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MAN news

| JUNE 2021 | NEWSLETTER ISSUE 12 |



IN FOCUS

Latest Trends
and Technologies
in Construction

1946-2019

In loving memory of our
Chairman Michel L. Abi Nader,
we will continue his legacy.





Building a Legacy... Until the Last Beat

More than a year has passed since our beloved Michel Abi Nader, Founder and Chairman of the MAN Enterprise group of companies, has left us.

Born in 1946 to a modest family, Michel was known for his perseverance and his humane qualities. A humble, lovable and kind person, he was widely acclaimed to be a true gentleman and sweetheart by all means.

The best way to portray Michel is through the quotes, life examples and values that have shaped his legacy and its culture.

“When your job becomes your hobby, you never have to work again”

Through passion-driven entrepreneurship, he founded MAN Enterprise (back then known as Michel Abi Nader Enterprise) in 1971 in Beirut, Lebanon. Despite the wars, challenges, and political unrest the country went through, he kept going. Resilience and perseverance were keys to his continuous success.

Having inherited from his father the love for wood and carpentry, the passionate Michel built the largest wood and metal factory in Lebanon: Tecman Industry.

“The future is becoming more complex; only professional companies will last”

With this approach to life, he built a construction company from scratch, which evolved into a major regional player across the Middle East and Africa.

Countless achievements have put him at the forefront of the colossal contractors: building with no limits, dreaming with no frontiers, and staying grounded to his roots and values.

“It is not your equipment fleet that builds your success; it is the excellence of operational systems and the trained, motivated people behind it”

Michel understood early on that recognition and teamwork inspired people to do their best, opening up success opportunities to many. He brought clarity to the teams, and made them focus, through their individual growth, on expanding the business at large.



“We stand by those who share our ethics and values, so we can all grow together”

A father figure to many, Michel instilled an exceptional family culture and an unprecedented teamwork spirit. An inspirational leader, he consistently sympathized with the people around him, helping them overcome their worries.

“We have built a corporation with an academic backbone”

Michel’s search for excellence pushed him to teach in four different engineering faculties and helped him align theory to practice throughout his life.

“Profits were never our focus; the exciting part was the achievement behind it”

Fueled by a clear vision, Michel focused on achievements and realizations rather than on profitability.

“Our client is our long-term partner; we need to be their advisor and solution provider”

His success comes from building a client-centric, reliable, and trustworthy culture for his companies.

Michel Abi Nader was one of those who kept building with wisdom, until his last heartbeat. He was always sought after by people and decision-makers for help and advice, spanning social, economic, technical and business matters.

His absence is a shock to his family, his colleagues, and those who knew him. Yet he will continue to live through the people he taught, the corporations he created, the landmarks he built, and the legacy he spread to those around him.

“
When your job
becomes
your hobby,
you never
have to
work again”

We live by Michel’s young soul, and we will continue his legacy of turning challenges into achievements.

The MAN Enterprise Group Family

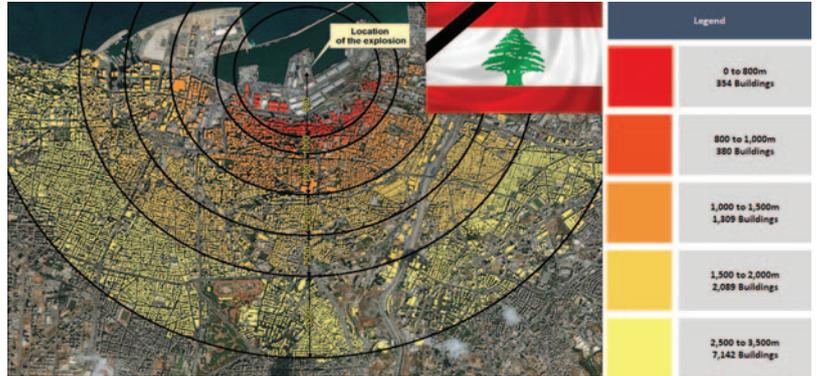
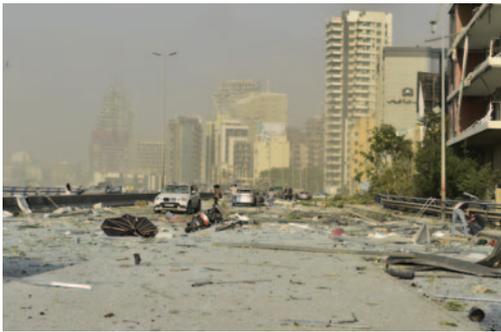
Beirut Explosion | August 4, 2020

MAN Enterprise initiates #AliveBeirut



We are here to build back better

On Tuesday, August 4, 2020, at 6.05pm, a massive explosion rocked the Beirut port, killing more than 200 people, leaving more than 6,500 injured, 300,000 people homeless, and massive property damage estimated at over \$4.8 billion USD.



Base Camp

Beirut City Destroyed



Heritage Building MAN Enterprise Supported

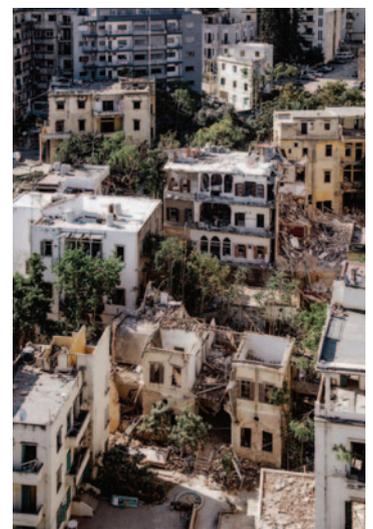
Beirut is the home of our headquarters, and during the last 50 years, we have built many of the city's prominent landmarks. The tragic explosion turned Beirut into ruins. The city, that made us who we are today, has been devastated. It has lost its soul and its heritage. We have been left with no choice but to act. MAN Enterprise, in partnership with Solidarity, has launched the Alive Beirut initiative, committed to returning families to their homes in the shortest time possible.



Meeting with French delegation



Meeting with Tom Barrack



As a first step, a full-fledged reconstruction base camp was created at the center of the damaged area in Mar Mikhael to ensure quick response times in an efficient manner.

MAN Enterprise is dedicated to investing its resources and equipment to support the reconstruction of Beirut by resettling as many people as possible in their homes before winter. It is a task where time is of the essence for surveying damage in hundreds of buildings. The repairs are time-consuming, while the focus is on restoring basic services as quickly as possible, and in the process, improving the quality of buildings by respecting construction standards. In addition, collaborating with partners to ensure efficiency and transparency is also a priority. In addition, MAN Enterprise managed through its internal resources to elaborate promptly a very efficient Application for the damages surveying which is integrated with a business intelligence platform.

On October 3, the American delegation that included Tom Barrack the businessman with Lebanese roots and Lance Armstrong the former professional racing cyclist visited the base camp in Karantina and participated in a cycling course to raise donations for different NGOs supporting the capital affected by the explosion, Beirut.

Our target as MAN Enterprise and Solidarity Team is to return **1,000 families to their refurbished homes by March 2021**. We have completed around 500 homes to date and currently have another 500 in the pipeline.

Tom Barrack and Lance Armstrong in Beirut

Christmas Event in Mar Mikhael



IN FOCUS 22



Latest Trends and Technologies in Construction

The MAN Enterprise Group has a unique combination of competencies that provide integrated and consistent high-quality service in a wide range of domains and industries.



Alar Hotel Development 13

Located within the Qatar Entertainment City-Lusail, the 461-room Alar Hotel has a built-up area of 95,000 m².

Orient Building Lot 12 16

The Orient building is located in the heart of the historical city of Beirut. This project showcases the preservation of heritage buildings and its connection to modern architecture.



Completion of National Museum of Qatar 18

This landmark project, designed by renowned architect Ateliers Jean Nouvel is a masterpiece located at the heart of Doha, Qatar.

Case Study of 3D Formwork Elements 20

For the first time in Lebanon, 3D formwork was utilized in the new US Embassy compound.



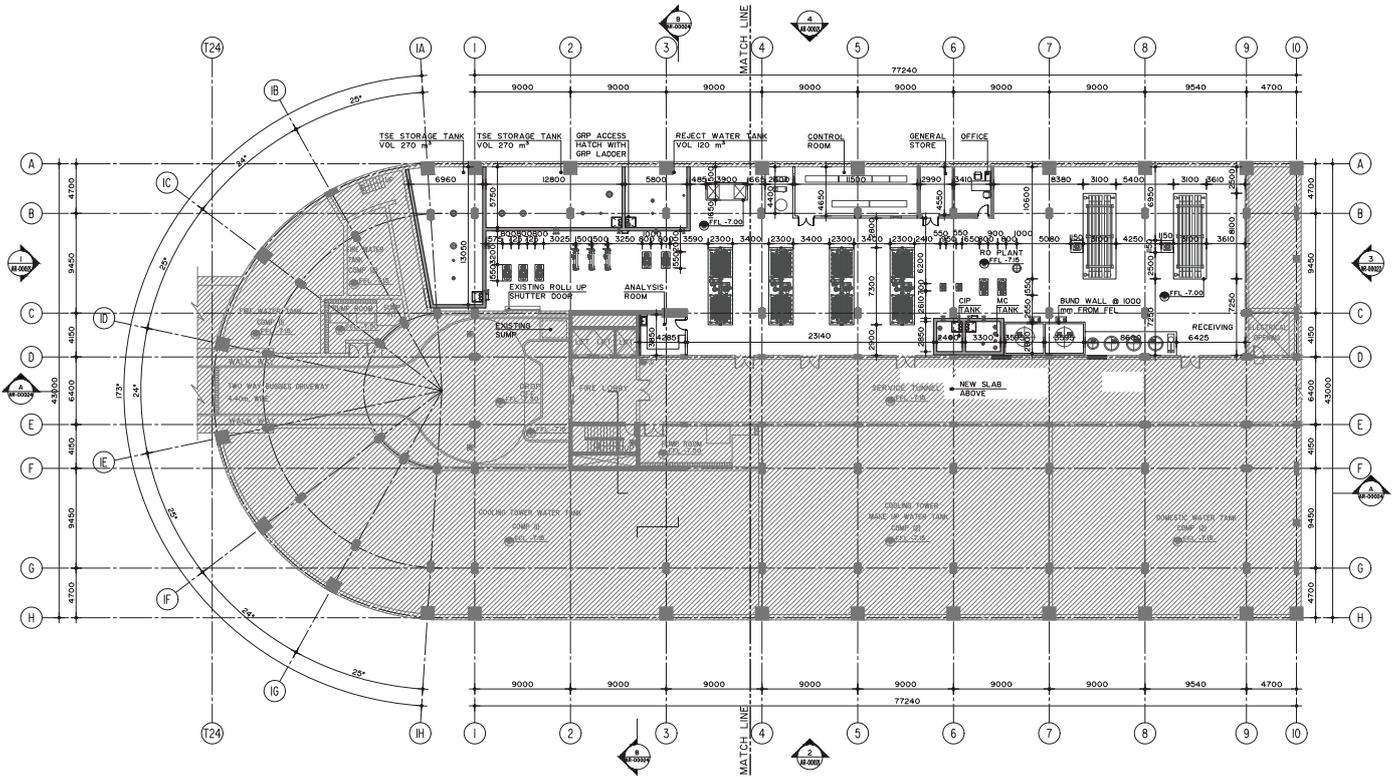
Cricket 2020 38

MAN Enterprise Qatar organized a one day cricket tournament for staff and workers on the occasion of Qatar Sports Day on February 11, 2020.

