



erga NEWS

SPECIAL ENGINEERS ISSUE #11



A WORD FROM ELIE & RANDA GEBRAYEL

Welcome to the special 2015 issue of Erga News dedicated to Erga Engineers. We wanted to draw attention to our hardworking engineers and some of the recent projects they have been working on.

Moreover, this newsletter issue brings to light some of our engineers with special talents which are worth mentioning as well as some of our sub-consultants related to the engineering field that we have been working with hand in hand in order to ensure a satisfying outcome.

An engineer, by definition, is a professional practitioner of engineering, concerned with applying scientific knowledge, mathematics and ingenuity to develop solutions for technical problems.

Engineers design materials, structures and systems while considering limitations imposed by practicality, regulation, safety and cost. In short, engineers are versatile minds creating links between science, technology and society.

Design During the engineering design process, the responsibilities of the engineer may include defining problems, conducting and narrowing research, analyzing criteria, finding and analyzing solutions, and making decisions. Most of an engineer's time is spent on researching, locating, applying, transferring information and developing new technological solutions.

Engineers must weigh different design choices on their merits and choose the solution that best matches the requirements. Their crucial and unique task is to identify, understand and interpret the constraints on a design in order to produce a successful result.

Ethics Erga's engineers have obligations to the public, to our clients, to our company and most importantly to their profession. Each engineering discipline maintains a code of ethics that the members pledge to uphold.



NAME
Mr. Dany El Murr
TITLE
Head Of Mechanical Department & Partner
LOCATION
Beitut Head Office

BS in Electro-mechanical engineering from ESIB, Beirut in 1997.

BS in Electronics from Lebanese University, Fanar in 1995.

Joined Erga in 1998.

Became Head of Mechanical Department in 2003.

Became partner in 2013.



	LOCATION
	Beirut, Lebanon
	TYPE
	Bank
	www.creditlibanais.com.lb



MECHANICAL DEPARTMENT SCOPE AT **erga**

The mechanical department, also known as building services engineering, deals with the design as well as the quality assurance and quality control on site.

Our engineers vast experience in designing mechanical systems goes from forecasting energy consumption patterns to supplying energy and water, developing heating, cooling, fire fighting and sustainability systems for all types of buildings ... This department employs and develops very talented engineers in the industry. Supported by specialists in every field, they deliver unrivalled building services solutions.

The mechanical department is committed to research and development remaining at the forefront of latest technologies and any modified legislation. The extensive research and the accumulated knowledge from one project to another form the basis of Erga's design expertise.

As for the sustainability, architecture plays a critical role in preserving natural resources. That's why sustainability lies at the core of every project Erga engineers design.

From intelligent facades to energy-efficient building systems, this department is renowned for developing sustainable strategies and for integrating environmentally sound principles at every stage of a project, whether it's a single building or an entire new community.



CREDIT LIBANAIS HEADQUARTERS

The different mechanical systems applied in Credit Libanais HQ project are as follow:

PLUMBING & FIRE FIGHTING

Rainwater drainage is collected from roofs and terraces and discharged by gravity into the city storm water network.

A 2-pipe sanitary drainage system discharges waste and soil separately then collects them in the sewage network.

Domestic cold water is supplied from city water network. It is stored in a main domestic tank in the lowest basement. A lift pump set lifts water to a domestic tank in the technical floor and another one on the roof. It is than supplied to floors by gravity, except the last one supplied by a booster set to ensure adequate flow and pressure at sanitary fixtures.

Domestic hot water is provided by means of individual electrical boiler in gymnasium, cafeteria and nursery.

The fire protection system's design is made as per the French code and local codes and regulations.

HEATING, VENTILATION & AIR CONDITIONING

Cooling & heating system is provided by means of Variable Refrigerant Volume (VRV) system. So VRV outdoor units are located on dedicated technical areas at each floor level. And VRV indoor unitsare distributed in each floor to assure well-being in summer and in winter.

Fresh air for indoor units is provided through a heat recovery module at each floor level exchanging heat between the toilets exhaust air and the supplied fresh air.

Technical rooms and stores are ventilated by means of exhaust fans and fresh air supply. Parking areas are ventilated with exhaust and fresh air supply fans through jet fans for each parking level as per French code requirements for smoke management.

Thus, carbon monoxide sensors are interlocked with BMS system controlling parking fans.

