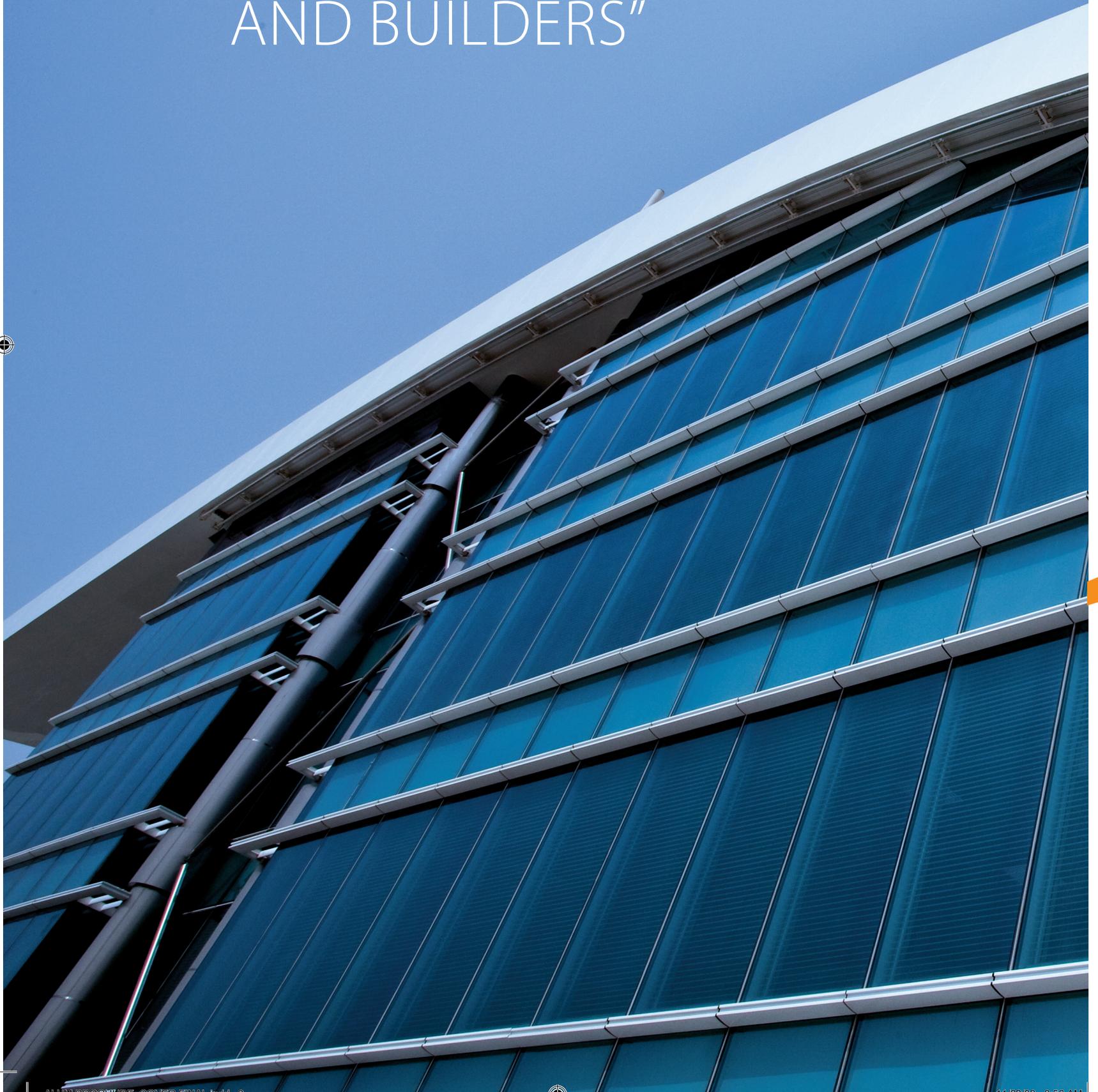


reem[®]emirates
aluminum



"THE NEXT GENERATION CURTAIN WALL DESIGNERS AND BUILDERS"





CORPORATE PROFILE

Reem Emirates Aluminum was established in May, 2006, to provide innovative and cutting-edge solutions to the fast-growing construction industry in the UAE and the Gulf region. At its inception, the main focus of Reem Emirates Aluminum was architectural finishing and metalwork; now the company specialized in architectural curtain-wall and cladding for buildings. The Abu Dhabi factory is built on an area exceeding 80,000 square meters and is fitted with the most advanced state of the art CNC machinery.

