THE FUTURE OF CONSTRUCTION IN OMAN

USING MODULAR CONSTRUCTION FOR IMPROVEMENTS IN COST, WORKFORCE ENGAGEMENT, AND IMPROVED SUSTAINABILITY

MEC

QUANTITY SURVEYING
PROJECT MANAGEMENT

CAPITALIZING ON MODULAR CONSTRUCTION TRENDS AND OPPORTUNITIES

As construction growth continues throughout the United States, Europe, and Asia, new methods of construction are continually being adopted to meet the demands of the new digital era. To meet the pace of development, modular construction, a Modern Method of Construction (MMC), is becoming one of the fastest growing real estate trends. In particularly, MMC is considered the technology that may most likely impact the bottom line of construction companies – ahead of trends such as BIM and 3D printing.

MMC is the use of pre-engineered – pre-fabricated – modules, or components, which are constructed in a controlled factory setting, transported to a construction site, and fitted together to form a fully functioning product. Companies implementing MMC often capitalize on the benefits, primarily seen in improved costs, quality, and time of selected construction projects, enhanced environmental credentials, and improved sustainability. In addition, MMC often involves opportunities to engage the local workforce, creating employment opportunities.

With these improvements, particularly in cost, quality, and time, it should be stressed that MMC solutions follow the same building codes and materials as traditional buildings. And, similar to other building methodologies, all weather situations must be considered and designed into the modules, despite the building components being fabricated inside a production facility.

At MEC, we've been following the benefits of MMC with the likes of Amazon investing in prefabricated modular supply companies and many of the large international contractors building up their own offsite facilities. What we aim to uncover is how Oman can use modular construction to benefit the local economy, while ensuring we meet the demands that come with greater urbanization.

As Oman itself is looking at other economic avenues outside of oil projects, companies are assessing the challenges and strengths of the construction industry. To meet the growing construction needs as tourism, education, and other economic markets are further invested in, MEC anticipates MMC to provide a number of benefits for both public and private developers within the Omani construction market.

FINANCIAL REDUCTIONS

MMC improves productivity, keeping costs generally in the region of 15 – 25% cheaper due to less delays and variations. In certain instances, the latest methodologies claim that costs can be further reduced by up to 40%.

TIME SAVINGS

There is evidence that MMC takes 30 – 40% less time to construct than a traditional building. For instance, a 3-bedroom semi-detached dwelling was shipped to the UK from China in containers, where the components were fabricated. Once arrived, it was completed in 40 days, a feat almost unheard of using traditional construction methods.

QUALITY IMPROVEMENTS

With 80 – 90% of a project's building components completed in factory-controlled conditions, there is greater quality control in material development. In addition, pre-fabrication removes weather concerns for construction of the product, reducing negative impacts due to external environmental factors.

INCREASED SUSTAINABILITY AND SAFETY

With the reduction in waste, dust, noise, and disruption in general, health and safety issues are minimized, helping to increase the sustainability of the project and the overall health and safety of workers.

IMPROVED IN-COUNTRY VALUE

MMC brings a number of unique opportunities, which should have considerable impact on Oman. For instance, technical apprenticeships and design roles within new production facilities, together with the creation of supervisory roles during building erection, open up new opportunities for the Omani workforce.

REMOVE INEFFICIENT CONVENTIONAL CONSTRUCTION

Many traditional construction techniques are no longer efficient and do not align with emerging technologies and building systems, such as BIM. Allowing a new approach, like MMC, will allow Oman to gain a commercial foothold and advantage in streamlining construction projects, without compromising on quality or safety.

MMC VALUE-ADDED OMAN SECTORS

While there is no question as to whether MMC adds value within the construction process, there are certain sectors that will realize greater value-added benefits because of this methodology.

- Agricultural Buildings
- Hospital Rooms
- Hotels
- Housing
- Processing Sheds/Plants
- Social Housing
- Logistic Hubs
- MEP Modules - all building types
- Military Buildings
- Offices
- Student Accommodation
- Schools and Classrooms

MODULAR CONSTRUCTION AROUND THE WORLD

MMC is not new by any means with many countries already seeing its benefits in relation to their construction industry. Below is a small sampling of industries and companies working with modular construction to improve their buildings and processes.

FLOATING VILLAS

A leader in real estate pioneering construction, Admares has created turnkey solutions for developing villas that have shorter timelines and minimal impact on the environment, creating villages that float, removing the need for a traditional construction site entirely.

