mixed



housing, quality architecture and urban design, traditional neighbourhood structure, increased density, green transportation, sustainability and better quality of life.

Integrated townships offer self-contained residential units with schools, hospitals, stores, restaurants, cafes, parks, landscaped gardens, retail outlets - factors that lead to a more progressive lifestyle. These townships also aim at providing high-quality affordable housing.

Mews Gate designed by us is an integrated township with a mix of commercial and retail stores, low and high-rise residential units, and green areas that include a sports park. The project focuses on the development of a long-term living ecosystem supported by modern infrastructure that promotes a healthy, relaxed environment, encourages people to walk to work and school to minimise vehicular traffic and pollution within the township.



## Ar. Akshay Selukar **H&A Consultants**



People are heading towards sustainable construction and this is bringing opportunities for the real estate and building materials industries too.

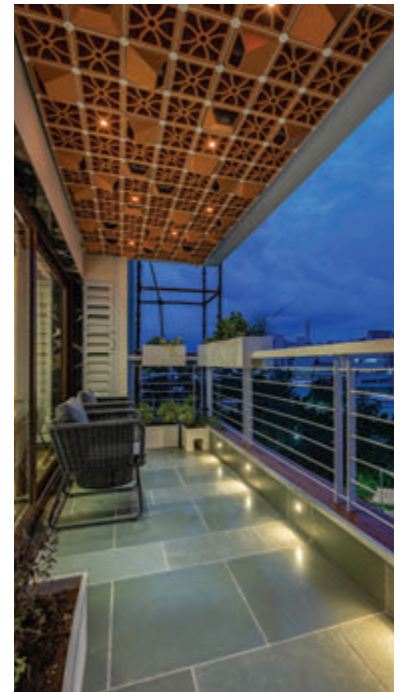
A building speaks about its existence, its history, its construction process, and how its creator made it different, the materials used, and its foundation.

Sustainable construction is creating a structure by using processes that are eco-friendly and efficient in the building's life cycle. It also aims at reducing the impact caused by construction on our health and environment.

This can be achieved by using materials that have eco-friendly properties and are sustainable. Activities that involve construction, operation, maintenance, renovation, and deconstruction can offer remarkable inputs towards this objective as a large quantity of materials is required by all these segments.

We must take a fresh approach towards building better structures with a focus on the buildings' lifecycle and utility along with resource management.

Sustainable construction must meet the three main elements: environmental, social, and economical. Benefits of sustainable construction include cost budgeting, waste reduction, optimum and wholesome utilization of materials, environmental management, enhanced output, and a better standard of living, meeting contemporary market requirements with scope for future innovations.



## Ar. Shobhan Kothari **ADND**



Architects will realise that the future designs of buildings will have to be sensitised even more to the needs of the inhabitants.

In our everyday life we experience architecture daily from the place we reside, during our commute, and at our workplace. This experience is further heightened in our travels and vacations. To say spaces have a direct impact on us would be



an understatement. Spatial designs are one of the single most contributing factors to a healthy state of mind.

Take for example last year when people were trapped indoors due to the virus, our homes were not only a refuge for safety but also became multifunctional spaces for home schooling and office work. The design and layout of these homes became a priority for the inhabitants and thus for the designers to realise that the future designs of buildings will have to be sensitised even more.

So far, the architectural landscape has been sporadic in its implementation of designs which encourage social living/interaction with very little emphasis on sustainability.

Buildings of today and the future will have to bear these two factors at the early stages of design and implementation. Governing by laws will need to be tweaked to make provisions that encourage social interaction. We live in a populated country. We need to provide for spaces that cater to the influx of people and are yet lenient for social interactions to happen. These spaces need to be conceived both outside the buildings and between buildings as much as within the building itself. Inclusion of nature as a driver for better social wellbeing is widely acknowledged. Biophilic designs are now being embraced. These increase social interaction and also the well-being of individuals.

Far too often the responsibilities with sustainability have been shrugged. Time has come to make the building more energy efficient. A strong mindful approach on sustainability is the way forward. Design and designers can no longer turn a blind eye to these larger issues which will have a long-lasting impact on the way we live and in creating a better environment.

## Ar. (Dr). Harish Tripathi & (I.D) Jyoti D Tripathi **Arhta**



**Sustainability is a major concern. In 2021, one should aim for maximization of resources and keep things 'future ready'.**

Architects should design with sensitivity towards the topography and any special features at the site and maximize the benefits of climatic conditions. Design which is truthful in its existence; has a distinct personality; it is based on appropriateness and does not seek to just impress. It materializes from nature and it complements nature. A project must not be dependent on outer means for its goal of sustainability, rather, its very soul must be sustainable.

**Sustainability should not be driven by compulsions imposed by the market. It should be 'nature and natural'. It should be 'fal khao jad nahin'.**

The grand aim must be to create an architecture which is socially sensitive, utilizes nature to its fullest and gives back to it, takes care of human values, utilizes technical advancements in construction, and creates smart services and systems. The prevailing pseudo-sustainable models and materials are getting exposed; the public has started distinguishing between what is sustainable and what only maintains the facade of sustainability.

Today, a common practice is to increase the overall load of air-conditioning by creating unnecessarily huge volumes in the name of grandness and then reducing it by a meagre 20% with equally expensive methods. Calling such calculation gimmicks 'sustainability' is concerning, to say the least. Such capitalist propaganda and marketing gimmicks about sustainability is getting revealed. Corporations can no longer hide behind the mask of green; rather they should aim to achieve a sustainable goal which is democratic and suits people.

**It is high time that we recognize our true nature as an Indian and start building to cater to our real needs.**

The market driven star-rating model being popularly adhered to, comes with its fair share of maligned intentions. It increases consumerism and runs on false notions. If we strictly refer to it, our most sustainable thatched jhoparis will get the poorest of ratings - far from a platinum one. Consumers are no longer blindsided to these facts.