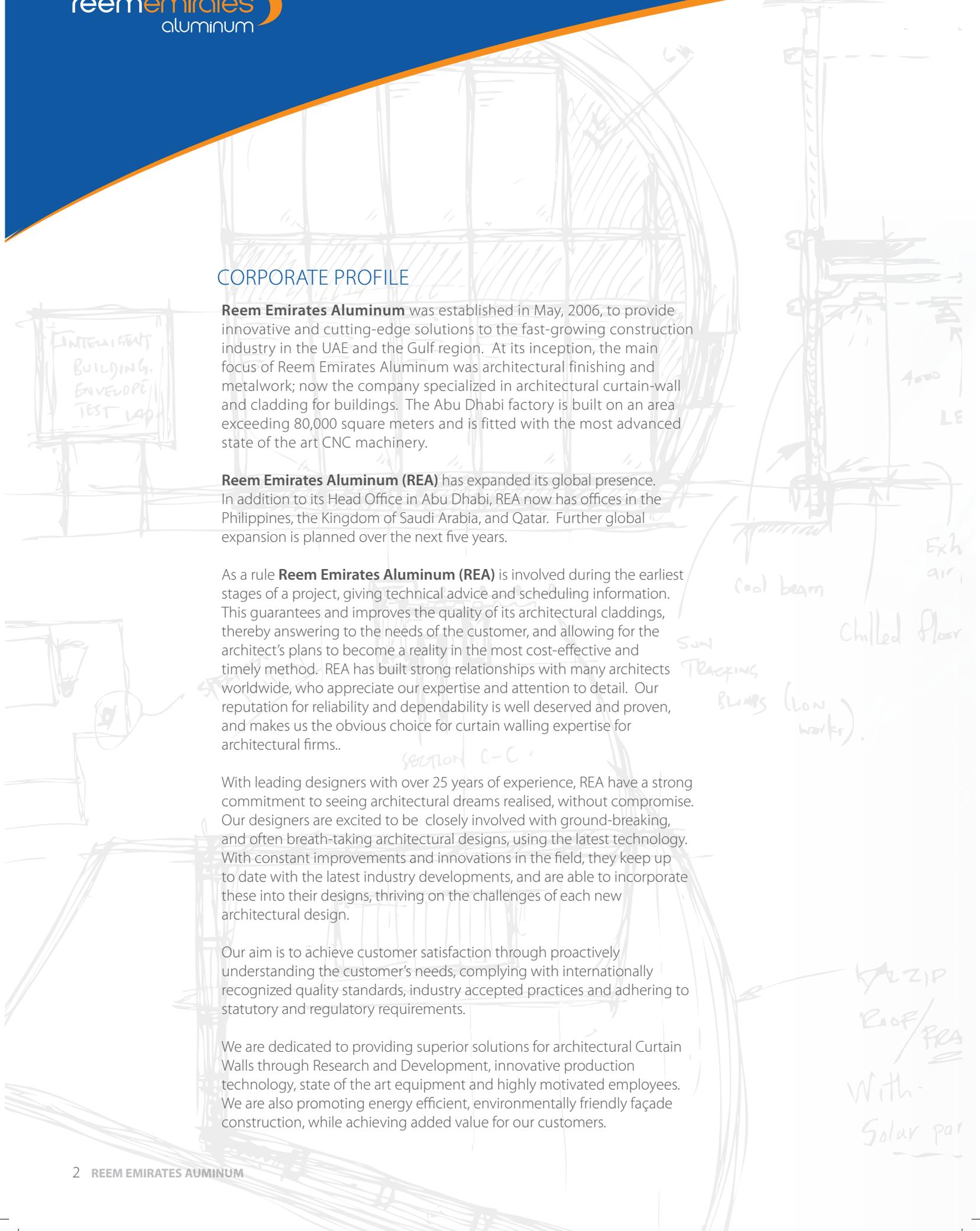
Reem Emirates Aluminum (REA) has expanded its global presence. In addition to its Head Office in Abu Dhabi, REA now has offices in the Philippines, the Kingdom of Saudi Arabia, and Qatar. Further global expansion is planned over the next five years.