BUILDING MANAGEMENT SYSTEM (BMS)

A Building Management System for all the project's electro-mechanical systems (generators, fuel tanks, water tanks, pumps, fresh air and exhaust fans, electric panels...) is provided allowing to remotely control the status of all equipment (start/stop), the alarm (on/off and volume) and all fault indications...



STRUCTURAL DEPARTMENT SCOPE AT erga

Erga's structural engineers have the experience, capacity and resources to provide structural solutions to a wide range of projects from small villas, to large urban projects and complex tall buildings... The combination of institutional tradition with state-of-the-art technology, using world-class software and in-house custom developed applications, ensures easily built and optimized structural solutions in terms of cost, safety, quality, project's particular conditions and international building codes' requirements. With research and development as a daily task, we aim to improve the development of new structural concepts, design and analysis methods, drafting techniques, the development of new materials and reinforcements for concrete structures...

The wide range of our structural services comprises: 3D analytical modeling, seismic design (static, dynamic, linear and non-linear analysis), wind design, Building Information Modeling (BIM), structural assessment, rehabilitation & retrofitting of existing structures, foundation analysis, soil-structure interaction, value engineering...

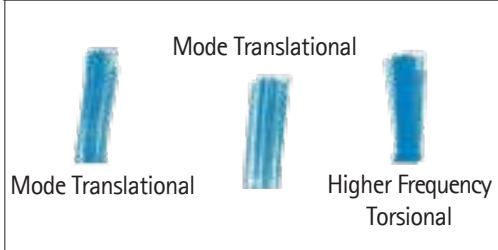


NAME	Mr. Fady Achkar
TITLE	Head Of Structural Department & Partner
LOCATION	Beitut Head Office
BS in Civil Engineering from ESIB, Beirut in 1995.	
Joined Erga in 1998.	
Became Head of Structural Department in 2003.	
Became partner in 2013.	



ACHRAFIEH 4748

LOCATION	Beirut , Lebanon	
Type	Residential	
www.achrafieh4748.com		



THE STRUCTURAL SYSTEM consists of a common basement with three merging towers and one story retail block. The towers are separated from common podium by structural joints. Expansion joints are dividing the podium into 7 separate blocks. The gravity floor system of the substructure floors consists of precast pre-stressed slabs capped with cast-in-situ reinforced concrete topping. For superstructure floors, a post-tensioned flat plate system is used.

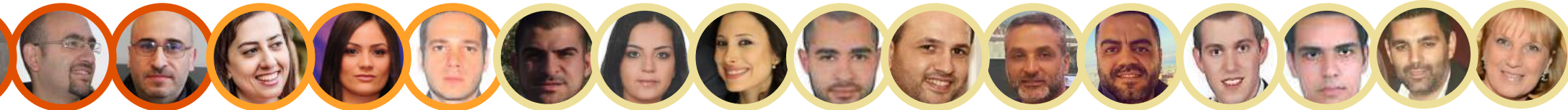
THE WIND DESIGN ANALYSIS was done using the analytical procedure of ASCE7 code. The loads generated into the 3D model of buildings and serviceability and strength criteria validated. The wind-induced motion perception by building occupants was well complying with ISO 10137 related requirements. The dynamic analysis indicated that the 1st & 2nd mode shapes are both lateral side sway, with similar fundamental period of 5.1 seconds.