Historically, Indians have been practicing sustainability for the longest time. We have always relied on recycling, as well as constructing with local materials and techniques. Our vernacular architecture has always been deep-rooted in sustainability, cost effectiveness, and responding to our socio-cultural values.

## Ar. Arpan Johari **AW Design**



More than ever, now is the time to live in connected cities that run in a smart and efficient manner.

Construction is the 4th industrial revolution that we are undergoing and India being the 'world's largest construction project' finds itself right at the center of it. Being of the scale that it is at, it is a no-brainer that we be the trendsetters in adopting sustainable, intelligent construction and planning practices. Sustainability is a broad term and with respect to

smart cities it extends not just to address the environment, rather, it also encompasses the social structure and equitable living for its residents.

A building impacts lives of its users much beyond the plot boundary. We should look at it as an all-encompassing, systems-based stepping-stone to building a city. This can be done combining conventional construction techniques, material use with ICT and linked logistics, which can streamline the way we build and have the lowest possible carbon footprint. Most of our cities have grown organically. More than ever, now is the time to live in connected cities that run in a smart and efficient manner based on statistical data inputs. The idea of integration of municipal services, public transit, waste management, transportation, energy grid, healthcare and education with the user being the core focus would be seen as being more mainstream and the basis of sustainable and smart cities.

Simple interventions like supplying construction waste from one site to back fill another would not only reduce landfills, but also economize transactions as stakeholders save on costs of disposal and buying of such waste. With building transit systems, a simple ICT intervention like real-time public transit information, and availability of accessible transit stops can allow users to plan and cut down on travel time, making these systems useful and urban living equitable in the true sense. Ability to generate and sell electricity back to grid via Net metering mechanism helps one reduce energy spends.

Free flowing landscapes between buildings would allow for social spaces that promote interaction between communities.

Increasing FSI in business hubs of cities will allow for vertical growth, keeping the horizontal available. This would also change the density dynamics of urban areas, allowing for a

more formal mixed-use living set-up. In effect, this would increase the availability of urban social spaces multifold. Scale of these spaces would be very different to what we conventionally have in a housing society. Free flowing landscapes between buildings would allow for social spaces to act as a contemporary interpretation of 'chowk' and 'nukkad,' fostering and promoting interaction between communities, allowing seniors and children to have safer, vehicle-free spaces to spend time in.



Metal Refinery, Ahmedabad



## Ar. Kanhai Gandhi **KNS Architects**



Architecture and design are becoming even more global, ecological, and inclusive, with open spaces, natural materials, simple lines, and decor that encourages relaxation; these features are going to shape architecture.

For many in the design community, the rapid spread of Covid-19 has made them reevaluate their life's work, and what it might mean to design for a world that will never be quite the same, especially when it comes to how we use large public spaces like airports, hotels, hospitals, gyms, and offices. Someone has rightly pointed out, that it isn't the first time that designing will be affected by a disease; however, Covid-19 has been a catalyst in the process towards advancements in architecture and design.

The focus of designing has shifted to prefabricated solutions - leading to more off-site and machine work rather than onsite work and thereby making construction faster, more economical, and efficient.

Concerns about future viruses will encourage architects to design with an eye towards creating more open spaces within townships, residential societies, and offices.

At a micro level, planning houses with individual areas has increased the size of the apartments, while at the macro level, the importance of public spaces within the residential societies has gained significance. Under the open space concept, an improved fluidity between spaces needs to be achieved, with maximum light between the spaces and better integration between the rooms in an office or home.

Public spaces will move towards more automation to mitigate contagion. There will be increased usage of touch-less technology such as automatic doors, voice-activated elevators, cell phone-controlled hotel room entry, hands-free light switches and temperature controls, automated luggage bag tags, and advanced airport check-in and security.

Upcycled materials add to the sustainability factor and help in conserving our natural resources.

The trend of using upcycled materials is seen as a cautious effort towards sustainability within the design fraternity. For instance, retouching vintage furniture to give it a modern look, re-using old doors and flooring during redevelopment of a building, etc, is seen as responsible architecture.

There is a sense of wellness arising in people; they want clean air and water, and greenery. Wellness is more than being free from illness; it is a dynamic process of change and growth; it is a state of complete physical, mental, and social well-being.

## Ar. Sumit Dhawan **Cityspace'82 Architects**



Sustainable construction, which implies the utilisation of green building materials with low embodied energy, is highly dependent on the typology of the project.

Using compressed earth blocks or ACC/AAC blocks instead of the regular kiln-burnt bricks, or using Ferro cement channels as a substitution of reinforced concrete cement, are green ways of construction. Earth blocks have higher strength and



are more cost-efficient as one is not dependent on a vendor, rather, they are technically dependent on the site itself. Using AAC blocks is also a cost-effective and faster construction method. Both these materials aid in insulation such that the inside temperature can reduce by 7-8 degrees. The manufacturing process is also sustainable as these blocks are mechanically standardised. Also, there is less labour involved as the process does not include cement-mortar fixation. The water consumption is also cut down substantially as curing is not required.

**New building technologies like precast / modular construction / prefabrication is the future of construction.**

Precast / modular construction offers high precision and easier, quicker, and cost-effective construction. Use of double-glazed windows, insulated terraces, etc, are other techniques that are likely to be taken forward. For instance, a prefab steel building can be completed in a short span of two months whereas a regular RCC construction usually requires a minimum of 6 months. In fact, RCC construction can be replaced by steel, and if designed properly, it is a much more economical solution.

In small-scale architectural projects, modular doors, kitchens, windows, wardrobes, wooden floorings, are anyways in trend. The glazing which is conventionally fixed at the site can be replaced by semi-unitized or fully unitized modular glazing assembled at the factory and fixed directly at the site, serving an even better aesthetic purpose. The demand for modular cabinetry or carpentry is growing due to their time-saving and durability factor.