UPDATES FROM THE FIELD

Newly Awarded Projects

KATARA TREATED SEWAGE EFFLUENT POLISHING PLANT PROJECT KATARA, QATAR



Contractor:
MAN Enterprise

MEP Contractor:
Metrix Qatar

Client: Katara / Veolia

Engineer:
ECG – Engineering Consultancy Group

Construction Management:
KEO International Consultants

Duration: 15 months

Start Date: December 2020

Scope of work: Design and Construction of Civil Structural and MEP works

Katara Projects intended to establish a new TSE polishing plant with a capacity of 15,000 m³/day. Located in Katara energy center next to Katara village to serve both cooling tower and irrigation water. The plant needs to be accommodated in the basement which is currently used as a store and it will be required to construct a new store at the roof of the same building to replace the existing.

UPDATES FROM THE FIELD

Newly Awarded Projects

BEKAA PACKING STATION

BEKAA, LEBANON

General Contractor: MAN Enterprise

Client: Merit Invest SAL

Architect: Archika

Construction Management:
DBO Pro

Duration: 10 months

Start Date: September 2020

Scope of work: Infrastructure, Civil, Architecture, Electromechanical and Refrigeration

The project is located in Taanayel Zahle in Bekaa Governate. The project constitutes a new facility for the packing of fruits and vegetables with a built-up area of 6000 m². The facility includes; processing areas, storage and refrigeration areas, offices, utilities rooms, loading & unloading zones. Moreover, the facility



is surrounded by a large asphalted area to serve as parking and maneuvering zone for the incoming and outgoing trucks, which also includes some landscaping works.



ZUHAIR MURAD HEADQUARTERS REHABILITATION

BEIRUT, LEBANON

Main Contractor:
MAN Enterprise

Client: Zuhair Murad SAL

Engineer: Arrow Constructions

Duration: 192 working Days

Start Date: 23 February 2021

Trades Involved:

Concrete Works, Finishing & MEP Works

The project consists of rehabilitating the headquarters of the international renowned fashion designer Mr. Zuhair Murad which was severely damaged by the Beirut Port explosion.

The rehabilitation cover all façade works such as aluminum and stone cladding, interior finishing and MEP works at the Ground Floor and the ten upper floors, in addition to some repair works at the first basement.

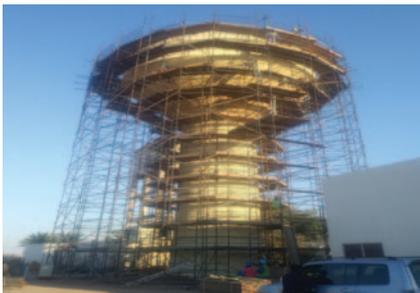


On-Going Projects



Hymex is a joint venture formed in the UAE by Metrix SAL(Offshore) (UAE) and Hydropower Energy & General Construction LLC (UAE), combining their respective strengths for jointly executing world class projects in buildings, infrastructure, water, waste, industrial and energy sectors in the MENA region.

Metrix and Hydropower Energy & General Construction LLC are joining forces as Hymex to combine their wide spectrum of knowledge, expertise and experience to form a dynamic and ambitious new entity.



REFURBISHMENT OF PUMPING STATIONS AL DHAFRA REGION AND CENTRAL & EASTERN REGION,UAE

Client/Engineer: Abu Dhabi Distribution Company (ADDC)

Duration: 18 months

Start Date: July 2018

This project consists of the refurbishment of the ADDC pumping stations and connected accessories as per the ADWEA/ADDC standard specifications.

This ensures efficient operations and maintenance of the pumping stations to meet the growing customer demand and to secure a reliable distribution of water.

BLANKET AGREEMENT FOR COMPREHENSIVE MAINTENANCE SERVICES FOR ALL ABU DHABI GOVERNMENT ENTITIES ABU DHABI, UAE

Client/Engineer: Abu Dhabi General Services Company (Musnada)

Duration: 60 months

Start Date: January 2018

This agreement provides comprehensive maintenance services to all government entities in the Emirate of Abu Dhabi.

ALAR HOTEL DEVELOPMENT

LUSAIL, QATAR



General Contractor:
MAN Enterprise

MEP Contractor:
Metrix Qatar

Designer: WSP & WATG & PYR

Consultant: Shaker Consultancy

Engineer: Turner & Townsend

Duration: 29 months

Start Date: March 2019

Scope of work: Structural works, architectural and interior finishes including fit-out and FF&E works, electro-mechanical and all external and marine works.



Located within the Qatar Entertainment City - Lusail with a built-up area of 95,000 m², the 461 room ALAR Hotel is comprised of two basement floors, a ground floor, and 12 floors including a spa, restaurants, ballroom, lounges, terraces, landscaping works, swimming pools and child play areas, with a section for offices and utility areas.

Furthermore, the scope of work also includes marine works which incorporate environmental study, geotechnical investigation works, design, supply and the laying of beach sand, Rock Groyne, and the installation of a jetty along with a gangway and pontoon.

UPDATES FROM THE FIELD

On-Going Projects

SKY TOWER PROJECT

LIMASSOL, CYPRUS

General Contractor:
MAN Enterprise -
Atlas Pantou J.V.

Employer: Wildcat Enterprises Ltd

Architect: UHA London

Contractor:
MAN Enterprise / Atlas Pantou JV

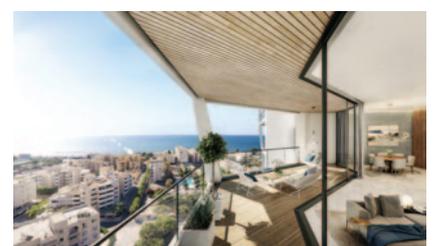
Duration: 24 months

Start Date: October 2018

Trades Involved:
Civil, MEP, Architecture, ID

The Sky Tower is located in the historic city of Limassol on the southern coast of Cyprus. It is situated on a prime plot of land toward the eastern side of the city.

Soaring over 100m in height, the Sky Tower consists of a total of 84 exclusive apartments ranging from one-bedroom units to large duplex penthouses. It is comprised of one basement, a ground floor, and 23 upper floors with a built-up area of 16,200 m² and a plot area of 14,560 m². MAN Enterprise's scope of work, along with its partner Atlas Pantou, includes all structural works for the superstructure in addition to all electro-mechanical, finishing, façades and landscaping works.





JV Metrix
and Hydropower Energy

CONSTRUCTION OF TANKER FILLING STATION AIN AL FAYDA STORE, UAE

Client/Engineer: Al Ain Distribution Company (AADC)

Consultant: Tebodin Middle East

Duration: 18 months

Start Date: September 2018

The construction of an automated tanker filling station with a capacity of 13 MIGD will serve up to 1,400 tankers per day to meet the high demand of AADC customers.

The automated tanker filling station will minimize driver interference and waiting time to ensure quality service for AADC customers. The project includes civil, structural, and architectural works; mechanical, electrical, instrumentation, control, automation, fire protection, potable water, storm water and drainage, HVAC, power supply, and CP systems; piping, storage tanks, valves, hydrants, and all ancillary equipment.

CLEANING AND MAINTENANCE OF STORMWATER COLLECTION AND DISCHARGE SYSTEM AL AIN REGION, UAE

Consultant: Italconsult

Client/Engineer: Al Ain City Municipality

Duration: 36 months

Start Date: May 2018

This project consists of the cleaning and maintaining for the stormwater gravity networks in Al Ain and the surrounding regions.

UPDATES FROM THE FIELD

On-Going Projects

ORIENT BUILDING - LOT 12

BEIRUT, LEBANON

General Contractor:
MAN Enterprise

Client: Orient 12 Marfaa SAL

Consultant: Erga Group

Duration: 24 months

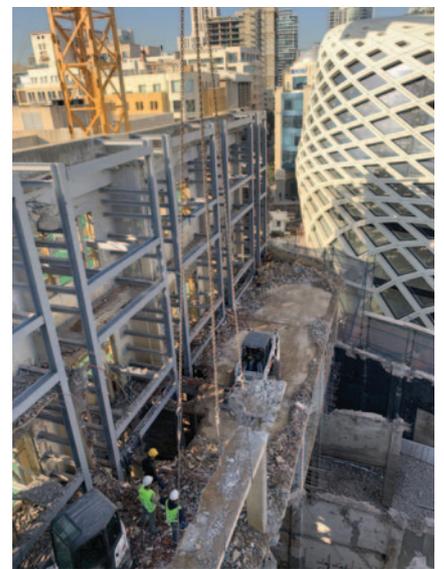
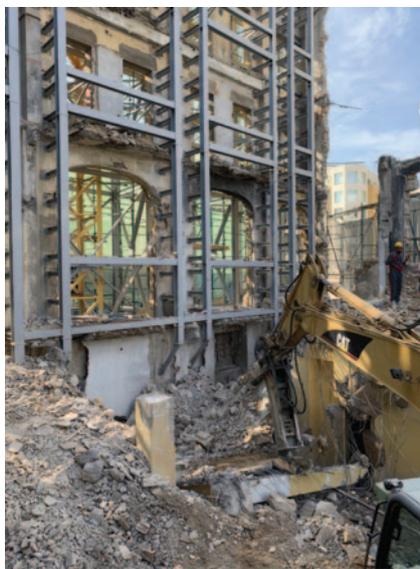
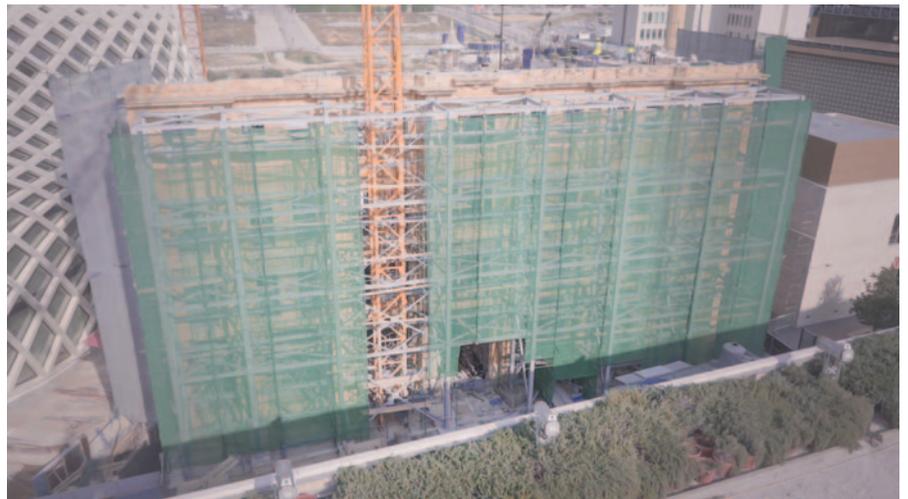
Start Date: June 2020

Scope of work:
Demolition and Bracing Works, Enabling,
Civil and Architectural Facades Works

The Orient building is located in the heart of the historical city of Beirut.