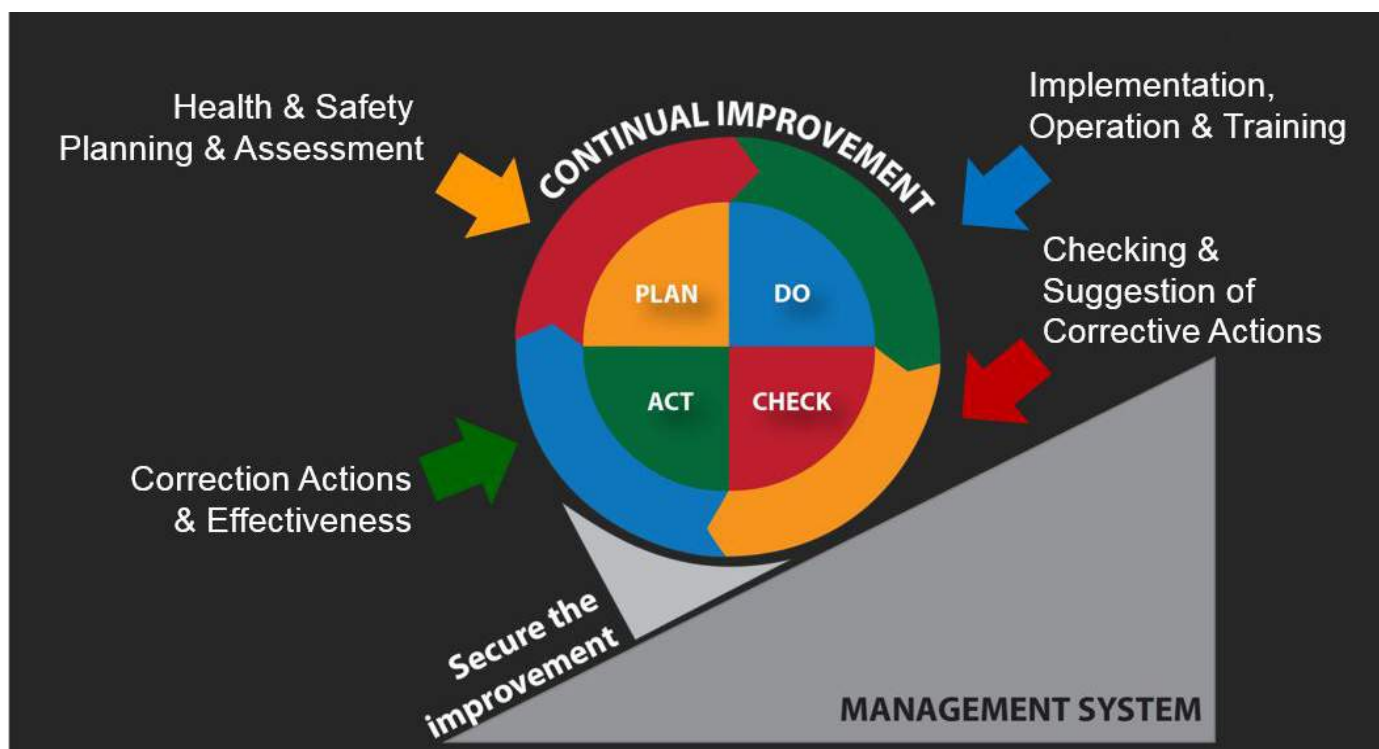
THE FOUNDATION SYSTEM consisted of a "piled-raft" under towers and a simple reinforced thickened mat under the podium. Temporary settlement strips were envisaged between the towers and podium foundation systems. The towers' raft foundations, 2.5m thick, acts concurrently with the underneath piles to withstand the heavy weight of the structure. A state of the art QA/QC testing program was accomplished, including preliminary instrumented static destructive pile load tests, cross-hole ultrasonic as well as low and high strain dynamic tests.

The displacement under the towers was monitored to anticipate any possible deviation between the theoretical and actual settlement values. A mock-up was executed on site to verify the raft execution procedures and monitor / validate the concrete temperature rise and difference between center and top surface utilizing thermal couples.

AN ELASTIC SHORTENING ANALYSIS was performed to anticipate any extra differential movement between floors' members, and avoid visual long-term tilting of the slabs.

CONSTRUCTION
The towers' core walls were formed using an automatic self-climbing formwork system. The construction sequence has the central core and slabs being cast first. Concrete was distributed utilizing concrete booms, which are attached to the jump form system.





SITE SAFETY MANAGEMENT

HEALTH & SAFETY PLANNING & ASSESSMENT

- Establish Norms & Guidelines:
 - Site Cleanliness & Security
 - General Security Information
 - Security Guards Information
 - Visitors & Employees Regulations & Rules
 - Fire Protection
- Identify hazards, risks, environmental aspects & impacts,
- Identify relevant legal & other requirements,
- Establish objectives & targets.

IMPLEMENTATION, OPERATION & TRAINING

- Establish a safety management structure & define responsibilities
- Identify training needs & awareness programs,
- Set-up communication structures,
- Conduct risk analysis & impact evaluations,
- Establish operational controls,
- Develop emergency preparedness & response plans,
- Implement safety measures per project.

CHECKING & CORRECTIVE ACTIONS SUGGESTIONS

- Monitor activities with possible significant risks & impacts,
- Raise non-conformance reports using safety checklists,
- Plan corrective & preventive actions to eliminate risks.