The Mivan method, which is one of the most economical methods for repetitive modules, is the future for vertical

construction and extensive projects like row housing. It can save up to 30-40% of steel and concrete; and eliminate seepage problems of a building while increasing its longevity.

To conclude, the appropriate procedure is to take into account different permutations and combinations with respect to engineering and economics in order to calculate an economical and viable solution.



## Ar. Manuj Agarwal **Manuj Agarwal Architects**



Any type of building can incorporate green and sustainable design principles.

Sustainable architecture seeks to minimize the harmful impact that buildings have on the environment. Sustainably built green buildings are environmentally responsible and resource-efficient, right from location selection to the demolition after its lifecycle ends. A green building uses less energy, and other natural resources, creates less waste and greenhouse gases, and is healthy for people living or working inside as compared to a regular structure.

Building green is not about a little more efficiency; it is about creating buildings that optimize the use of local materials, local ecology, and, most importantly, building to reduce power, water and material requirements. Sustainable design reduces the negative impact on the environment and human health, thus improving the performance during a building's life cycle. Careful consideration is given to water, energy, building materials, and solid waste. If you look at all these design parameters, you will realize that our traditional architecture has always been very 'green'.

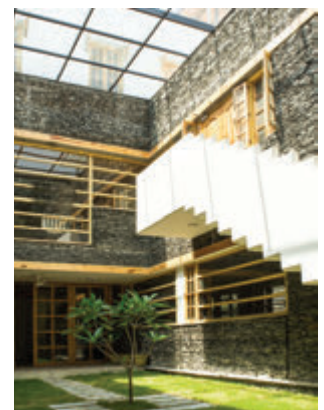


The strategy to design an energy-efficient building is to optimize the building envelope, minimize demand through serious conservation, and supply energy with maximum efficiency and using renewable materials, along with the site's micro-climate, energy conservation, passive solar heating, passive cooling, natural ventilation and daylighting. Depending on the function of the building, consideration is given to efficiency in materials, mechanical systems, and operating costs in the design process.

The government should set strict guidelines and policies for sustainable development before it's too late.

While sustainable construction has gained rapid growth worldwide in recent years, it is confronting various challenges and problems, particularly those from a management perspective. According to a report, 30 percent of sustainable construction projects experienced rework, 50 percent projects were delayed, and 90 percent required cost premiums to ensure completion.

Unfortunately, the forces of globalization have reduced implementation of Sustainable Architecture and the design philosophy with the rapid speed of urbanization taking place while the outreach of the conventional building materials has increased tremendously due to the increasing infrastructure development such as construction of wide roads, especially in the hills. There is an urgent need from the government/administration for setting strict guidelines and policies for the future growth and development before it's too late. We cannot stay ignorant anymore.



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## Ar. Kamal Roop Singh **KR Architecture Studio**



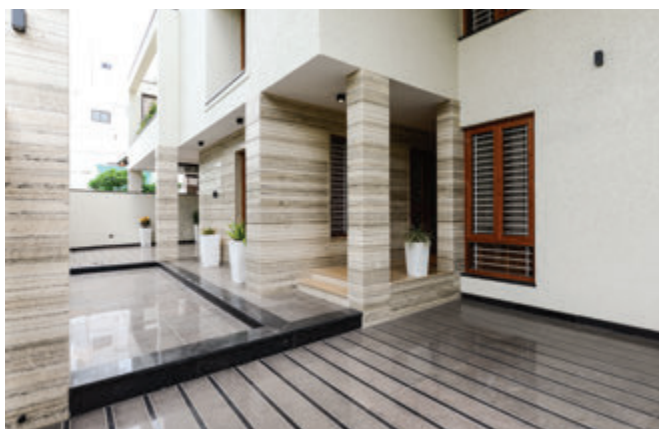
The design fraternity will have to be more eco-friendly and come up with environmentally responsible solutions.

Any product which is sustainable will have a larger life in the market. Our profession will also need to adapt new ways of working and construction strategies. Hence, the focus should be on products which are green, recycled, and eco-friendly. For example, using reclaimed wood furniture and flooring in a new



way is a sustainable choice. The same approach can be taken with lights, rugs, hardware, recycled glass, recycled plastic, HDPE etc. Rustic themes or houses with reclaimed furniture and flooring look stunning. Since the cost of reclaimed furniture will be more affordable, they will generate a greater demand from consumers.

Designers can collaborate with factories and execution agencies for endorsing signature style products, recycled-metal furniture, and other products. The furniture industry is globally a 180 billion USD industry; China has a 50% market share, while Italy and Germany contribute 20%. Indian furniture manufacturers should come up with greener alternatives for products used in construction industries. We should learn from our past and invest in the future, upgrade our technical skills and learn to use new and sustainable ways of working.



## Ajay Kapoor **Adhiraj Constructions**



**New building technologies like precast/modular constructions are saving time and money for developers.**

Real estate developers are emphasizing the use of new and innovative construction techniques to improve their time to market and deliver better-finished products. With project execution challenges and the need for providing efficiencies in construction, traditional brick and mortar construction is giving way to newer construction techniques like Mivan – an aluminum formwork construction technique, which we have used in our upcoming township project Adhiraj Capital City to build the tallest skyscrapers of Navi Mumbai. This construction technique not only ensures the maximum structural integrity of the building but also a better finish. It reduces construction time and improves space efficiencies in comparison to conventional techniques, and increases the cost efficiencies substantially.

**Self-sustainable townships fulfill an entire family's need by creating a large bio bubble offering a safe and secure environment.**

Since the outset of the pandemic, township projects have peaked in demand. After weathering the storm of last year, many homebuyers are considering relocating to self-sustained gated communities offering bigger and spacious apartments, along with recreational and entertainment amenities that reduce the need to venture out.