This project showcases the preservation of heritage buildings and its connection to modern architecture.

The execution of this project comprises the demolition of the existing L'Orient Building while preserving its south façade, which will be connected to a newly constructed structure. Our scope includes the shoring, dewatering and excavation works; the preservation of the south façade shall be ensured by a well-designed steel structure; the construction of the new structure is composed of two basements, a ground floor with mezzanines, and four upper floors. The total built-up area is 6,563 m².



Handed Over Projects

ORANGERIE PROJECT - KATARA COMMERCIAL PLAZA

DOHA, QATAR



MEP Subcontractor: Metrix Qatar

Client: Aspire Zone Foundation

Design Consultant: Erga Qatar

Construction Management:
KEO International Consultants

Duration: 6 months

Start Date: June 2019

Scope of work: HVAC system, substation, plumbing, drainage, firefighting, gas system for kitchen appliances, electrical power supply network, lighting, fire alarm, telecommunications/data, CCTV, access control, public address/background music and building management system.

This project consists of the SNAN Luxury Food Hall and Orangerie's specialty steel and glass structure. The



front of the house areas on the ground, first, and second floors are comprised of a café, offices, lift lobby, and a terrace. The back of the house area on the basement level includes the kitchen, chiller and freezer units, staff area, stores, receiving area, offices, and lift lobby.



Handed Over Projects

NATIONAL MUSEUM OF QATAR

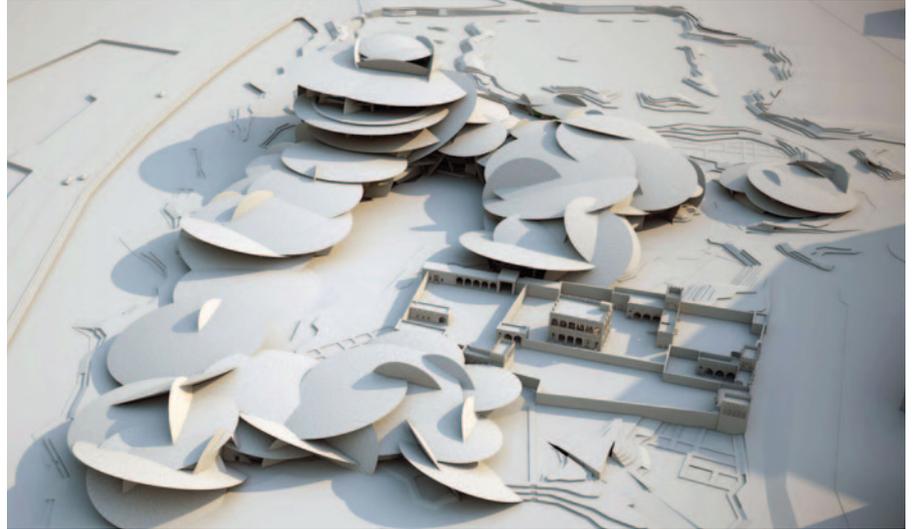
DOHA, QATAR

Contractor:
MAN Enterprise / Empty JV

The project is located on a prominent 135,000 m² site on the corniche in central Doha and offers a total of 36,000 m² of newly enclosed space.

Public facilities include permanent and temporary galleries, an auditorium, two cafés, a restaurant, a museum shop, and facilities for school groups and VIPs, while staff facilities consist of a heritage research center, restoration laboratories, staff offices, collection processing, and storage areas. The museum is surrounded by an 11,500 m² semi-public park and includes parking areas for approximately 300 cars. The old palace onsite has been refurbished to become part of the new museum.

MAN Enterprise Qatar's joint venture with EMPTY S.L., a Spanish museography company specializing in such areas, to execute the museography works as design and build for the permanent exhibit galleries over an area of 8,500 m², which forms a ring around the museum's central courtyard.



The above includes the fit-out of the 11 permanent galleries with different themes from Qatar's geological history to the people of Qatar and their life experience prior to the discovery of oil, followed by the LNG and concluding with Qatar today. Work involves abortive and enabling works to accommodate the museography scope within the building's existing finishes and the design, the manufacturing and installation of showcases, set works, models, a state of the art audio visual system, lighting, graphics and associated electro-mechanical works.



RAS LAFFAN WAREHOUSE AND WORKSHOP BUILDING EARLY WORKS PACKAGE | RAS LAFFAN INDUSTRIAL CITY, QATAR

General Contractor:
MAN Enterprise

Client: Qatar Shell GTL Limited

Located in Ras Laffan Industrial City, our scope of work included the upgrade existing façade and roof - wall and ceiling lining, external and internal acoustic windows, steel fire exit door, external staircase, MEP works, chilled water, supply and exhaust duct, fresh air duct, medium and low voltage cables, metal trunking and cable trays.



CASE STUDY

3D Formwork

An important factor of the buildings in the new US Embassy compound in Beirut is that they require 3D wall formwork. The design is very challenging due to the elements that are curved and inclined.

About one third of the elevation areas have complex shapes and need to be formed in line with a very specific dynamic system that perfectly follows the elevation waves.

These complex architectural features require a lot of engineering design and are very complex to execute. The formwork designs are made in Peri, Germany, and require months for

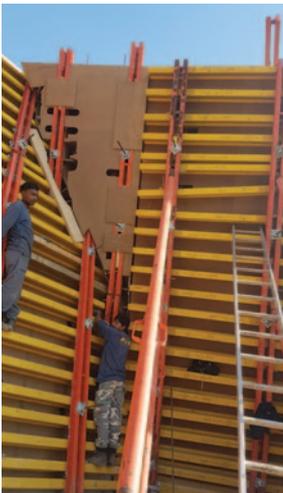
completion. In an attempt to overcome the time factor, four engineering teams were dedicated to this special mission.

This is the first time in Lebanon such a task was undertaken, considering the size and complexity of the 3D work.

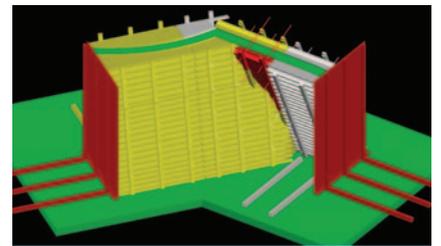
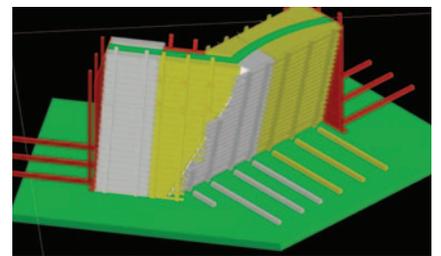
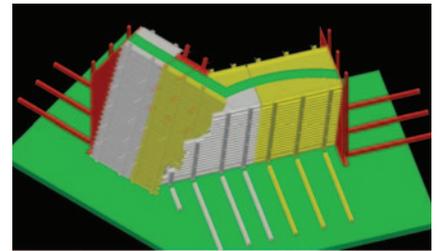
The challenge was to develop complex formwork systems without error as high quality was a priority. In addition, a spruce wood pattern was required for architectural purposes and it constituted another parameter to be considered.

Living boards were needed which required precise work and CNC machines to create the complicated special forms of the wall.

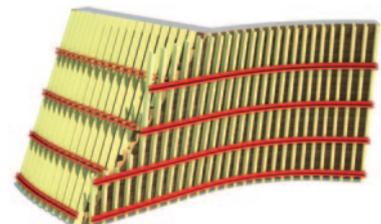
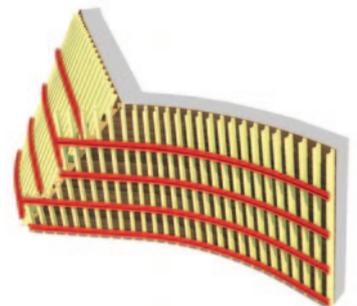
MOCK-UP FOR A CURVED / INCLINED WALL WITH 3D FORMWORK BASED ON LIVING BOARDS



3D MODELING FOR THE FORMWORK OF A CURVED / INCLINED WALL BASED ON LIVING BOARDS



3D MODELING FOR THE FORMWORK OF A CURVED / INCLINED WALL BASED ON CURVED STEEL WALER BEAMS



MEET THE TEAM



Marlowe
Mayani

QC
ENGINEER

METRIX QATAR

I came to Doha, Qatar on June 4, 2008, and started working as an Electrical Site Engineer for MAN Enterprise. I was assigned to the National Convention Center Carpark (NCC Carpark) Project, the construction of a multi-story car park in Qatar Foundation Education City.

In December 2009, I was transferred to Metrix, an MEP Contractor of MAN Enterprise. From then, I started working on the Infrastructure Priority Package Project (IPP) which focused on the installation of 11KV cables from Qatar Foundation primary KAHRAMAA substations to specific buildings in the area until mid-2011.

After, I was assigned as the QA/QC Engineer of the West 4-Story Car Park in Qatar Foundation-Education City. In addition, I was involved in the handing over of the Oxygen Park Project.

I have been working for Metrix for 10 years. In October 2018, I was transferred to Viva Bahriya Tower 14 & 15 in the Pearl Qatar for a short period of time and in January 2019, I was assigned to a new project as a QA/QC Engineer in the Alar Hotel Development Project.

My career in Metrix has been life changing. I have been able to support my family and learn how to live away from them. For all this, I thank Metrix management and my colleagues for the support and trust that they have given me over the years. I am looking forward to more successful and fruitful years with my family at Metrix.



Charbel
Saade

PROJECT
MANAGER

TECMAN Industry

In early 2006, I joined MAN Enterprise Qatar. At that time, I was privileged to work on the Ceremonial Court project at Qatar Education City. Being a young fresh graduate onsite and working with an international leader in the construction industry, it has been a great experience for me to practice my know-how with eagerness and I have learned and evolved tremendously.

In late 2007, I returned to Lebanon and was transferred to Tecman Industry where a different experience in the manufacturing field awaited me. I had the opportunity to work on a large number of custom designed wood and steel works for national and international projects by renowned architects. Carpark was one of most challenging projects during that phase.

Starting in 2011, I shifted to manage the fit-out works of the Beirut Waterfront project which was a very fulfilling and personal experience for me to be on a project design by Steven Hall. This paved the road for a new field of expertise within the construction industry, namely design and build, through the Summerland Kempinski Bay project in the south of Beirut.

The diversity of positions all the way up to my fourteenth year has been an enriching and fulfilling journey so far. Currently, being the Head of Operations with a team of professionals has enabled me to successfully juggle between different projects. This has not only enhanced my skillset, but has taught me how to multitask, and develop interpersonal skills and resilience.