CORRECTIVE ACTIONS & EFFECTIVENESS

- Implement corrective and preventive actions to eliminate risks,
- Make sure that corrective actions are effective and that recurrence is impossible,
- Identify means for continual improvement.

erga MANAGEMENT

Missing Names: Victor Makhoul.



OUR SUBCONSULTANTS



ATT GROUP

ATTG provides expert engineering and planning support to Erga in the fields of traffic and transportation infrastructure since 2005. ATTG's experienced transportation and infrastructure professionals provide a wide range of services in the fields of highway and bridge design, traffic engineering, transportation planning.

They feature traffic operations engineers/transportation planners, transportation design engineers, infrastructure and structural engineers and construction management staff, giving them the ability to deliver almost any type of surface transportation assignment. Projects include: Bridge Structures, Highway Design, Planning, Rail and Traffic Engineering.

ATTG experts work closely with Erga team in order to provide a comprehensive review and design of the project design and situation of the site with respect to the surrounding roads and transportation services. The coordination with Erga Architects and study team is done through the various design phases of the project from the inception of the project to the production of tender documents.

Current projects worked with Erga include:

1. Waterfront City Development Project, Dbayeh, Lebanon
2. Marsa El Seef Development Project, Al Seef, Bahrain
3. Al Wajba Development Project, Al Wajba, Qatar
4. Sama Beirut Development Project, Beirut, Lebanon



erga QATAR

Missing Names: Pappu Denny, Kamil Sleiman, Tawfik Magdi, Malit Rico, Francois Francis, Ara Abdel Naser, Anthony Babu, Georges El Bittar, Reynaldo Galindo, Inciong Ruelito, Matar Tarek, Dennis Ponce, Roilan Ingal, Nith Mathew, Vance Gino Meneses, Sooraj Ravi, Siju Sathiadasan, Mathew Nithin.



erga PROGRESS

Missing Names: Arlyn Pingol, Shihadeh Hamzeh, Younes Mohamad, Lim Erwin.



erga SAUDI

Missing Name: Taher Mohammad Zayed.



RWDI Consulting Engineers and Scientists - RWDI

In its 41 year history, RWDI Consulting Engineers has provided wind engineering and other specialty building science services for projects in every continent of the world.

Over the last few years, RWDI has developed a close relationship with Erga through various project studies and interaction with personnel at Erga's office in Lebanon by RWDI *Chairman Dr. Anton Davies*, who frequently travels in that region to discuss projects and technical issues.

Close contact enables projects to run more smoothly and ensure that Erga's needs are met consistently.

Other services by RWDI involve the various effects of climate on master planning and building design and include: air quality studies, accoustics and noise issues, rain and sand impacts, ventilation, thermal effects and human comfort in and around buildings, plus energy use and alternative energy strategies.

RWDI hopes to continue its involvement with Erga and looks to a future where our professionals continue this professional interaction and derive mutual benefit from it, with a goal of providing excellent spaces for the ultimate users of this collaboration.



Chairman,
Dr. Antoun Davies



ABC Dbayeh Beirut Lebanon



Dubai Recycling Park - Dubai U.A.E

NAME
Mr. Ziad Helou

TITLE
Head Of Electrical
Department & Partner

LOCATION
Beitut Head Office

MS in Telecommunication from
ESIB, Beirut in 2001.

BS in Electrical Engineering from
ESIB, Beirut in 1997.

Became Head of Electrical
Department in 2003.

Became partner in 2013.



ELECTRICAL DEPARTMENT SCOPE AT erga

The electrical department in Erga deals with the technology of electricity, especially the specification and design of electrical systems like lighting, alarm, communications, lightning protection, grounding, instrumentation and control using the latest 3-D modeling platforms.

In addition, the department's experience is going more widely to delivering sustainable projects with energy conservation stressing on renewable energy and energy efficiency with our electrical engineers remaining at the forefront of latest technologies in this field and the latest building codes.

The extensive experience of Erga's electrical engineers is mainly in designing, specifying, preparing and delivering the electrical documents for the construction of all types of projects going from residential, institutional, commercial facilities like banks, office buildings, hospitals, retail stores, parking ramps, warehouses, data centers, sports fields...

Implementing and integrating smart systems is essential nowadays in Erga's designs starting from smart grid technology to smart power distribution, smart metering, smart peak load demand controls and smart BMS...

Our engineers are also involved in the quality assurance and quality control to make sure their designs are well implemented.