Given the new normal and foreseeable future requirements we have taken pains to address the requirements, of residents so that they will transition smoothly from WFH to traveling to the office and vice versa. We are also encouraging walk-to-work culture by providing grade A office spaces, residential towers with high-speed destination-controlled elevators, and a 3-tier security system for the homeowners. We also use water saving admixtures for curing, water harvesting mechanisms, and solar powered streetlights.

**Social spaces in residential complexes encourage community interaction.**

Recreational spaces within lush green areas help residents to unwind and rejuvenate by engaging in a range of activities. When people are given these spaces to bond, development of an evolved community begins. As the discerning buyers will be extra cautious regarding sanitization and physical health, these spaces in townships will also help them to increase their immunity. We have also designed and built sky lounges with curated themes that offer a barbeque zone, children's play area, Japanese-style Zen gardens, etc, for residents to spend quality time with their loved ones.



Adhiraj Capital City - Project photo - artist impression

## Chintan Sheth **Ashwin Sheth Group**



Considering the struggle to build such complexes in the city, developers are making the most of every stretch of the land parcel they acquire. For instance, our upcoming project - Avante at Kanjurmarg, is strategically designed with zero negative space planning, and amenities spread across three levels: ground, e-deck and terrace. We have adopted a proficient design philosophy resulting in more moving spaces to cater to homebuyers' requirements.

There will be a demand in residential complexes to create more social spaces that encourage community living and interaction.

With the advent of urbanization, the green and social spaces in the metropolitan cities have become a rare sight. Homebuyers are now willing to pay a premium and opt for residential developments with social spaces that provide a safe and secure environment. Such complexes have dedicated areas for children and senior citizens, allowing them to be physically active and communicate with their peer groups. Also, with increasing pollution in the metros, people are looking to enjoy the benefits of recreational amenities and a healthy lifestyle within the residential complex.

Homebuyers today are looking to upgrade their standard of living. Social spaces that include a swimming pool, an amphitheater, a fitness centre, co-working spaces, cricket pitch, kids' play area, crèche, multipurpose court, rooftop yoga and party deck, star gazing pedestal, landscaped garden, games room etc, are set to become the norm as demand by the end-users increases and competition rises amongst the real estate developers.



## Lindsay Bernard Rodrigues **Bennet & Bernard Group**



The future of an increasingly globalised world lies in green buildings and eco-friendly homes - a concept that is gaining traction rapidly.

Sustainability is the vital element in development from material selection to use of recycled content within the building structure, to water conservation and rainwater harvesting systems. I believe that at every step of home building, the elements of nature and the aspects of construction can coexist in harmony and synergy rather

than at cross purposes. Going forward, there will be a lot of innovation in housing, where sustainability and exclusivity will be the key to this new paradigm shift.

A building designed using passive architectural features can significantly reduce its dependency on mechanical forms of cooling and heating and lower operational costs to a great extent. For instance, white- or light-coloured roofs reflect the sun's energy instead of absorbing it, thereby reducing the amount of energy it takes to cool a house. Laterite stones, rich in iron and aluminium are good for insulation and keep houses cool in summers. Double glazed UPVC windows help in maintaining the internal temperature and provide good ventilation. Rock-wool for ceilings acts as an insulant, preventing loss of heat or coolness. R290 and R600a AC systems, for instance, are hydro-fluorocarbon (HFC) that do not contribute to ozone depletion. Damp-proofing technology at the plinth level, anti-termite treatment from naturally derived solvents, use of IP65 rated outdoor lighting, application of food grade coating for water storage tanks, and solar water heaters are perhaps the more visual technology.

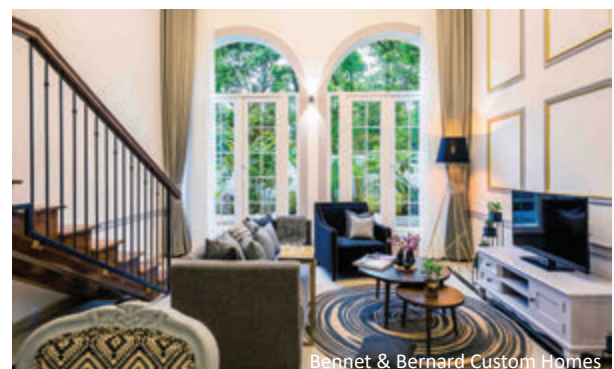
The sustainability factor has taken centerstage today for sustainable development goals.

Using natural resources such as light, wind and earth, sustainable homes aim to lower their carbon footprint and significantly reduce the amount of heat and power they consume. High roofs with large openable ventilators, windows and skylights, which allow for hot air to rise and leave and circulate cool air in the house keep the interiors cooler in summers. Also, houses that are optimally positioned and aligned keeping in mind the wind directions and sun in mind.

As developers, our endeavor is to make green a way of life, a reconnection to a natural, organic, simpler and healthier way of being, and in harmony with our spaces and the nature around us.



Bennet & Bernard Custom Homes



Bennet & Bernard Custom Homes



## Anjana Sastri **Sterling Developers**



The current focus on 'stay home, stay safe' has reinforced the importance of home ownership as living in an owned home is safer than the uncertainty faced in a rented home.

Urban dwellers are faced with myriad challenges. Looking for a home that is secure and in close vicinity to amenities is a dream for most city residents. This has created interest among homebuyers to invest in properties that are a part of a defined and well-planned community. The pandemic and work from home culture has further sensitized people towards the need for larger, multifunctional homes and holistic living. It has encouraged people to think about their choice of address as one that is comfortable and well-equipped.

There will be a rising preference to live, work, and play in controlled environments.

Home-buyers value residences that are holistic in nature with all necessities, conveniences, and recreational facilities. Thus, there is an emerging trend of people settling in well-designed



gated communities that also offer greenery, open spaces, safety and hygiene. There is also an increase in demand for premium projects that provide comfort, space, convenience, and security and are ready-to-move-in or are nearing possession. Going forward, technology will also play a vital role in shaping the Indian real estate sector.