My commitment to the vision and mission of the MAN Group, in general, and my belonging to Tecman Industry, in particular, has helped me to fulfill my long-term goal to always excel and deliver my best.



Chadi
Bakhos

SECTION
ENGINEER

MAN Enterprise

Six years ago, I received the opportunity of a lifetime.

Shortly after my graduation in 2014, I started my career at MAN Enterprise as a site engineer on the District S Project in downtown Beirut. Being responsible for the concrete works and finishing of 22 buildings was a big challenge at first. However, with the help of my colleagues at MAN Enterprise, I overcame this challenge and it shaped and strengthened me for the better.

Three years later, on December 2017, I was assigned to one of the largest and most complex project in the Middle East: the New US Embassy compound in Awkar, Lebanon. Working in such a complex environment has offered me invaluable experience in the structural field and given me a lot of confidence. Nevertheless, there is always more to discover and I am certain that with MAN Enterprise, I will meet further challenges.

I am proud to be part of this prestigious organization. It's been six years so far - cheers to fifty more!

IN FOCUS





Latest Trends & Technologies in Construction

The pace of digitalization and the use of innovative methodologies is accelerating. Digitalization has already transformed many industries and now there are significant developments revolutionizing construction. Many technological advances and other innovative methodologies have the potential to substantially change the way owners, designers, construction managers, and contractors perform their work.

Once these changes are more widely adopted in construction, productivity will increase, cost and duration will decrease, harm to the environment will decrease, and site safety will improve.

There are many advances reshaping the construction industry that are grouped into the following categories:

- Sustainability
- Lean construction
- Digital collaboration and mobility
- Modular offsite construction
- Building Information Modeling (BIM)
- High definition surveying and geospatial technology
- IoT, RFID and advanced analytics
- City Information Modeling (CIM)
- Drones
- Robotics and autonomous equipment
- Wearable technology

IN FOCUS

1. SUSTAINABILITY

The common objective of green buildings and sustainability options in the construction industry is to reduce the overall impact of the built environment, human health, and the natural environment. In MAN News Issue 9 in June 2016, green building was addressed. However, there is another green revolution in public works which has started to take shape. A few of the latest trends that will reshape roadways and hardscapes are:

Energy Producing Roads and Hardscapes

These roadways and hardscapes aim to replace standard asphalt roads, parking spaces, pavements, and bike paths with advanced solar panels that generate clean and renewable power. They could also blend into local energy systems, capture the heat from the sun in summer, store it for several months, and release it when needed.

Recycled Roads

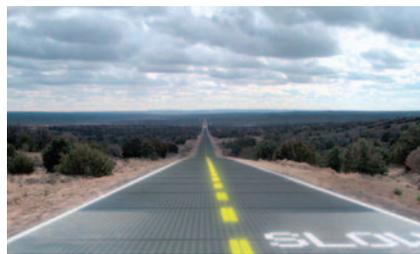
Made of recycled plastic waste.

Reflective Mixes that Reduce Lighting Expenditure

With the right lighting system in place, roads would reflect light, look more appealing and lower the public lighting costs by up to 40%.



ENERGY PRODUCING ROAD



ENERGY PRODUCING ROAD



RECYCLED ROAD

2. LEAN CONSTRUCTION

We have tackled this topic in the previous ninth issue and have presented how we are adopting the Lean principles in MAN Enterprise. We will only briefly reintroduce Lean Construction in this article.

Lean construction is concerned with the alignment and holistic pursuit of concurrent and continuous improvements in all dimensions of the built and natural environment: design, construction, activation, maintenance, salvaging, and recycling. This approach aims to manage and improve construction processes with minimal cost and maximum value by considering customer needs.



Defects

Efforts caused by rework, scrap, and incorrect information.



Overproduction

Production that is more than needed or before it is needed.



Waiting

Wasted time waiting for the next step in a process.



Non-Utilized Talent

Underutilizing people's talents, skills, & knowledge.



Transportation

Unnecessary movements of products & materials.



Inventory

Excess products and materials being processed.



Motion

Unnecessary movements by people (e.g. walking).



Extra-Processing

More work or higher quality than is required by the customer.

THE 8 WASTES

Studies conducted on multiple construction projects in the USA have revealed the following:

- 50% of all construction projects run behind schedule
- The biggest cost impacting construction is that of inefficiencies built into the way projects are run and managed

Getting work to flow efficiently and predictably on a construction site requires the impeccable alignment of the entire supply chain responsible for constructed facilities such that value is maximized and waste is minimized.



LEAN CONSTRUCTION TARGETS

With such a broad scope, tools found in lean manufacturing and lean production, as practiced by Toyota and others, have been adapted to be used in the fulfillment of lean construction principles.

The three unique tools and methods that were specifically conceived for lean construction are:

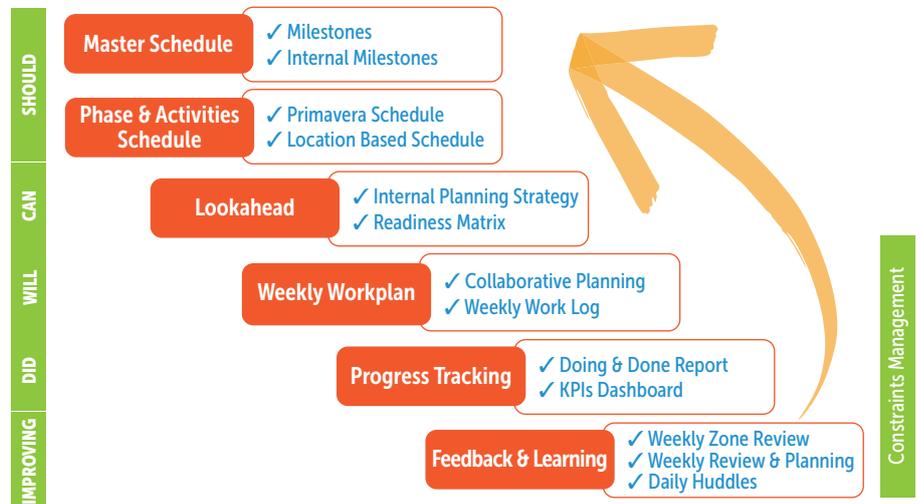
- The Last Planner System
- The Target Value Design
- The Lean Project Delivery System

If the tool, method, or technique would assist in fulfilling the aims of lean

construction, it is also considered a part of the toolkit available for use.

The application of lean construction has proven to have the following positive impacts:

- Reducing waste
- Creating stable schedules
- Reducing cost
- Improving quality
- Promoting employee participation which leads to improved satisfaction
- Improving customer satisfaction



THE LAST PLANNER SYSTEM

3. DIGITAL COLLABORATION AND MOBILITY

Process digitization means moving away from paper and toward the web and real time sharing of information. Replacing the paper process with digitization enhances and speeds up information sharing and collaboration and makes information more accurate. Digitization of project information is intended to improve design management, project scheduling, materials management, crew tracking, quality control, cost control, safety control, contract management, performance management and document management, in addition to helping in the timely consolidation of multiple project information.

There are already many digital collaboration solutions available, and this field is continuously evolving and improving at a fast rate.



4. MODULAR OFFSITE CONSTRUCTION

Modular offsite construction is a process in which a building or parts of a building are constructed offsite, under controlled plant conditions, using the same materials and design to the same codes and standards as conventionally built facilities but in up to half the time. Buildings are produced in modules that when put together onsite, reflect the identical design intent and specifications of the most sophisticated site-built facility without compromise.

The key benefits of modular buildings and modular offsite construction are the following:

4.1 Greener

Greater Flexibility and Reuse: Modular buildings can be disassembled and the modules relocated or refurbished for new use, reducing the demand for raw materials and minimizing the amount of energy expended to create a building to meet the new need.

Less Material Waste: When building in a factory, waste is eliminated by recycling materials, controlling inventory, and better maintaining building materials.

Improved Air Quality: When building in a factory, improved air quality is achieved.

4.2 Faster construction process and ROI

Reduced Construction Schedule: Because construction of modular buildings can occur simultaneously with enabling and foundation works, projects can be completed 30% to 50% sooner than traditional construction.

Elimination of Weather Delays: 60 - 90% of the construction is completed inside a factory, which mitigates the risk of weather delays. Buildings are occupied sooner, creating a faster return on investment.



MODULAR BUILDING

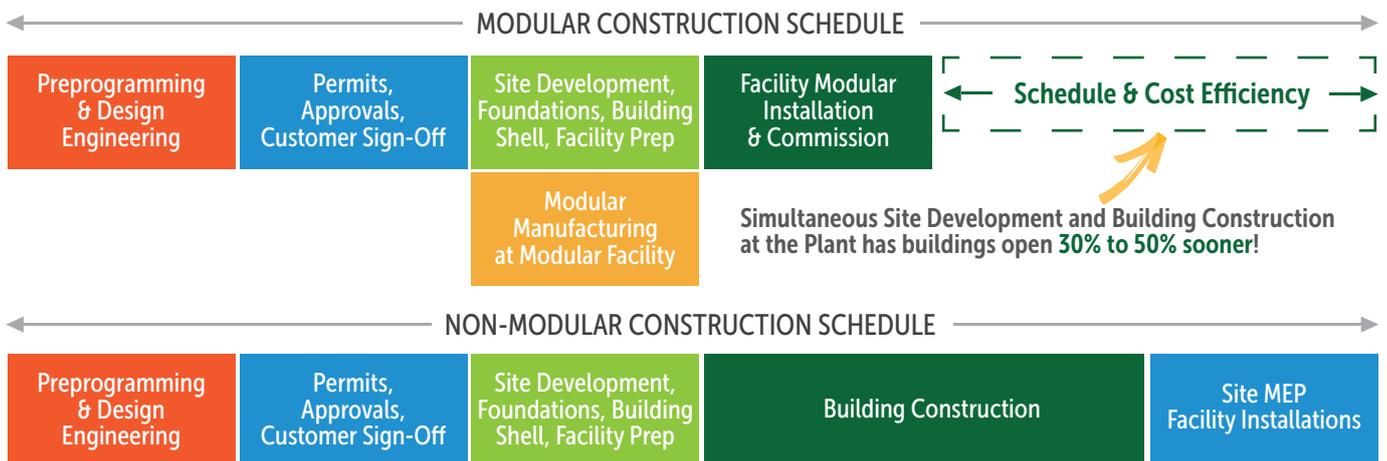
4.3 Improved quality

Building the major components in a factory, in a very well controlled environment and where materials are well maintained, results in improved quality.



4.4 Safer

The indoor construction environment reduces the risks of accidents and related liabilities for workers.



MODULAR VS. NON-MODULAR SCHEDULE

5. BUILDING INFORMATION MODELING (BIM)

BIM is creating a revolution in the construction sector. It involves creating a digital model, as soon as the project begins, for everyone working on the project to use throughout the process. These models reduce risks during design, construction, and operation while streamlining schedules and reducing costs.