As a rule **Reem Emirates Aluminum (REA)** is involved during the earliest stages of a project, giving technical advice and scheduling information. This guarantees and improves the quality of its architectural claddings, thereby answering to the needs of the customer, and allowing for the architect's plans to become a reality in the most cost-effective and timely method. REA has built strong relationships with many architects worldwide, who appreciate our expertise and attention to detail. Our reputation for reliability and dependability is well deserved and proven, and makes us the obvious choice for curtain walling expertise for architectural firms.

With leading designers with over 25 years of experience, REA have a strong commitment to seeing architectural dreams realised, without compromise. Our designers are excited to be closely involved with ground-breaking, and often breath-taking architectural designs, using the latest technology. With constant improvements and innovations in the field, they keep up to date with the latest industry developments, and are able to incorporate these into their designs, thriving on the challenges of each new architectural design.

Our aim is to achieve customer satisfaction through proactively understanding the customer's needs, complying with internationally recognized quality standards, industry accepted practices and adhering to statutory and regulatory requirements.

We are dedicated to providing superior solutions for architectural Curtain Walls through Research and Development, innovative production technology, state of the art equipment and highly motivated employees. We are also promoting energy efficient, environmentally friendly façade construction, while achieving added value for our customers.





ABOUT US

With Abu Dhabi becoming a leading capital of the GCC and an increasing world focus on the United Arab Emirates as a hospitable investment area with the potential for rapid growth many changes have been mandated into effect such as the Urban Structure Framework Plan, "Plan Abu Dhabi 2030", to present a new picture for the City of Abu Dhabi as an environmentally, socially and economically sustainable community and a great world metropolis.

Reem Emirates Aluminum (REA) is part of the Royal Group. The Royal Group was launched in the late 1990's and is now a conglomerate of more than 60 companies that are based in Abu Dhabi.

The group currently employs over 10,000 people from various countries and cultures. The Group's Chairman is His Highness Sheikh Tahnoon Bin Zayed Al Nahyan.

Over the past 10 years, the Group has built significant experience and global presence in the following sectors:

- International Property Development
- Real Estate, Finance & Investment
- Building, Landscape & Marine Construction
- Project Management, IT & Consulting
- Power, Desalination & Waste Utility Development
- Manufacturing & Industry
- Communications & Electronic Media
- Accommodation, Hospitality, Trading & Retail

Due to REA's unprecedented success the company has recently established two specific business units which will allow REA to offer more services to its client, **Reem Emirates Glass (REG), Reem Emirates Metals (REM) and Reem Emirates Cladding (REC)**

Reem Emirates Glass (REG) was set up in May 2009, and is one of the largest glass processors in Abu Dhabi, producing heat treated, double-glazed/insulated and laminated glass. REG has a production capacity extending from 12,000 sq meters per month for laminated glass to 48,000 sq meters per month for glass cutting.

Reem Emirates Metals (REM) was formed to service the growth in demand for architectural finishes and metal works in the Gulf Region, North Africa and Europe, and now boast being one of the top 3 global leaders with state of the art facilities and production lines. Reem Emirates Metal (REM) was set up in February 2009 and has a production capacity of 3,600 tons per annum, creating stainless steel architectural metal products to complement Reem Emirates Aluminum (REA)'s core business.

Reem Emirates Cladding (REC) is a subsidiary of Reem Emirates Aluminum, was established over a 4,000 Sqm area to complement the operations of Reem Emirates Aluminum (REA). The facility is a fully equipped cladding fabrication factory in the industrial city of Abu Dhabi with technically advanced CNC

machines, vertical $\frac{3}{4}$ saws, roll bending machines and all other ancillary machinery required for fabrication of composite panels.

REC has the capacity to undertake aluminum cladding projects of any magnitude and complexity supported by an experienced technical team of architects, engineers, supervisors and skilled workers.

REC executes the cladding works to international standards by giving the utmost importance to quality and unparalleled workmanship.

Reem Emirates Aluminum (REA) has won four prestigious projects for a variety of large development houses in Abu Dhabi, worth AED 400 million, due to the support of its subsidiary and complementary business units. These include: The Corporate Tower on Reem Island, The Gateway by Sorouh, Marina Club C1 and C12 by Tamouh and Al Salam Avenue by Dopa. REA has also been awarded a prestigious project in Qatar – Barwa Commercial Avenue by Barwa Development.

Reem Emirates Aluminum (REA), along with Reem Emirates Glass (REG), and Reem Emirates Metal (REM), has a firm commitment to innovation, integration and energy saving, providing top quality and innovative solutions to architectural envelope challenges. Growth has been impressive and will continue with REA's exciting plans for the future.