We believe that at every step of home building, elements of nature and aspects of construction can coexist synergistically. We construct homes using materials that give expression to luxury as well as sustainability. The vision for the future encompasses property development of global standards that deliver superior value and returns to customers and stakeholders.



# Supriya Ambavane

## Tata Realty and Infrastructure Limited



The pandemic is compelling the real estate industry to look at wellness as a major priority area of building design and construction, along with on-time delivery of projects.

Newer and greener technologies like Precast and System Formwork are ensuring faster delivery of projects. Today, how we conceptualize, design, do land profiling and use satellite imageries, all are led by technology. This is helping in bringing down the overall turnaround time for projects and managing inventory better. Project management is also aided by technology like CAD, 3D BIM for design and construction management, automatic strips machine for optimizing manpower and productivity.

Increasing concern over global warming has given rise to the concept of Smart Cities.

Smart Cities use information and communication technologies (ICTs) etc to improve quality of life and efficiency of urban operation and services. In sync with this, all TRIL residential properties at TRIL are IGBC pre-certified. We also have smart features incorporated in our projects / sites to collect, analyze, and utilize data to enhance the efficiency of water, wastewater, and energy utilization, as well as our impact on



Smart Community Development; for instance, at Santorini, Chennai, a small lake has been developed as a rainwater harvesting feature to enhance water storage for the community.

Environmentally responsible builders are focusing on creating green buildings that provide health and nourishment for communities to flourish.

Owing to the pandemic, home buyers are now seeking large developments with in-house amenities, including open spaces that facilitate community interactions. Builders like TRIL that are environmentally responsible, are focusing on creating green buildings that ensure lower carbon footprint with use of local materials, energy efficiency with solar panels, energy modelling, DGU's etc; conserving water resources through reuse and recycling; landscapes that harvest rainwater, purify wastewater, protect from dust and air pollution, and grow organic vegetable, herbs and fruits within the premises.

There is low environment footprint even during the operations through use of wastewater, dust mitigation measures, low emissions by using the Chakra innovation, efficient DGs, sourcing power from solar farms, etc. They are also engaging with the local community to help build / rebuild habitats and livelihoods.



## Kushagr Ansal **Ansal Housing**



In India, the idea of Smart Cities has become a reality due to changing technological trends and is expected to develop rapidly.

Smart Cities will see success and quicker adoption if consistent attempts are made to incorporate technology into all facets of public life with emphasis on creating a sustainable environment. The availability of real-time data would greatly

speed up the process. Healthcare, public sector, infrastructure, and transportation are all expected to be revolutionized, with an equal emphasis on security systems.

Smart city projects become more viable as inconvenient costs decline. The government is increasing its spending on public security infrastructure, which is expected to gain even more attention in the aftermath of the pandemic.

**In 2021 and beyond, we will need to keep an eye on 5G as one of the biggest concepts to watch.**

As the first step of infrastructure installation comes to a close, cities will turn to Artificial Intelligence and Machine Learning to accelerate their digital transformation. These will make operations run more smoothly, quickly, and efficiently and produce reliable, error-free performance.

Data integration and homogeneity would be enabled by the interoperability of disparate systems. The foundation of smart city development and sustainability will be data science and analytics. Data analytics will be critical in smart cities for digital transformation in order to build a clean, stable, and seamless environment for civilians. It will significantly affect Smart Cities due to enhanced security, better connectivity, and processing speed.

As 5G rollout begins, the true vision of connected smart cities will begin to take shape. Blockchain technology has largely become democratized, and industry players are working to integrate it into everyday activities like transportation, financial services, defense, and real estate, among others.





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## Harvinder Sikka **Sikka Group**



Infrastructure has always been the mainstay of economic development and with major private sector investment contributing to a potential boom, infrastructure growth in India is all set to go stratospheric.

The country's rapid economic growth over the last decade has placed tremendous stress on its limited infrastructure.

Thanks to massive investments, major private sector participation and a paradigm shift, infrastructure has grown phenomenally in the last ten years, making it one of the most growth-intensive sectors of the economy. India has successfully executed highways, seen its ports expanding and airports being modernized over the past decade.

Sustainable design and construction are now more relevant when there is a mad rush to build endlessly to cater to the requirement of modern living and the fast increasing working population.

For ages, we in India, believed in building and designing buildings smartly and carefully, which was manifested in the ancient art of Vaastu Shastra. Now, when the costs for sustainable materials and products are finally dropping and they are readily available in India, building green is

really the most cost-effective kind of design and construction. The green concepts and techniques adopted by the realty sector help to address national concerns like water efficiency, energy efficiency, and reduction in fossil fuel use, handling of consumer waste and conserving natural resources. The biggest and immediate advantage is that it can enhance occupant's health and well-being.

It is always beneficial to adhere to Green building concepts while developing a residential society as it reduces energy cost by 20-30%, reduces water requirement by 30-50% and improves the well-being of occupants.

Sustainable buildings save money. Many studies prove that the payback period is significantly reduced following the initial investments and the savings because sustainable design strategies are almost ten times of the initial cost in the lifecycle of the building. Both residential and commercial buildings retain a high resale value if they include sustainable design components.

One indirect benefit is reduced demand for energy such as electric, gas and water utilities, which means that we can do more with less. The savings can result in lower energy costs over the long run as the energy sources do not need to expand constantly and the service standards could be then improved.



## Rakesh Reddy **Aparna Constructions & Estates**



The global impact of the construction industry means that the top priority is to create buildings both sustainably and efficiently.

Increasingly, developers are utilising eco-friendly materials and integrating natural sources of energy into the architectural design such as rainwater harvesting, waste management and solar power. Energy modelling tools can optimise a building's architecture and layout, so efficiency is integrated into the design. This improves operational efficiency of the buildings and promotes conservation of natural resources. Drone footage of construction sites, combined with advanced analysis and design methodologies, will allow the efficient construction of buildings with minimal environmental impact. As

consumers shift their focus towards health and wellness, this trend will only continue.