BIM 3D is the BIM that most are familiar with. However, there are other BIM dimensions (4D, 5D, 6D and 7D) that aren't yet widely used.

5.1 3D BIM

The major benefits of 3D-BIM are the following:

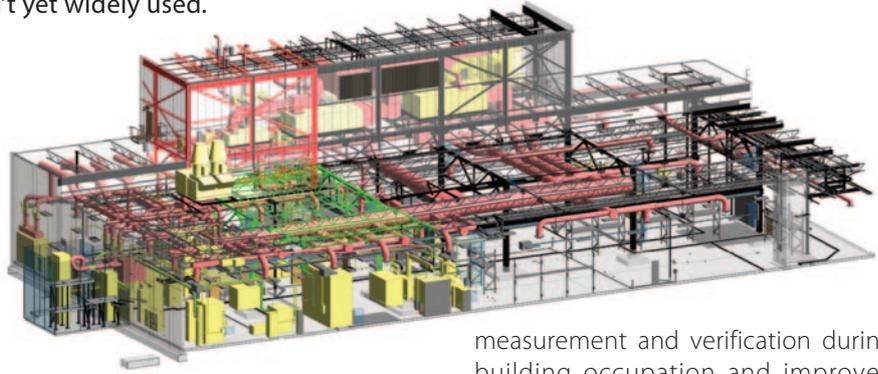
- Visualization capabilities used to envision the building in three dimensions before ground is ever broken.
- Improved multidisciplinary collaboration
- Fabrication and shop drawing generation for various trades is made easier
- Conflict, interference, and collision detection
- Quantity take off

5.2 4D BIM - Time

A Building Information Model (BIM) can be effectively used for construction sequencing and scheduling, material ordering, fabrication, and delivery schedules for all building components. The concept is to allow stakeholders to visualize all scheduled activities and events in advance and through the lifetime of the project before execution. Being able to picture both the design and the construction plan well in advance of actual construction allows project participants to foresee and avoid problems such as the congestion of trades which is difficult to spot when reviewing a typical Critical Path Method (CPM) schedule. It also allows the simulation of various construction sequencing options and therefore optimize scheduling.



EXTRACTS FROM 3D BIM MODELS



5.3 5D BIM - Cost

Considerations may include capital costs (the costs of purchasing and installing a component), its associated running costs, and the cost of renewal or replacement down the line. These calculations can be made based on the data and associated information linked to components within the graphical model. 5D-BIM provides methods for extracting and analyzing costs, evaluating scenarios, and changing impacts.

5.4 6D BIM - Sustainability

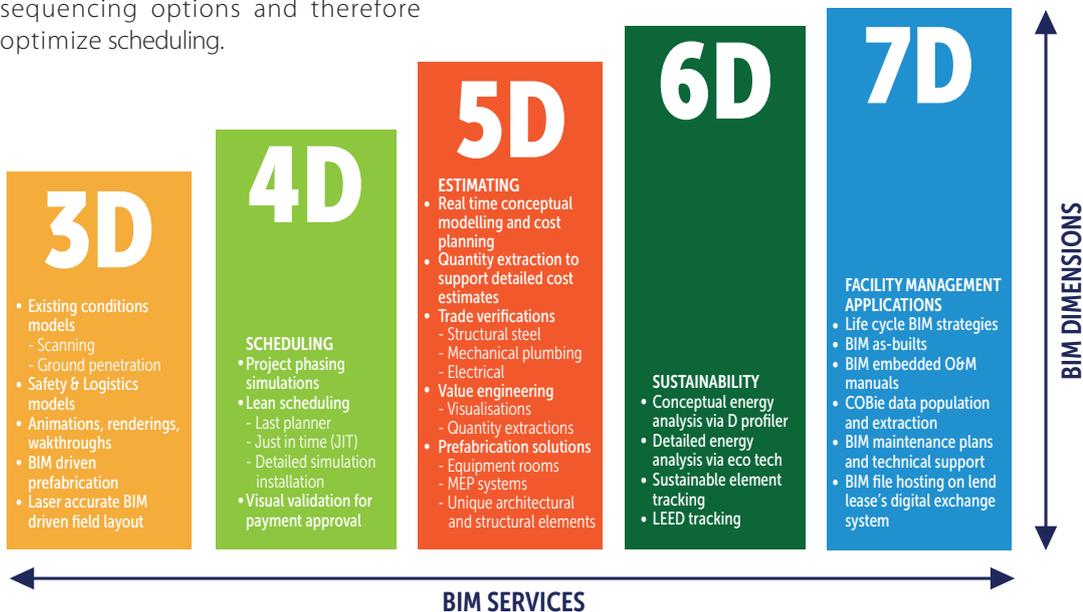
6D-BIM helps perform energy consumption analyses. The utilization of 6D-BIM technology can result in more complete and accurate energy estimates earlier in the design process. It also allows for

measurement and verification during building occupation and improved processes for collecting data in high performance facilities.

5.5 7D BIM - Facility Management Applications

7D-BIM is used by managers in the operation and maintenance of the facility throughout its life cycle. It allows participants to extract and track relevant asset data such as component status, specifications, maintenance/operation manuals, and warranty data.

The utilization of 7D-BIM technology can result in faster part replacement, optimized compliance, and streamlined asset life cycle management over time. 7D BIM provides processes for managing subcontractor/supplier data and facility components through the entire facility life cycle.



IN FOCUS

6. DRONES OR UAVS

Drone technology, also known as Unmanned Aerial Vehicles (UAVs), has already started to be used for different purposes in the construction industry.

6.1 Surveys

Most building surveys, for instance, require visibility of the building's roof to identify its condition and assess any defects. Using a small drone to perform the survey can save time, money, and reduce health and safety risks.

6.2 Construction Site Inspections

The ability of a drone to carry out a visual inspection of high-risk areas can save time and reduce health and safety issues. Site inspections can be undertaken more regularly and cover larger areas more efficiently.

6.3 Health and Safety Inductions

Using a drone to fly over a site can show new site operatives H&S risks in real-time, and enable site managers to demonstrate moving vehicles, moving cranes, or active excavation areas.

6.4 Maintenance Inspections

Drones can provide a quicker and easier way of carrying out the inspections of bridges, high-rise building, roofs and scaffolding, feeding back HD real-time footage to the inspector.

6.5 Project Progress Reports

Construction progress reports are often prepared weekly and monthly. A regular drone flight can be a speedy way to record and visualize project progress.

6.6 Promotional Photography

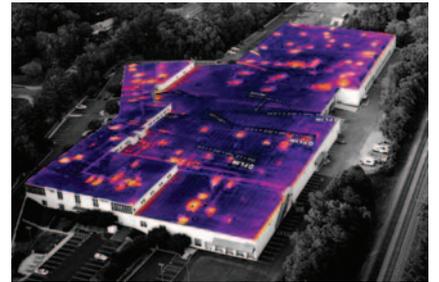
The ability to capture high-res videos and photos from unique angles can provide an interesting insight into a project or building, rendering it marketing material.

6.7 Live Feed - Virtual Walk Around

Utilizing First Person View (FPV) technology, a drone camera can stream HD footage to the project team or stakeholders in real-time. This experience could also be enhanced by the use of VR glasses.

6.8 Site Logistics

Drones can provide a real-time update of site logistics and what is happening around the site.



INSPECTION AND PROGRESS TRACKING USING A DRONE

6.9 Point Cloud - Laser Scanning

It could often be difficult for a surveyor to gain access to a suitable location to laser scan elevated areas of a building. Laser scanning using drones has become a recognized method of capturing specific topography detail.

6.10 Thermal Imaging Recording

Similar to laser scanning, drones can be used to take aerial thermal image recordings which can be used to assess potential cold or heat spots in buildings in areas holding electrical components. This can give engineers essential information when trying to identify and rectify building defects.



DRONE

7. ROBOTICS AND AUTONOMOUS EQUIPMENT

Robotics in construction, until recently, have been used in a very standard and rudimentary manner. Robots can be used in construction in multiple ways, including the following:

- **Demolition Robots**
- **Printing and Contour Crafting Robots – 3D Printing**
- **Unmanned Drones**
- **Bricklaying Robots**
- **Welding Robots**
- **Roadwork Robot**
- **Autonomous Construction Vehicles**



WELDING ROBOTS



DEMOLITION ROBOT



AUTONOMOUS CONSTRUCTION VEHICLES



3D PRINTING AND CONTOUR CRAFTING



BRICKLAYING ROBOTS

8. WEARABLE TECHNOLOGY

Wearable technology has become common in everyday life with the advent of fitness trackers, wearable cameras, smartwatches, heart rate monitors, GPS tracking devices, and smart virtual assistants. Wearable technology is now being used in the construction industry. Some examples are:

8.1 Virtual Reality (VR)

Early adopters, mainly in the gaming and entertainment sector, have been significantly transformed by this groundbreaking technology. Construction is one of the sectors that has recently started to adopt this technology. This is primarily being encouraged by the widespread use of BIM. VR enables developers to interact with the design, spot inaccuracies and introduce amendments.

8.2 Augmented Reality (AR)

Augmented Reality (AR) is a view of the real-world environment that has been augmented or supplemented by computer generated input such as graphics or video.

8.3 Smart Helmet

These helmets include an AR display that provides real time data.

8.4. Smartwatches and Health Trackers

Health bands track construction worker heart rates, perspiration, temperature, and activity. Armband monitors can manipulate the environment around the wearers and/or interact with smart glasses.

8.5. Safety Vests

The safety vests currently in development are intended to alert highway workers of moving objects (such as cars or trucks) that are approaching. Other safety vests in development include touch sensors that will be able to monitor worker conditions.

8.6. Pulse Oximeter

Fitted to a hard hat, these devices detect the onset of carbon monoxide poisoning and alert laborers in the area.

8.7. Wearable Safety Badges

Such badges track crew locations in real time with 20cm accuracy. They alert workers when they enter hazardous areas.



VIRTUAL REALITY



AUGMENTED REALITY

CAREER DEVELOPMENT

Trainings

Soft Skills

ISO 9001-2015 INTERNAL AUDIT CERTIFICATION TRAINING

7 AND 13 MARCH 2018 | DOHA, QATAR

The ISO 9001 Quality Management standard was updated from the 2008 edition to the 2015 edition. As part of MAN Enterprise's recertification, training was performed for the certified internal auditors according to the new standard. The course was a summary of ISO 9001:2015 internal audit procedures and an opportunity for the 37 trainees to practice auditing.

QATAR CONTRACTS PROCEDURE

20 MARCH 2018 | DOHA, QATAR

Training was conducted by Quantum Global's head office for 40 employees. Many subjects were highlighted including contract procedures in Qatar, the basic procedural steps for managing contracts, notice and time bars, understanding risks, risk sharing, contractual determinations, and contemporary records.

TIME AND ATTENDANCE - SOFTWARE IMPLEMENTATION

9 JUNE, 16 TO 18 JULY 2018 | BEIRUT, LEBANON

The Administration, HR, IT, and PMO Departments attended the training on the configuration of the new attendance devices and the use of the new time attendance software that integrates with the complete ERP solutions.



bSMART MOBILE T&A TRAINING

8 JULY 2018 | DOHA, QATAR

Training, conducted by bSmart, was given to 34 MAN Enterprise and Metrix Qatar timekeepers and administrators. These individuals learned about the different functions and usage of the new MAN attendance system.