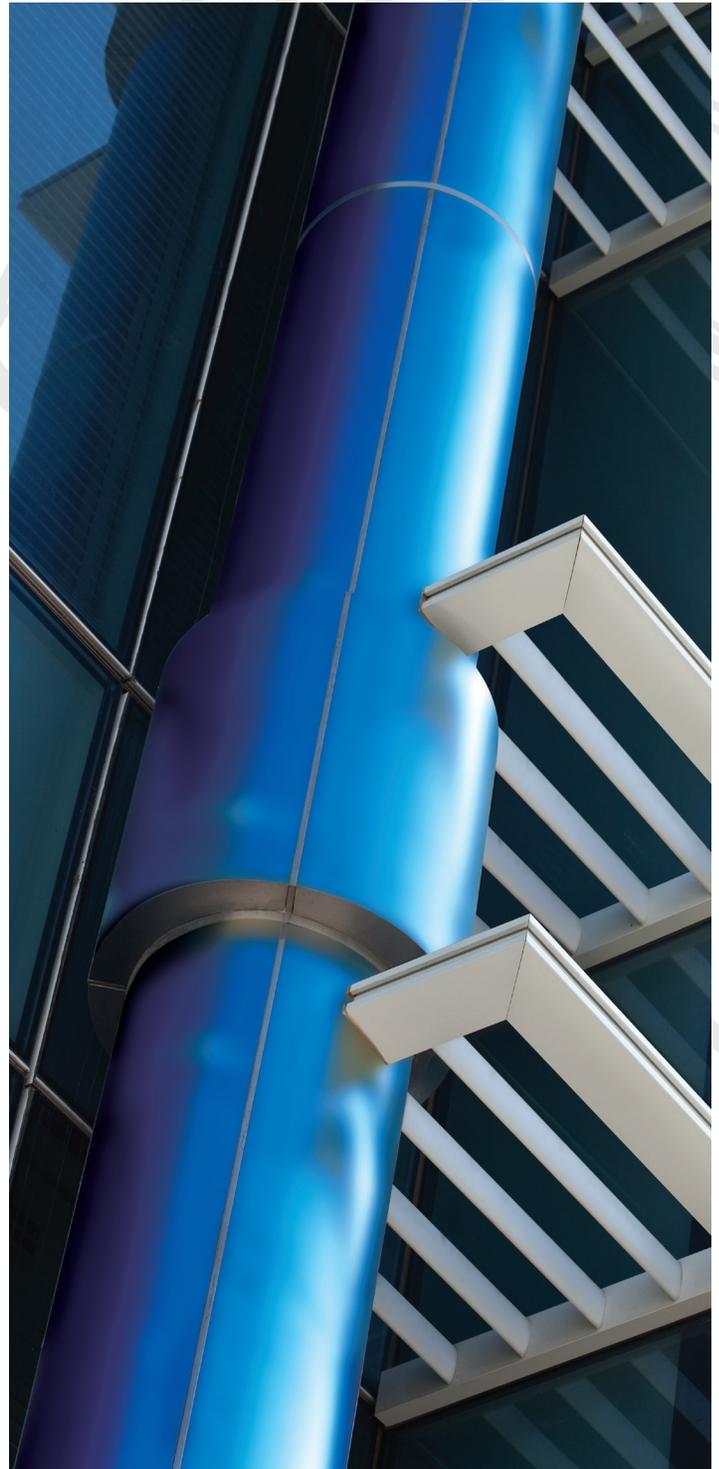
REA'S ABILITY TO VALUE ENGINEERING & WORKS WITH ARCHITECTS

REA specialize in the design manufacture & installation of panelized curtain walling on major commercial building projects.

Individual curtain wall panels are factory manufactured to ensure consistent quality and to utilize the efficiencies of mass production through the use of advanced machinery and assembly line production. Each curtain wall panel is designed to interlock with adjacent panels to ensure an air tight and waterproof external skin. Individual panels are supported from the structural frame of the building and allow independent movement of each panel resulting from building frame movements caused by member deflection, column shortening and seismic movement.

Curtain walling is designed on the principles of pressure equalized drained joints. These principles recognize the need to provide a building envelope which is as air tight as practically possible from the external environment. We also recognize the need to exclude rainwater from penetrating through the façade to the interior space of the building. Because the façade is necessarily made up from separate components due to the constraints of manufacture and installation there is a need for many joints in the façade & the cavities within the façade system resulting from the junctions between many different building elements.