Awareness is fundamental to changing behaviour over the long term. Residents should be aware of how sustainable construction optimises the use of local materials, minimises the impact on local ecology and, most importantly, reduces power, water and material requirements. In recent years, sustainable construction has created new benchmarks for housing projects and has proved that luxury and sustainability can go hand in hand with optimization of natural resources.

**Cost-efficient building materials, including steel and concrete, are integral to construction practices in 2021 and beyond.**

With India being the world's second-biggest producing and consuming market for cement, we must look at cost-efficient sources of building materials. The cost is dependent on the growing real estate demand and logistical factors which affect supply. Cement and steel prices were steady during the previous year due to the lagging real estate market. As demand for new projects has increased in recent months, the demand for cement and steel production has likewise ramped up, which has created logistical challenges.

**Social spaces that encourage community living will be a key factor for potential homebuyers in 2021.**

The increasing trend of working from home has consumers seeking out residential areas with well-maintained integrated social infrastructure including clubhouses, parks, gardens, and sports facilities. There is also a growing demand for projects with onsite supermarkets and health centers for added convenience and comfort.



Aparna Sarovar Zicon - Entrance Gate, Night View

## Aman Trehan **Trehan IRIS**



With the current changing times and uncertain conditions, architects and developers have their thinking caps for creating futuristic communities that are smart, self-sufficient and sustainable.

There are a lot of variations and up-gradations in the current and existing formats of architectural designs, but few of them will be the trendsetting features in 2021. The focus will not only be limited to designing elements, but it will also be a major consideration to keep all the construction elements in mind, in order to keep the various parameters for creating sustainable spaces for future generations.

Sustainable Construction is the new buzz word, which has a great emphasis on using natural materials received from Mother Earth. These materials, which are used to create sustainable construction are naturally available for extraction and are known for adding value to the spaces used. However, an important aspect of procuring sustainable materials and the process of using them has to be carefully taken care of, to make the construction really sustainable.



For the upcoming smarter generations, Smart Cities are the future of urban development.

Creating sustainability in a smart way involves optimal usage of existing resources along with creating value. Infusing technology to enhance the existing structures will be the basic need for creating and developing any kind of spaces. The projects for managing air quality, waste management, water conservation and solid waste reduction will be further induced at household levels after implementing at the city levels for smooth functioning and better management.

On one side, including smart projects at initial levels for micro development are sure to create more responsible behaviour among the citizens, while, the current uncertain conditions have already created a shift in the mindset of the society to stick to the essentials.

Minimalism and cost efficiency will play an essential role in creating & constructing in the coming times. After being an avid user of AI and smartphones, constructing designs with smart materials will be the new way of living. The future is surely going to be a blend of sustainability along with the right use of technology for modernisation & minimalistic living.



# Modern Doors vs Conventional

**Sleek Boards** spreads awareness of High-Performance Doors that are now the need of the hour with the Work From Home concept becoming the New Normal



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These doors are unable to deter noise penetration, leading to distraction, low concentration, and inefficiencies in one’s office work. Despite keeping the doors properly shut, the day-to-day household noises from TV sets, music systems, pressure cookers, mixers, blenders, and sounds of children playing, etc, are causing a high amount of noise pollution. Unfortunately, these sounds can be heard during video conferencing or during important phone calls.

Doors that are installed without considering noise penetration show poor performance as they fail to reduce the sound transmission from the outside to the inside.

Besides this, we are also ignoring commonly seen defects in doors like swelling, warping, and bending, and (unfortunately), considering them as natural characteristics of doors - the way we see potholes as an integral part of roads – when the fact is that the doors are of inferior quality and the roads are poorly constructed.

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To know more, please contact Sleek Boards Marketing Services LLP on sleekboards@gmail.com or call/whatsapp on +91 7447446760



Suggested Acoustic & Fire Rating for Residential & Office Doors		
Location	Acoustic Rating (ISO 140-3)	Fire Rating (IS 3614 or BS 476 part 22)
Main Doors	34 dB	60 minutes
Bedroom Doors	27 dB to 38 dB	30 minutes
Toilet Doors	22 dB to 26 dB	N.A.
Conference Room Doors	34-39 dB	20 minutes
Management Cabin Doors	34 dB-36 dB	30 minutes
Banquet Halls	42 dB	30 minutes



# Arancia Kuchen

## Setting Trends in Kitchen Design

**Samir Patel, Co-Founder & Director, Arancia Kuchen,** discusses the trends in kitchen design and materials, and the brand's unique selling points

**What designs and materials is Arancia offering in view of the latest trends in kitchen design and materials?**

In recent times, the focus of consumers has been shifting from simply aesthetics to durability, sturdiness, and smooth functionality. To cater these needs Arancia offers a wide range of products that are low on maintenance and at the same time gives the kitchen an aesthetic appeal.

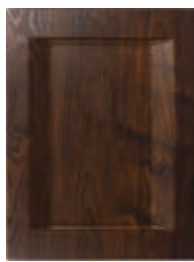
We have recently launched 13 new designs in our Membrane shutters; some of which are in combination with PU paint finish on the handles as well. Given the current preference for solid colors, we have introduced 12 new metallic shades in our Membrane range; these colours give the impression of real gold, copper and silver. Moreover, based on the current trend of seamless shutters, we are offering our seamless acrylic range of Concors shutters in marine ply.



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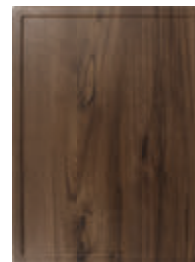
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“ We have introduced 12 new metallic shades which give the impression of real gold, copper, and silver. Interior designers can use these shades and textures in various furniture products like bedroom sets, dressing units etc, to create a well-coordinated look in the interiors

**Samir Patel**

Interior designers can use these shades and textures in various furniture products like bedroom sets, dressing units, crockery units, wall paneling, TV units, etc, for a well-coordinated look in the interiors.