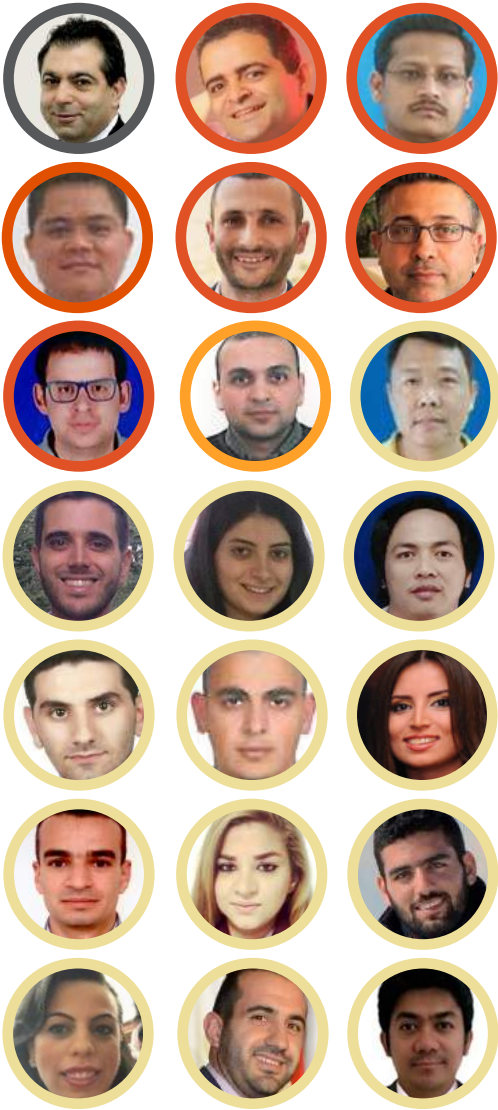
LOCATION
Qatar, Doha

TYPE
Data Center

www.ashghal.gov.lb

ASSET AFFAIR BUILDING





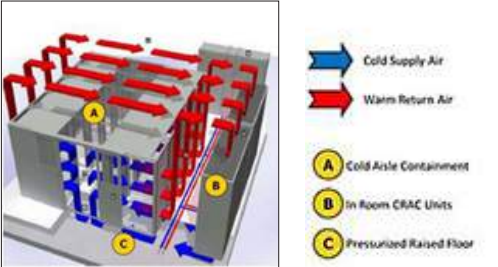
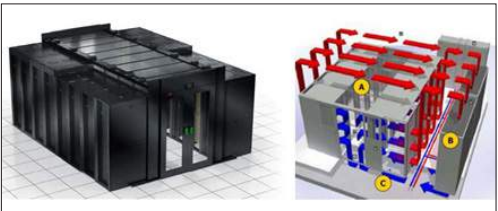
With the beginning of 2014 Erga tackled Data Center Design as a new design category to meet the growing customer demand for its cloud-based IT.

Asset Affair Building project is the first of many Data Center projects that Erga will handle as part of a new design generation to strengthen and extend its design services in the Middle East and around the world. It is technically demonstrable that data centers are the new emerging trend for all the companies that rely on high processing speeds and bulk storage with disaster recovery facility.

Asset Affair Building consists of two Data Centers, both intended to meet Tier IV rating in accordance with the latest requirements of the Uptime Institute and TIA 942. Tier IV Data Center is considered to have the most stringent requirements for the electromechanical systems compared to other Tiers' ratings.

Tier IV rating requirements are, but not limited to:

- Redundant component
- Dual active distribution paths
- Concurrently maintainable systems
- Fault tolerant/Autonomous response to single fault
- Compartmentalization among redundant systems and distribution paths
- Continuous cooling for equipment and UPS rooms...



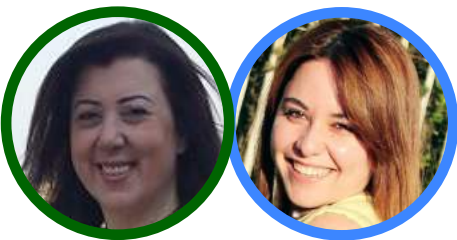
Missing Names: Noel Cantonjos, Farsath Mohamed.

CIVIL DEPARTMENT SCOPE AT erga

The Civil Engineering Department tasks encompass Civil and Structural design projects. The main scope of civil engineering is planning, designing, estimating, supervising construction, managing construction, execution, and maintenance of structures like building, roads, storm and sanitary sewers design, culverts, bridges and structural steel projects.