ACCOUNTS PAYABLE FROM ACCOUNTING TO MANAGEMENT

23 JUNE 2018 | DOHA, QATAR

This course provided instruction for the new managers in Accounts Payable. It aided the ten employees from Metrix Qatar and Man Enterprise Qatar in their new roles. The training covered management principles, invoices, check processing, preventing errors, annual audits, and the use of technology in the department.

LEADERSHIP AND MOTIVATION IN A MULTICULTURAL ENVIRONMENT

2 JULY 2018 | DOHA, QATAR

Ten employees from Metrix Qatar and Man Enterprise Qatar attended the course at the Qatar Skills Academy. It provided them with the opportunity to acquire an understanding of how leadership shapes and effects organizational outcome.

ERP SOFTWARE IMPLEMENTATION - PROCUREMENT AND STORES

19 TO 25 JULY 2018 | BEIRUT, LEBANON

Storekeepers, main store personnel, procurement and the PMO Department learned about procurement standard requisitions, procurement purchase orders, deliveries, procurement reporting, and stock management.

TEKLA SOFTWARE TRAINING

3 TO 6 SEPTEMBER 2018 | BEIRUT, LEBANON

This course covered how to create cast in place concrete models and detail independently. The two participants learned how to perform model checks,

extract shop drawings, bills of quantity, bar bending schedules, and SDI data.

NEGOTIATION SKILLS

29 SEPTEMBER TO 8 OCTOBER 2018
DOHA, QATAR

23 employees from Metrix Qatar and MAN Enterprise Qatar attended training about defining negotiation strategies, highlighting different negotiation approaches, and helping attendees strengthen and develop negotiation skills.

ERP SOFTWARE IMPLEMENTATION - VALUATION AND COST

4 AND 5 OCTOBER 2018

BEIRUT, LEBANON

The Cost Control and Operations Departments attended the training where post tender valuation and cost control, using the relevant software that links to the Complete ERP solution, was discussed.

ERP SOFTWARE - USER SEMINAR AND SHOWCASE, COST AND TIME MANAGEMENT

10 OCTOBER 2018

BEIRUT, LEBANON

All current and future users of the ERP software solutions related to cost and time management from multiple departments such as Estimation, Procurement, Operations, and PMO attended the training at Le Royal Hotel. They were guided through the most important features of the software as well as exciting new developments.

EMPOWER YOURSELF

10 NOVEMBER 2018 | DOHA, QATAR

Training was conducted for ten employees regarding the functions of leadership, characteristics, and strengthening personal leadership skills.





LEADERSHIP SKILLS WORKSHOP

26, 28 AND 30 NOVEMBER 2018
BEIRUT, LEBANON

14 candidates attended the Leadership Skills Workshop Training. The training covered the role of leaders and competent managers, the four different leadership styles, adapting to one's own leadership style according to employee competence, and tools and techniques needed to succeed as a leader.

PRIMAVERA WORKSHOP

4, 6, 11, 13, 18 AND 20 DECEMBER 2018 | BEIRUT, LEBANON

The main role of the training was to define the project and coding, add and organize activity data, create target schedules, develop a project network, enter data, design a schedule, apply constraints to a schedule, and customize project layout. 15 candidates attended the training.

ERP IMPLEMENTATION - ACCOUNTING AND COST MANAGEMENT

4 TO 14 FEBRUARY 2019
BEIRUT, LEBANON

The Accounting and Finance Departments, in addition to PMO, Operations, Cost Control and QS personnel, attended the ERP Implementation Training where all major accounting and cost management modules such as accounts payable, accounts receivable, subcontractor accounting, general accounting, and reporting were showcased.



GLOBAL SCALEUP PROGRAM

18 FEBRUARY 2019
BEIRUT, LEBANON AND MADRID, SPAIN

Mr. Melhem Matar, MAN Enterprise Qatar's AGM, successfully completed the Global Scaleup Program at the American University of Beirut and IE Business School, offered over 12 days from February 18, 2019, through April 12, 2019. The program demonstrated how to unlock the organization's growth potential, enhance analytic abilities, and take appropriate action in today's global markets.

GREAT ACCELERATION DEBATE

5 MARCH 2019 | DOHA, QATAR

This workshop, held for two employees, discussed project acceleration cases from the contractor, client, and arbitrator's point of view. Methodical and logical recordkeeping was explained in depth.

LEAN CONSTRUCTION, PRINCIPLES, AND METHODS

9-10 MARCH, 1 AND 11 MAY 2019 | DOHA, QATAR

Lean Construction training was conducted for 46 employees. Lean history, concepts and methods, in addition to the Last Planner System LPS, were covered. Simulation exercises and theoretical studies aided in the learning process.

SUBCONTRACT MANAGEMENT

12 MARCH 2019 | DOHA, QATAR

44 candidates attended the training conducted by Quantum Global which highlighted the process and types of subcontracting, risks, scope gaps, design liability, price, past performance and recommendations, issues with subcontracts, nominated subcontractors, procedural steps for construction management-FIDIC99, and standard dispute trends.

METHOD STATEMENT OF RAFT CASTING

4 APRIL 2019 | DOHA, QATAR

In line with MAN Enterprise's commitment to providing well-coordinated works on site, all new activities with approved method statements were presented and discussed with seven engineers and foremen responsible for execution. Concrete casting methodology and raft casting steps and sequence were also reviewed.

METHOD STATEMENT FOR CONCRETE REPAIR AND CHEMICAL ANCHORING, PLASTERING WORKS, RAFT CASTING, PAINTING AND EXPOY WORKS, STRUCTURAL AND MECHANICAL, INSTALLATION OF ELEVATORS, SCREED CASTING AND INSTALLATION OF GRC PANELS AND STONE WORKS

4 APRIL; 12 AND 22 SEPTEMBER; 9 NOVEMBER 2019; 4 JANUARY; 22 AND 23 FEBRUARY; AND 2 JULY 2020 | DOHA, QATAR

In line with MAN Enterprise's commitment to providing well-coordinated works on site, all new activities having approved method statements are presented and discussed with engineers/foremen responsible for execution. Several inductions were presented by a representative from the ALAR project for 76 engineers, explaining concrete repair and steel anchoring methodology, plastering works, raft casting, painting and epoxy, structural and mechanical works, elevator works, screed works casting, GRC panel works, marble and stone works methodology, and material characteristics.

CAREER DEVELOPMENT

Trainings

LEAN CONSTRUCTION

4 AND 12 APRIL 2019 | BEIRUT, LEBANON

Divided into two sessions, 56 employees attended lean training with simulation exercises. In addition, the Last Planner System including master scheduling, pull scheduling, look ahead planning, weekly work planning, and integrated project practices were studied.

ISO 14001-2015 LEAD AUDITOR COURSE

15 JUNE 2019 | DOHA, QATAR

Training for one candidate for ISO 14001:2015, the international standard that specifies requirements for an effective environmental management system (EMS), was conducted by DISS Qatar to certify attendees for auditing (Certified Lead Auditor).

PROPERTY MANAGEMENT

20 JUNE AND 11 JULY 2019 | BEIRUT, LEBANON

Property Management training, delivered to three Hausman employees, covered the Law Decree 88/83, property bylaws, estimated budget preparation, co-owner expenses, shared allocation, counter readings, variable expense distribution and allocation, financial reports, management supervision and the checklist, and common area purchase procedures.

INTERNATIONAL GROUP FOR LEAN CONSTRUCTION CONFERENCE

3-5 JULY 2019 | DUBLIN, IRELAND

MAN Enterprise participated in the International Group for Lean Construction Conference in Dublin in July of 2019. Having witnessed the evolution of construction management prior to lean, MAN conducted a presentation, "Comparing Lean Management Principles and Evolutionary Design in Nature." This presentation showed, through its original theoretical topic, the correlation between lean management principles and evolutionary design in nature, reaching a conclusion that lean construction is the natural evolution of construction management.

BASIC FIRST AID WITH CPR

15 JULY 2019 | DOHA, QATAR

Basic First Aid with CPR training and certification, given to two participants, covered important workplace safety information relevant to industry sites.

PRODUCTIVITY ISSUES CAUSES & EFFECTS

10 SEPTEMBER 2019 | DOHA, QATAR

Eight engineers from the ALAR project attended the presentation which defined productivity causes and effects, in line with the weekly LPS meetings and productivity computation.

QATAR TAX CONFERENCE AT DELOITTE

29 OCTOBER 2019 | DOHA, QATAR

This course discussed the rapidly shifting global tax environment that is



FIDIC

23-25, 30 APRIL AND 2 MAY 2019 | BEIRUT, LEBANON

The training was given to 13 employees with topics such as employer procurement strategy, FIDIC 2017 conditions, applicable law and contracts, the role of the engineer and agreement/determination, project management tools, quality management, and quality verification systems.

LEAN CONSTRUCTION TRAINING, LOCATION BASED MANAGEMENT AND TAKT TIME PLANNING

15 MAY 2019 | DOHA, QATAR

In continuation with lean construction principles and methods, training was conducted for 30 trainees that highlighted location based management and takt time planning concepts along with simulation exercises.

FACILITY MANAGEMENT

17 JUNE AND 8 JULY 2019 | BEIRUT, LEBANON

The Syndicates of Engineers provided Facility Management training to six employees from Hausman, explaining the duties and responsibilities of facility managers and how to develop and manage the strategic facility plan. It discussed life cycle analysis, reliability-centered maintenance, and other tools needed to manage and oversee the operations and maintenance of buildings, systems and equipment. Moreover, the course explored how to use the workflow process, specific performance measurements, and key performance indicators to characterize performance using a balanced score-card.

creating unprecedented changes in the market. The chief accountant from Metrix Qatar attended the training.

GLOBAL ECONOMIC OUTLOOK 2019 AT DELOITTE **19 NOVEMBER 2019 | DOHA, QATAR**

This course reviewed the global growth that is projected and how to improve for the next year. The chief accountant from Metrix Qatar attended the training.

PROJECT PLANNING **19 OCTOBER AND 21 NOVEMBER 2019 | DOHA, QATAR**

A presentation was conducted for 17 office and site engineers by the MAN Planning Manager. Project planning, starting from the tendering phase until the project handing over, was highlighted.

ALAR SITE COST CONTROL MEETING APRIL 2020 **9 APRIL 2020 | DOHA, QATAR**

A workshop was given regarding the ALAR Project for 11 site management and engineers, in which productivity rates and performance of site teams for the concrete works period was reviewed, in addition to the projection for the upcoming site works.

DEVELOPING YOUR X-FACTOR IN LEADERSHIP WEBINAR AT THE SKILLS ACADEMY **15 JULY 2020 | DOHA, QATAR**

15 participants attended this course which focused on the four key factors of leadership: the led, the leader, the situation, and the communication.