### What technology / hardware fittings are present in Arancia kitchens?

We offer a wide range of hardware fittings for our kitchens and, if desired, Blum hardware as well. Our aim is to ensure that a wide collection of products are available to cater to the diverse needs of the consumers. In light of the current situation, offering anti-bacterial solutions is the need of the hour. At Arancia Kuchen, we

understand the importance of safety and are therefore offering the option of germ-resistant materials and surfaces for our kitchens. We have put special emphasis on ensuring that our product range is germ-resistant, easy to clean and maintain, and hygienic.

### What new kitchen models is Arancia offering?

Our Metallic range of foils in Membrane shutters is the latest addition to our range. These products provide a metallic and polished look to the furniture and also make the furniture indistinguishable from what real metal looks like, giving a dynamic look to the kitchen. Textured metallic shades are also available in this range which can be used as highlighters, if desired.



## What are Arancia kitchens' unique selling points?

At Arancia Kuchen, we strive to design the best modular kitchens while keeping in mind individual tastes and preferences. Our range of modular kitchens are built on the foundations of ample storage, functionality, durability, and low maintenance. Our expert team of designers come together to develop a unique range of kitchen products.

## What is the lifespan, maintenance requirements and after sales services offered by Arancia?

5 years of conditional warranty is offered on all Arancia Kuchen products. After-sales services are catered to by our franchise partners. For any manufacturing defects, customers can get the products replaced, but for parts that are damaged due to wear and tear, we charge a nominal fee for replacement.

## How widespread is the Arancia's brand presence?

Arancia Kuchen has a pan India presence with around 52 franchisees, and we have 5 franchisees in Nepal. We also export our products to Canada, Oman, UAE, and Australia.

## How does Arancia collaborate with Architects and Interior Designers?

Our franchisees have good contacts with the leading Architects and Interior Designers in their cities and surrounding areas. They keep them updated about our product launches and help them in getting Arancia Kuchen for their clients. They also organize Architect/Interior Designer meets at regular intervals in different cities. We also send them mails during festivals and to announce our new product launches. **MGSA**

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## WPC Glass House

Designed to Sit, Relax & Enjoy the Monsoons on the River Side

**W**PC exterior grade products are a direct replacement of natural wood. Made with Polyethylene or Polypropylene resins in composition with wood powder, the process creates high density wood-like profiles for different applications.

As shown in the picture, we have recently installed a turnkey project with all WPC products, including WPC Pergola, WPC Gazebo, WPC Deck Floor, WPC Wall Cladding, WPC Fencing, WPC Ceiling and Artificial Garden. The WPC glass house was installed with a variety of WPC products on the 13<sup>th</sup> floor terrace of Iscon on the Sabarmati river front in Ahmedabad.

The glass house has 3 sides installed with hardened glass to give panoramic views of the river front and the open sky from the comforts of a sofa inside. The ceiling is made with WPC wall cladding, which has been mounted in a reverse manner to give an ethnic look of a village home. The back wall is mounted with WPC fencing on MS structure. An AC and lanterns add utility and an exotic look to the glass house. Sofas provide leisure seating and a river line view, which is especially enjoyable during the monsoons.

For more details log on to:  
[www.wpc-centre.com](http://www.wpc-centre.com)



Site: Nirvana, Iscon river side, Sabarmati river front, Ahmedabad.



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## Lingel Windows celebrates 15 years in India

Lingel Window and Doors Technologies, a premium German window brand completes 15 years of providing superior, customised and modern solutions for windows across India. Over 300 employees work in the company's sales, manufacturing and marketing divisions. The 60-year-old German company has been providing high-end solutions for windows across Germany.

In India, Lingel first started in 2006 in Bhiwadi, Rajasthan. uPVC was just emerging as a window material and the market was very nascent as very few were aware of uPVC; the company later introduced an array of products. Today, Lingel is known for its innovative windows. It has completed many landmark projects and has developed a strong customer base. Over 50% of the customers come from references of old or existing customers. After introducing its range of Smart windows, Lingel has launched Security windows and doors. An amalgamation of glazing and hardware, the windows are strong, sturdy, and burglar-proof.

Says Mario Schmidt, Managing Director, "As team Lingel celebrates its success story, it also looks to the future. For 15 years we have forayed ahead in creating a happy customer base. When I first came to India, little did I know that this country would become my home. India has welcomed my brand and me with open arms and I look forward to a brighter future for Lingel and our team with all our expansion plans."

Lingel's plans include introducing new fenestration solutions, expanding its dealer base, opening new experience centres for its customers (one will be opened in Jaipur), and undertaking brand building. The company manufactures premium uPVC, aluminium, and wood windows with unique designs, besides pergolas, awnings, roller shutters, glass conservatories and more.

Lingel India has received many prestigious awards over the years. To mark 15 years of its performance in India, the company has started a campaign to raise awareness for reducing carbon footprints. The initiative took root in 2019 when Team Lingel planted samplings at Manesar – becoming the only window company in India to undertake such an initiative. Mahesh Kumar represented the brand by cycling 6000 kms across India for a month.

Established in 1959 in Ellwangen, Germany. Lingel is one of the leading manufacturers of high-end doors and windows in Europe and has opened experience centres in every major city. With a sound background in construction and building projects, Lingel provides cutting-edge technology and services, along with its complete fenestration solutions.



## Riten Choudhury, MD, Tata BlueScope Steel, receives Business Leader of the Year award



Riten Choudhury, Pune Managing Director of Tata BlueScope Steel, was honoured with the title Business Leader of the Year under the award category 'CEO of the Year 2021', at the 19th Global Edition of World Leadership Congress. This platform serves as a recognition of effective leadership within organisations, driving successful businesses.