In addition, the Civil Engineering department staff review shop drawings and diverse design calculations submitted by contractors and provide comments and/or approvals for submittals.

The Civil Engineering department follows International codes and standards, including IBC and UBC building codes, ASCE, AASHTO and AISC standards in all projects and uses state of the art software including Sap2000, Etabs and Safe for building structure design and Eagle PointSoftware for road and infrastructure networks design.

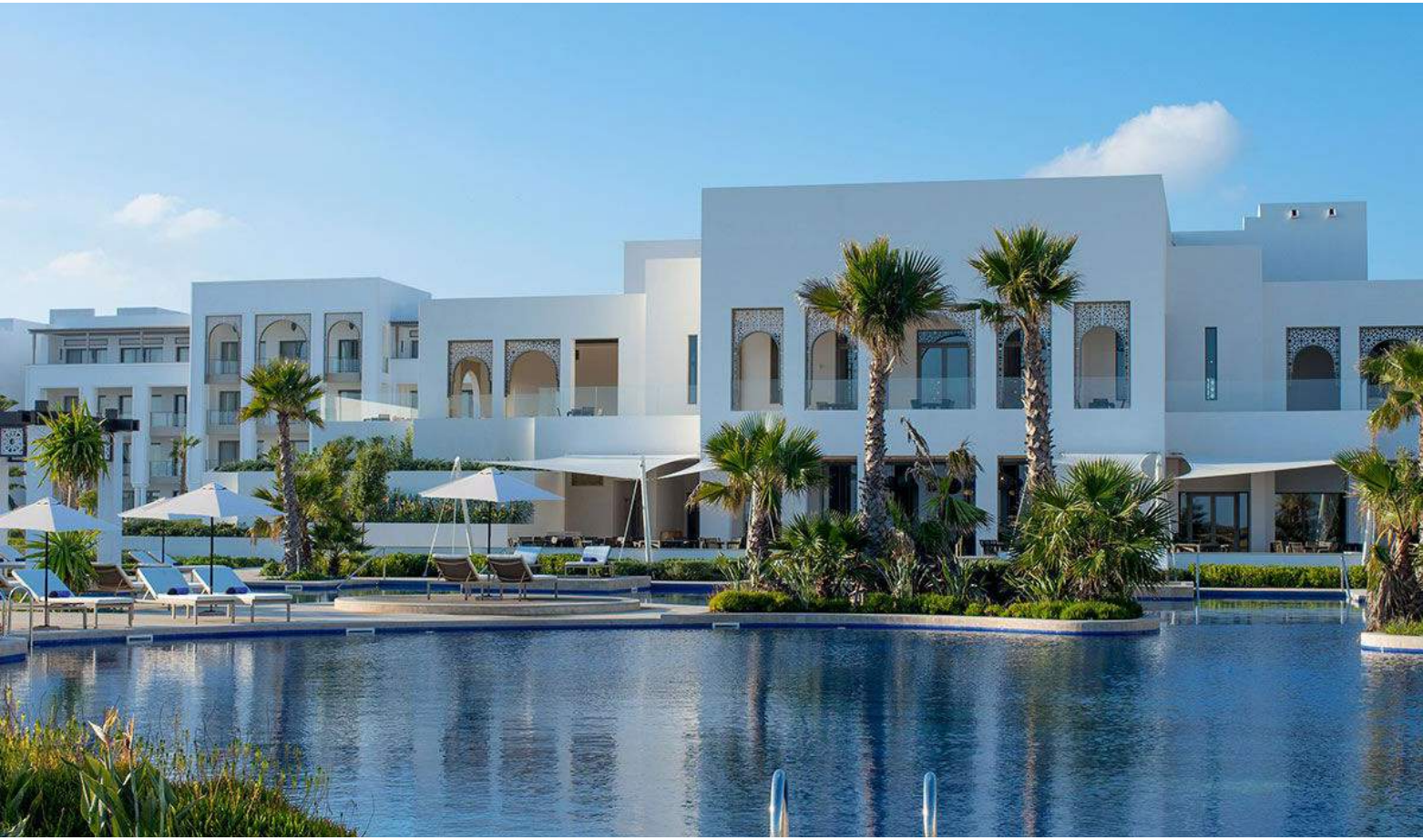


NAME	Mr. Elias Moussa
TITLE	Head Of Civil Department
LOCATION	Beitut Head Office
MS in Civil engineering from Lovain University, Belgium in 1982.	
BS in Civil engineering from Lovain University, Belgium in 1980.	
Joined Erga in 1996.	
Became Head of Civil Department in 2003.	
Became partner in 2006.	