PRE-FAB HOSPITAL ROOMS

In Finland, EIR Healthcare has implemented pre-fabricated hospital rooms, centred on improving the quality of patient care through technology adoption and space design, resulting in an optimized, patient-centric room.

HOTEL/SHOPPING CENTRE

The Ring Centre in Berlin is a well-known modular hotel that sits on top of a shopping centre, offering improved flexibility for expansion, reduction, or even reconfiguration.

HOTEL ROOMS

Designed using modules built entirely in Poland by Polcom Modular, the Pod Brooklyn in New York is a 249-room hotel that was assembled in a mere 6-week period

WORKFORCE ACCOMODATION

Stack Modular is building a 4500-person accommodation camp in Northern British Columbia, Canada. Due to the pre-fabricated components, workers will not have to construct the building outside in the extreme cold, minimizing safety, reducing costs of transporting materials, and improving environmental impact.

OMAN AND MODULAR SOLUTIONS TO DATE

To enhance the Omani construction market, we must begin implementing modular solutions that engage our workforce, while being cognizant of the additional support required in reducing or removing challenges faced. In order to take advantage of MMC and the opportunities that come with it, Oman will have to address the following in order to move forward in a supported, effective, and aligned manner.

GOVERNMENT INVOLVEMENT

Promotion and support of MMC is required from the government, particularly as it relates in engaging the Omani workforce and supporting education of modular construction techniques.

INDUSTRY REGULATION

There needs to be more flexibility, along with a push from government entities, encouraging the use of MMC, while still adhering to strict building and material safety measures.

FACILITY INVESTMENT

To bring MMC into Oman, we need to identify solutions for capitalizing on this methodology. For instance, there is the possibility of a Joint Venture or other global partnership in developing a factory production facility here, including properly-trained management to run it. By investing in a production facility, Oman can position itself as a leader on the global market in the pre-fabrication industry.

MMC PIONEERS

MMC requires mindsets that focus on doing more than "the usual." Oman needs more developers/government entities who are willing to consider MMC solutions, along with pioneering architects who can deliver. The current construction crisis Oman faces is that local architects currently have little experience in realizing the opportunities and benefits MMC can provide. Simply put, Oman needs more MMC pioneers.

REMOVING "RESTRAINTS" ON MARKET SHARE

The current building structures in Oman make it less favourable to change to a modular construction system due to potential loss of market share to new entrants. However, to remain competitive with the rest of the global market in terms of exports, tourism, and employment opportunities, Oman must look at alternatives in construction, while remaining respectful of the vested interest in maintaining the status quo.

THE FUTURE OF MODULAR CONSTRUCTION IN OMAN

While there are a number of benefits to modular construction, there are just as many challenges that must be addressed as Oman's construction industry looks to adopt other global, more sustainable and cost-effective construction techniques.

As stated earlier, as modular construction is introduced into Oman, there is a viable opportunity for developing a factory-based product facility to help engage the local Omani workforce. Whether this is some combined investment between public and private sector, the development of a facility in one of the port areas would open a wealth of local and export opportunities. As the technology develops, perhaps we will even see lightweight modules delivered by a new generation of high capacity drones, used to pioneer development of currently remote, and difficult to access areas, opening up new mining areas, providing school and medical centres in remote villages.

Oman must look to current leaders implementing modular construction methodologies, such as in the UK. For instance, the BRE Establishment in London, UK, launched the Centre for Smart Homes and Buildings. This is an established collective hub for industry, government, and academia to build smart products into environments, reducing the number of common challenges in traditional construction. Knowing these collaborative approaches are improving MMC standards – such as building efficiencies, safety, costs, and improved industry knowledge – it would be interesting to see how Oman can implement this type of approach, both in aligning teaching at the local and international university level and in government support.

Regardless of where Oman currently sits with construction practices, at MEC, we feel that all stakeholders in the construction industry should consider MMC to help a notoriously outdated industry get up to speed. This is imperative to answer the challenges the industry faces, and modular construction is a positive solution for developers and Oman in reducing these challenges.

MEC is here to provide opportunities to support designers and developers as they structure their projects, provide cost and schedule analysis combined with forward thinking contractual solutions, helping to bring the added value of MMC to the Omani construction market

To discuss your next project, visit www.majaneng.com or contact Kevin Ellis at k.ellis@majaneng.com or Michael Robertson at m.robertson@majaneng.com.

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