'Leaders help transform vision into reality' – this axiom is an apt summary for Riten Choudhury's leadership and business acumen. He has been instrumental in steering the company's performance with agility and resilience for a profitable growth. Under his guidance, the company has registered remarkable achievements not only in the marketplace and financial performance but also in delivering value to customers,

shareholders and community.

On receiving the award, Riten Choudhury said, "I accept this award with great humility on behalf of the entire Tata BlueScope Steel family. In these challenging and transformational times, our team has demonstrated exemplary passion and dedication. Such a recognition is a tribute to their ingenuity, teamwork and commitment for excellence."

Tata BlueScope Steel is delivering advanced technologies in colour coated steel through sustainable, world-class products and solutions for the construction fraternity, and is present in almost all progressive segments such as infra, manufacturing, commercial, residential and across geographical locations.

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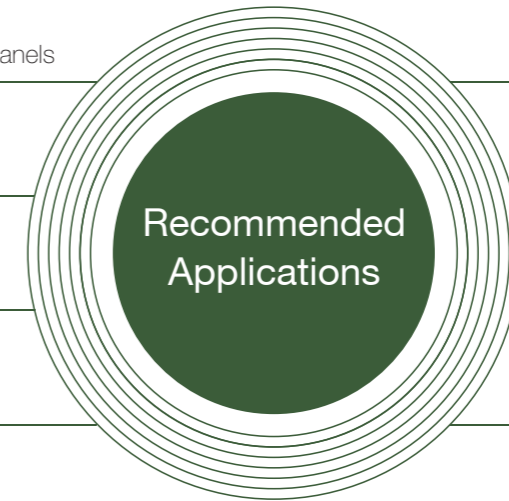
High end packaging

Furniture and interior design

Crates, internal structures, bins, boxes

Outdoor furniture

Cabinet making



Recommended Applications

**Greenpanel Club Plywood with Life time guarantee**

Greenpanel Club Plywood is a premium quality plywood made of select hardwood species based on density, bending strength, high impact resistance and surface finish characteristics. Engineered to deliver superior and ultimate performance. It is 100% both side calibrated and double surface sanded for superior buffed surface. This plywood is constructed with boiling waterproof, extremely low emission adhesives for greater eco-friendly plywood. It is stable, strong, durable and free from warping, twisting and cupping. The plywood is manufactured using Quadra Pro technology to ensure uniform distribution of moisture and adhesive. It is double calibrated for uniform thickness. It goes through 3 level of preservative treatments with glue line protection to ensure it is borer proof, microbiological decay resistant and termite resistant. Greenpanel Club Plywood ensures lifetime durability and its perfect for most building and structural applications.

11. Dimensionally stable strong and rigid
12. Zero core gap and no overlap
13. Innovative and advanced glue line treatment (GLT) for termite protection
14. Borer and termite proof
15. Surface treated with anti -bacterial, anti -fungal and anti -virus nano technology
16. Resistant to warping
17. 100% Calibrated plywood allows easy surface treatment
18. Easy to machine and fasten using conventional wood working tools and fasteners
19. Wide size and thickness range available
20. Superior nail and screw holding ability and carpenter friendly

**Make your favourite furniture last forever with Greenpanel Club Plywood.**



## Greenpanel Club Plywood

Your partner for life

Let's create beautiful spaces with Greenpanel Club Plywood. When you look at furniture as a work of art, you know not to compromise. This is the reason why we start the cycle of no compromises, right from the scratch.

Greenpanel, the largest wood panel manufacturer, is committed to bring the most advanced products across its portfolio to cater to the rapidly evolving needs of India's interior industry. From leading architects, interior designers, dealers and to your trusted contractors, our products are trusted choice of everyone.

**Wide range of Plywood, Blockboard and Doors**

- Club Plywood
- BWP Plywood
- MR Plywood
- Gold Plywood
- Accurate Plywood
- G PRO 710 Plywood
- G PRO MR Plywood
- BWP Blockboard
- MR Blockboard
- Flush Doors

**Quadra Pro Technology**

We, at Greenpanel, take pride in being the pioneers of the revolutionary Quadra Pro technology, a 4-stage, multiple steps manufacturing process, that ensures no blisters, de-lamination or warping so that you get the perfect piece of plywood.



\*Terms & Conditions Apply.

**20 reasons why you can't resist Greenpanel Club Plywood**

1. Quadra Pro technology
2. Life time guarantee\*
3. An IS 10701 certified product
4. Structural grade plywood
5. Environmental friendly, CARB P2 compliant
6. 100% Red composed core
7. Full Panel Full Core (FPFC)
8. Excellent strength and load bearing capacity
9. Extremely durable
10. Weatherproof and boiling waterproof



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- Anodised & electrostatic powder coated aluminium doors, windows & partitions etc.
- Fully Automatic Vertical Folding Doors of width upto 14 metres and height upto 6 metres
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# Glazing & Hardware

## Type

### LPG 11 – 11 mm thickness

Lingel - Panzer - Glazing  
Recommended for P6B as per EN356

### LPG 14- 14 mm thickness

Lingel - Panzer - Glazing  
Recommended for P6B as per EN356

### LPG 18 ULTRA – 18 mm thickness

Lingel - Panzer - Glazing  
Recommended for P7B as per EN356

### LPG 20- 20 mm thickness

Lingel - Panzer - Glazing  
Recommended for P6B as per EN356

### LPG 25- 25 mm thickness

Lingel - Panzer - Glazing  
Recommended for P6B as per EN356

### LPG 25 ULTRA - 25 mm thickness

Lingel - Panzer - Glazing  
Recommended for P7B as per EN356

### LPG-X

Upgrade your existing Lingel  
security glazing to LPG performance

## Type

### LSB 1

LINGEL SAFE BOX hardware  
to upgrade your existing Lingel window  
Recommended for RC2 and RC3  
as per EN1627-30

### LSB 2

LINGEL SAFE BOX hardware  
for your new state of art  
Lingel - security - window recommended  
for RC2 & RC3 as per EN 1627-30



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