AL HOUARA RESORT

LOCATION	Tangier, Morocco	
TYPE	Resort	
www.creditlibanais.com.lb		



This oceanfront resort celebrates Moroccos rich culture. A 500,000,000\$ project with around 2,730,000 square meters plot area, overlooking the Atlantic Ocean and including a 10.6 Km road and infrastructure network.

The civil Engineering department at Erga Group provided full road construction drawings including layout plan, profile, cross-section and details sheets.



Missing Names: Naji El Moussawi, Nagham Nader, Sarghini Abdel Ilah, Mohamad Brahimi, Mahjoub Tadaout, Sarkis Daher, Rizkallah Moussa, Anthony Sfeir.

NAME
Mr. Qais Simhairy

TITLE
Head Of EPQS Department

LOCATION
Beitut Head Office

MS in Construction Project Management - University of Technology, Baghdad, Irak, 1991.

BS in Building & Construction - University of Technology, Baghdad, Irak, 1980.

Joined Erga in 1995.

Became Head of Quantity Survey in 2008.



QUANTITY SURVEY DEPARTMENT SCOPE AT **erga**

Quantity surveyors are responsible for managing all aspects of the contractual and financial side of construction projects.

At Erga, they efficiently manage the costs as per the requirements of the Client and the classification of the project. Their job is to ensure that the construction project is completed within its estimated budget.

This department's main works are divided into four fields progressing in parallel with the progress of the design in every discipline to be able to deliver the best project on time:

BILL OF QUANTITIES (BOQ) provides the calculated quantities of the whole project in all its trades and it includes operations and maintenance criteria.

SPECIFICATIONS documents are the international requirements to be satisfied on the level of any material, design, product or service so that the contractor will be following the written content during construction.

TENDER DOCUMENTS are prepared for the projects to be the basis for the "Contract" between the Owner and the Contractor.

COST CONTROL: As the design proceeds, construction cost estimations are made using standard classification of elements, and are prepared at each milestone and for each stage.

The work of this department is crucial for the client. Its importance equals the importance of the design.



LEBANON NATIONAL LIBRARY

The QS team scope was to prepare the specifications and BOQ for a new underground building and the renovation of an existing old one along with landscape works.

THE EXISTING BUILDING

The Bill of Quantities included the renovation of the old building with special specifications for all renovation works, starting from selective demolition sand stone masonry restoration and plaster removal, restoration of existing Baghdadi false ceiling and existing marble tiling. Besides, it included the replacement of damaged roof wood structure and damaged clay tiles and adding adequate waterproofing below pitched roof tiles with marine plywood, taking into consideration the fire requirement (rating and zoning). It also comprised the steel structure and glazed façade for the stairs and elevators. Landscape area consists of several types of trees, lawns and grasses with pebbles, local stone, basalt and old Lebanese style paving tiles and a fountain.

THE NEW BUILDING

is located under the landscape area, the task included the shoring, excavation and construction of the four basements building with the waterproof tanking system.





CHIEF EDITOR: Randa Gebrayel
EDITOR: Myriam El Helou
GRAPHIC DESIGNER: Cynthia Hdayed

- Chief Officer / Operations Director

Head of Department

Assistant Head of Department

Head of Section

Assistant Head of Section

Project Director

Project Manager
- Senior (Site) Engineer

Project (Site) Engineer

(Site) Engineer

Senior Developer

Developer

Senior Draftsman

Draftsman

ENGINEER OF THE SEASON



Alexandre-Gustave Eiffel
1832 - 1923

Alexandre Gustave Eiffel, a French civil engineer and architect, made his name from various bridges for the French railway network, most famously the Garabit viaduct. He is best known for the world-famous Eiffel Tower, built for the 1889 Universal Exposition in Paris. After his retirement from engineering, Eiffel concentrated his energies on research in meteorology and aerodynamics.



18 July 1887



20 March 1888



21 Aug 1888



31 March 1889

LOCATION
Beirut , Lebanon

Type
Library

www.bnl.gov.lb