INSIGHTS DISCOVERY - PERSONALITY **3 AUGUST TO 2 DECEMBER 2020 | ONLINE**

64 employees and 3 project managers from MAN Enterprise Lebanon completed the online training during lockdown with the purpose of "Discovering Who I Am - My Personality," showcasing the eight types of personality

which helps employees to understand each other better and work together.

BUILDING INFORMATION MODELING (BIM) **27 AUGUST AND 8 SEPTEMBER 2020 | BEIRUT, LEBANON**

79 employees from MAN Enterprise, MAN Lebanon, MAN Ghana, MAN Cyprus, Hausman, and 155 employees from MAN Enterprise Qatar and Metrix Qatar attended the BIM training which is a digital representation of physical and functional characteristics of a facility. It is a shared knowledge resource for information about facilities forming a reliable basis for decision making during its lifecycle; it is defined as existing from earliest conception to demolition.

PROGRAMMING IN C# **1 SEPTEMBER TO 1 OCTOBER 2020 | BEIRUT, LEBANON**

This course is intended for experienced developers who already have programming experience and understand the concepts of object-oriented programming. One employee from MAN Enterprise Lebanon attended the training, learning how to create and invoke methods, pass parameters to methods, return values from methods, create overloaded methods, use optional parameters and output parameters, catch and handle exceptions, write information to the event log, explain the requirement for implementing logging, tracing, and profiling when building large-scale applications.

PROJECT MANAGEMENT PROFESSIONAL (PMP) **25 SEPTEMBER TO 4 NOVEMBER 2020 | BEIRUT, LEBANON**

The Project Management Professional Program is a globally recognized certification for project managers. It has been awarded to three attendees from MAN Enterprise Lebanon by the Project Management Institute. The program provides a comprehensive review of the ten project management body of knowledge areas.

ANALYZING DATA WITH POWER BI **7 TO 23 OCTOBER 2020 | BEIRUT, LEBANON**

One employee attended the program which discussed the various methods and practices that are in line with business and technical requirements for modelling, visualizing, and analysing data with Power BI. It also showed how to access and process data from a range of data sources including both relational and non-relational data. The course also explored how to implement proper security standards and policies across the Power BI spectrum, including datasets and groups.

DEVELOPING ASP.NET MVC 5 WEB APPLICATIONS **27 OCTOBER TO 26 NOVEMBER 2020 | BEIRUT, LEBANON**

This course was intended for professional web developers who use Microsoft Visual Studio in an individual-based or team-based, small-sized to large development environment. It taught the employee from MAN Enterprise Lebanon to develop advanced web applications and manage the rendered HTML comprehensively. In addition, they learned how to design the architecture and implementation of a web application that meets a set of functional requirements, user interface requirements, and address business models.

Technical Skills

WT BURDEN SURFACE WATER DRAINAGE SEMINAR **2 OCTOBER 2019 | DOHA, QATAR**

The seminar, attended by five employees, consisted of an elaborate presentation of Hydro International products that are installed around Doha, Qatar.

CONFINED SPACE SUPERVISOR **6 FEBRUARY 2020 | DOHA, QATAR**

The aim of this course was to prepare the three candidates to supervise

CAREER DEVELOPMENT

Trainings

confined space operations, write safe systems of work for confined spaces, draft and issue permits to work, and write rescue plans.

DESIGN AND MAINTENANCE OF HYDRONIC SYSTEMS TO MAINTAIN DESIGN DELTA T AND INCREASE SYSTEMS EFFICIENCY

8 FEBRUARY 2020 | DOHA, QATAR

Three engineers from Metrix Qatar attended this course that discussed variable-flow chilled water plants that are designed to maintain a relatively constant delta-T, and the difference between return and supply chilled water temperature.

TOWER CRANE ERECTOR

25 FEBRUARY 2020 | DOHA, QATAR

The course provided information regarding safety planning and procedures in tower crane erection, jacking and dismantling, and legal requirements and responsibilities of various stakeholders. One employee attended the training.

DEFENSIVE DRIVING FOR LIGHT VEHICLES

29 FEBRUARY 2020 | DOHA, QATAR

This course reviewed driving skills in a manner that saves lives, time, and money in spite of the surrounding conditions and the actions of others. One driver from Metrix Qatar attended the training.

Safety Measures

ANCHORS AND ANCHORED CONNECTIONS

27 MAY AND 23 JUNE 2018 | DOHA, QATAR

Hilti Qatar conducted a presentation in their head office for twelve employees highlighting types of anchored connections, base materials, anchor working principles, failure modes, anchor selection criteria, codes, and approval terminologies.



PASSENGER HOIST OPERATOR

16 FEBRUARY 2019 | DOHA, QATAR

Many topics were covered in this course involving passenger hoist operations and the role and responsibilities of a plant/equipment operator which include the stability, alignment and all around safety before usage. This training was offered to six individuals.

CONSTRUCTION MANAGEMENT AND MEASURING

18 FEBRUARY 2019 | DOHA, QATAR

43 candidates attended the training conducted by Quantum Global which highlighted internal construction management evaluation, earned value analysis, and key factors for measuring construction management performance.

MASONRY BLOCKWORK METHOD STATEMENT

17 JUNE 2019 | DOHA, QATAR

In line with MAN Enterprise's commitment to providing well-coordinated works on site, new activities with approved method statements were presented and discussed with nine engineers and foremen responsible for execution. A session explaining the masonry blockwork installation methodology, approved accessories to be used, work execution methods, and handing over strategy was discussed.

DOKA CONCRETE LOGGERS

18 JUNE 2019 | DOHA, QATAR

11 employees received training from Doka Qatar on concremote, which provides a real time measuring system of in-situ concrete development. By placing the device on fresh concrete, data transmits in real time to a server and real time results on the web portal give alerts based on the targets.

SAFE SCISSOR LIFT OPERATION AND OPERATOR CERTIFICATION

29 JUNE 2019 | DOHA, QATAR

This training covered regular and planned maintenance for scissor lifts and pre-operation inspection. There was one attendee for the session.

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH

25 SEPTEMBER 2019 | DOHA, QATAR

This course explained how to control hazardous substances at work and comply with the control of substances hazardous to health. There was one attendee from MAN Enterprise Qatar.

SAFE SCISSOR LIFT OPERATION AND OPERATOR CERTIFICATION

29 JUNE 2019 | DOHA, QATAR

This training covered regular and planned maintenance for scissor lifts and pre-operation inspection. There was one attendee for the session.

TUV SAFETY INSTRUMENTED SYSTEM COURSE
23 OCTOBER 2019 | DOHA, QATAR

This course covered process safety instrumented systems. It included the safety lifecycle of a system as a core part, and it provided a standard approach to ensure functions are available to respond to emergency situations. One employee attended the training.

FIRE MARSHALL
20 NOVEMBER 2019 TO 13 SEPTEMBER 2020 | DOHA, QATAR

This course provided the 18 attendees from MAN Enterprise Qatar and Metrix Qatar with the necessary training required to be a qualified fire warden. It taught them about legal duties and provided them with an understanding of fire, familiarizing them with fire hazards and fire safety arrangements, and detailed what the emergency evacuation procedures should entail.

SAFE TOWER CRANE ERECTION AND DISMANTLING SUPERVISOR
31 DECEMBER 2019 | DOHA, QATAR

The aim of the training was to provide the candidate with the necessary knowledge of methods of the safe erection and dismantling of scaffolds.

SCAFFOLDING INSPECTOR AT ENERTECH TRAINING CENTER
30 JANUARY, 5 MARCH AND 4 AUGUST 2020 | DOHA, QATAR

This training, given to seven employees from MAN Enterprise Qatar and Metrix Qatar, was to provide scaffold users, erectors and inspectors with the regulations, safety guidelines and procedures needed to recognize and eliminate hazards in the field.

WORKING AT HEIGHT AWARENESS
1 AND 25 FEBRUARY AND 16 AUGUST 2020 | DOHA, QATAR

This training was conducted to provide knowledge and skills to the 26 participants from MAN Enterprise Qatar and Metrix Qatar who learned effective and interactive ways to keep up to date with fall protection training requirements.

BASIC FIRE FIGHTING
27 FEBRUARY 2020 | DOHA, QATAR

The purpose of this basic firefighting training was to teach participants skills, knowledge and expertise that will enable them to identify the conditions capable of causing fire, know how to use a fire extinguisher, respond appropriately to

fire emergencies, and follow the fire evacuation plan while adequately implementing fire emergency procedures.

SCAFFOLDING ERECTION AND DISMANTLING CERTIFICATION
19 AUGUST 2020 | DOHA, QATAR

This training provided 15 candidates from Metrix Qatar with working knowledge and skills regarding methods of safe erection and the dismantling of basic scaffolds.



ACTIVITIES & EVENTS

MAN-Metrix Qatar Basketball Tournament 2019

The basketball tournament for MAN Enterprise Qatar and Metrix Qatar started on March 23 and ended on April 17, 2019 in Doha, Qatar.

Six teams were formed: MAN Head Office Lions (Head Office), National Museum of Qatar (NMOQ), Metrix (Head Office), VIBA (LAND), PAST/REST and ALARJECT (ALAR). They assembled in Al Arabi Club's open basketball court for their weekly games.

At the end of the tournament, ALARJECT (ALAR) took the title and boasted 2 MVPs (Most Valuable Player). The PAST/REST team earned first runner up and the VIBA team was second runner up. Each team displayed sportsmanship throughout the whole tournament.



MAN Enterprise Lebanon

Popsicle Stick Bridge Competition

The ASCE Lebanon section organized the third annual inter-university Popsicle Stick Bridge Competition (PSBC) on Saturday, March 9, 2019, at the LAU Byblos Campus at the Gilbert and Rose-Marie Chagoury Health Sciences Auditorium and Hallway.



MAN Enterprise was one of the companies that sponsored and supported the event where 27 teams from 10 universities participated. The full day program was comprised of several presentations from leading engineering companies. Students had the opportunity to learn, engage, interact, and most importantly, be exposed to innovation in bridge design and construction.

The event was featured under the patronage of the Order of Engineers and Architects Federation of Lebanese Engineers, and was in the presence of its President, Mr. Khaled Chehab. The winning team was from Notre Dame University, while the Lebanese American University ranked second and the Lebanese University, third.



ACTIVITIES & EVENTS

MAN Enterprise Group Cricket 2020

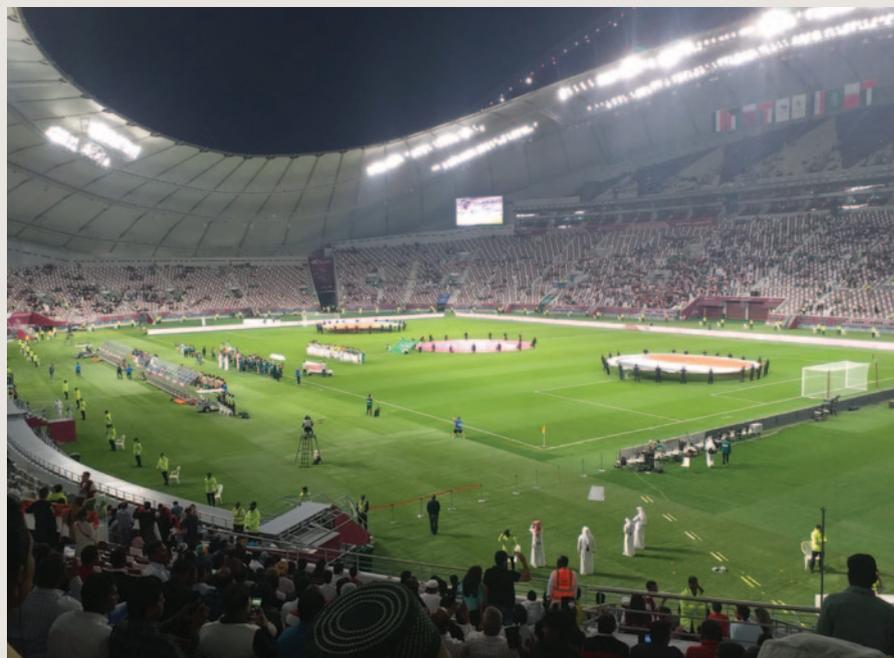
MAN Enterprise Qatar organized a one day cricket tournament for staff and workers on the occasion of Qatar Sports Day on February 11, 2020, on the Barwa Al Baraha Labor Accommodation ground.

Five teams participated in the knockout tournament: HO Calibers, MAN Sprits, Metrix Bruisers, Bengal Tigers, and United Indians. Trophies were distributed for United Indians, the winner, and HO Calibers, the runner-up.



MAN Enterprise Group Football 2020

MAN Enterprise Qatar and Metrix Qatar received tickets for 960 staff members and laborers to watch the Arabian Gulf Cup football match in Doha. **The match was UAE vs. Iraq on Friday, November 29, 2019, at Khalifa International Stadium.**



SOCIAL NEWS

Newborns



| MAN Enterprise |

- Nidal Halabi, Serena February 14, 2018
- Suha Saleh, Adam March 2, 2018
- Ranjith Parambil, Aadhidev May 8, 2018
- Paul Peralta, Paul Jacob Andres May 12, 2018
- Joe Jeha, Ella June 13, 2018
- Selim Abou Madi, Joanne July 2, 2018
- Paula Khoueiry, Charbel July 17, 2018
- Khalaf Alfaraj, Ajlan September 4, 2018
- Dijo Daniel, Nayonica September 12, 2018
- Georges Ibrahim, Nadim September 21, 2018
- Raymond Botros, Benjamin September 22, 2018
- Nadim Shaker, Tony September 23, 2018
- Cynthia Fenianos, Eva-Maria October 11, 2018
- Shaherdeen Parambath, Ali Muhammad Haadh October 25, 2018
- Fady Honein, Clara October 26, 2018
- Elie Asmar, Toni November 7, 2018
- Dary El Moghraby, Ralph November 10, 2018
- Jean Nahed, Alessandra December 13, 2018
- Hafez Hijaz, Ryan January 4, 2019
- Raguvaran Vanangamudi, Divisha January 10, 2019
- Khalil Masrouaa, Charbel Elie January 20, 2019
- Abin Abraham, Asher January 30, 2019
- Abdelkarim Kilani, Imad February 7, 2019
- Kamal Ghazi, Arafat February 10, 2019
- Bassam Mazloum, Keven February 13, 2019
- Riju Akkarakunnath, Aarav Akkarakunnath February 27, 2019
- Elias Bou Malhab, Rhea March 7, 2019
- Nouman Sulaiman, Laith March 17, 2019
- Patrick Abi Nader, Michel March 27, 2019
- Wissam Khattar, Louis March 29, 2019
- Richard Kozaily, Avy Maria April 24, 2019
- Roy Rahme, Samer May 14, 2019
- Michel Raad, Anthony June 27, 2019
- Paul Nakhle, Charbel & Marie-José July 12, 2019
- Rafael Puno, Khael Inigo Z. July 31, 2019
- Mohammed Jamali, Inza Khan August 3, 2019
- Khalaf Alfaraj, Bilal September 17, 2019
- Nizamudheen Moosa, Haiza Mariam October 31, 2019
- Alfredo Alumbro, Ameerah Victoria Meneses November 15, 2019
- Mehdi Nouredin, Youssef November 27, 2019
- Aditya More, Anshuman December 21, 2019

- Anthony Rizk & Stephanie Elias, Marita January 28, 2020
- Mohammad Islam, Aafiyah Fatimah February 6, 2020
- Sulfeekar Mytheenkunju, Nayra Maryam February 12, 2020
- Roy Malkoun, Matheo February 19, 2020
- Emile Zankoul, Gaelle April 4, 2020
- Michael Kallas, Romy April 25, 2020
- Antoine Obeid, Emma May 19, 2020
- Gurjit Singh, Jastej June 28, 2020
- Sultan Madi, Jolie August 11, 2020
- Ghazi Al Rbbai, Jad August 13, 2020
- Abdelgadir Ibrahim, Omer August 17, 2020
- Abd Alrzak Alibraheim, Talin August 26, 2020
- Muthu Veeraiah, Hassini .ML September 13, 2020
- Khalaf Alfaraj, Ibrahim September 13, 2020
- Sujo Thomas, Albin October 4, 2020
- Roland Darrous, Ivy Maria October 21, 2020
- Rafat Alrebai, Milad November 4, 2020

| Metrix |

- Joe Al Andary, Matteo June 26, 2018
- Reynaldo Parungao, Emmanuel Jose October 29, 2018
- Carlo Gabion, Claire Meghan November 6, 2018
- Elie Nakhoul, Christa November 10, 2018
- Christopher Atienza, Dave Alfonso December 15, 2018
- Ahmad Karim, Ali January 21, 2019
- Roger Bou Saleh, Kate April 23, 2019
- Patrick El Houry, Lucia Maria May 8, 2019
- Amalanathan Manickam, Amalariya Amaladhiya July 20, 2019
- Jerry Diego, Mikelle Alexa August 17, 2019
- Hasan Al Salbh, Ali September 3, 2019
- Jasem Abdallah, Ali October 6, 2019
- Angelo Jae Hernandez, Auie Angelica October 14, 2019
- Ahmad Karim, Hassan May 13, 2020
- Tony Abi Nader, Sienna May 22, 2020
- Shinjith Krishnan, Daksh June 22, 2020
- Elia Abou Chabke, Taliya July 14, 2020
- Mohab Adly Famy Aziz, Anthony October 9, 2020

| TECMAN Industry |

- Reine Outayek, Kylie November 25, 2018

Weddings

| MAN Enterprise |

- Michael Kallas & Hiba Labaki April 28, 2018
- Carel Rouhana & Jad Rizk May 9, 2018
- Anthony Rizk & Stephanie Elias June 3, 2018
- Richard Njeim & Zeina Tarraf July 7, 2018
- Nizar Amin & Manar Shmais July 21, 2018
- Wissam Khattar & Sandra Simon July 21, 2018
- Roland Darrous & Joelle Kahal July 29, 2018
- Mohammad Ajlouni & Houda Karroua August 10, 2018
- Felomino Jr Abuda & Lydle Castro Abuda August 11, 2018
- Md Imtiyaz Khan & Kahkeshan Perween December 30, 2018
- Emile Barakat & Nicole Daoud June 8, 2019
- Elias Salameh & Christina Amyuni August 4, 2019
- Jamil Moufawad & Joelle Saliba August 14, 2019
- Jeffrey Javier & Jenny Florentina V. Beralde December 27, 2019
- Tarek Waked & Sarah Berjaoui March 7, 2020

| Metrix |

- Shinjith Krishnan & Sanjuna Shinjith March 6, 2018
- Patrick El Khoury & Sanja Kozul August 24, 2018

NEW CERTIFICATES

MAN ENTERPRISE | LEBANON



ISO 9001

HAUSMAN | LEBANON



Hausman 2019 MEFMA Corp Member Certificate



Hausman MEFMA FM HEROES Certificate of Appreciation



Hausman's Admission to The Institute of Workplace and Facilities Management



Hausman HEROES Certificates-01



Hausman HEROES Certificates-02



Hausman HEROES Certificates-03



Hausman HEROES Certificates-04



Hausman HEROES Certificates-05

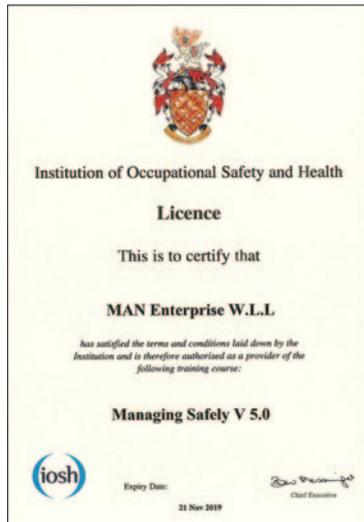


Hausman HEROES Certificates-06

MAN ENTERPRISE | QATAR



Rest Tower - Certificate of Achievement



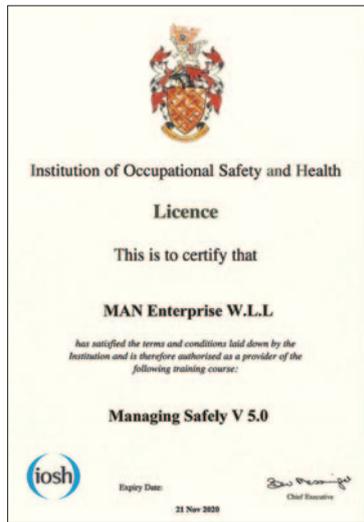
Managing Safety V5.0



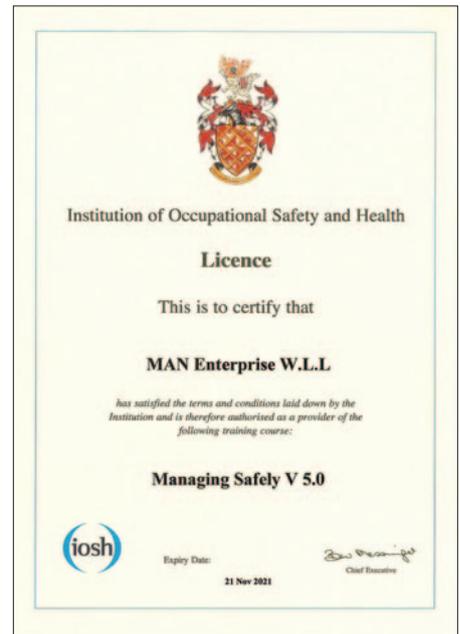
Certificate of Appreciation



Comb Project - GSAS Certificate



Managing Safety V5.0



Managing Safety 21.11.2021



Umm Shahrain - Certificate of Achievement

METRIX | QATAR



Civil Defense - Grade A



Kahramaa - Grade A



Civil Defense - Grade A



Kahramaa - 2021