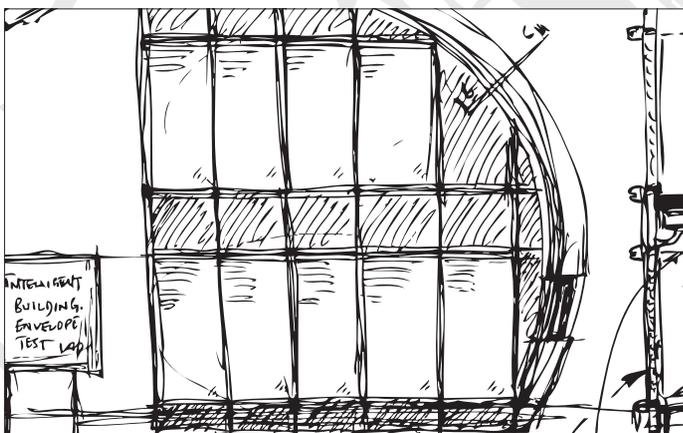
We recognize that no matter how well prepared joints in the façade are prepared and sealed it is likely that at some locations there will be an opening in a sealed joint which will allow the ingress of water. Openings in sealed joints are caused by loss of adhesion or degradation. Sealing gaskets may become partially dislodged during installation and not function to



exclude water. External joints either wet sealed with silicone or sealed with a gasket extend for several kilometers over the surface of a multi-storey façade. Recognizing the fallibility of external seals we refer to these as rainscreens & that some water ingress through external seals is likely & therefore accepted.

On this basis we design joint spaces formed within the curtain wall system to be pressure equalized to the external environment. This is achieved by providing openings in the lower portion of joint cavities to allow external wind pressure to pressurize the cavities. The objective is to avoid a pressure differential across sealed joints as a differential pressure at any opening in the sealed joint will draw water into the system. Openings in joint cavities also allow any water in the system to be drained to the outside. Internal cavities are also designed to allow any water entering the system through a rainscreen to be able to drain down and to the outside without extending to the rear of the system and making contact with any joint in the air sealed plane of the system. At these joints there is a pressure differential between the building environment and external air pressures & any water in contact with an opening in an air seal would result in water ingress into the building.

Curtain wall panels are manufactured using a perimeter frame with infill materials of various compositions to suit the design requirements of individual buildings. Panel frames comprise extruded aluminium sections designed to interlock with framing members of adjacent panels.



Framing members are cut & machined:

- To allow connection of framing members to each other
- For pressure equalization / drainage slots
- To receive components such as brackets

The design requirements for cutting & machining of extrusion are prepared using CAD/CAM software enabling machining equipment to be directly programmed to carry out all cutting and machining operations. All machining requirements for individual extrusion bars are fully automated once profiles are loaded into the machining centre.

SERVICES OFFERED

Drafting Production

- Shop and Fabrication Drawings for:
 - Curtain wall
 - Window Wall
 - Steel Truss
 - Precast Concrete
 - Glass Walls
 - Natural Stone
 - Paving
 - GFRC
 - EIFC
 - Roofing
 - Waterproofing
- Extrusion Die Drawings
- Hand Set Stone Systems
- Metal Stud Systems
- GFRC Systems
- Mock-up Drawings
- Installation Diagrams
- Specialized Computer Aided Drafting and Design Software

New Systems Design

- Custom and Standard Aluminum Curtain Wall Designs:
 - Unitized
 - Panelized
 - Stick
- Structural Silicone Glazing
- Suspended and Structural Glass Systems
- Operable Window Designs
- Natural Stone Cladding
- Proposal and Bid Drawings
- Thermal Systems
- Sliding Glass Doors
- Sloped Glazing and Skylights
- Recladding and Overcladding Designs
- Residential Products
- Roofing and Waterproofing

Structural Engineering

- Complete Structural Design and Analysis Calculation Packages
- Specialized Computer Software
- Wind Engineering for Cladding
- Evaluation and Testing of Materials and Design Assemblies for Structural Integrity
- Safety Factors and Design Criteria for Natural Stone
- Specialized Buckling and Stability Analysis for Framing Designs
- Evaluation of Existing Construction
- Large deflection and Membrane Stress Analysis
- Finite Element Analysis
- Thermal Analysis

Research & Development

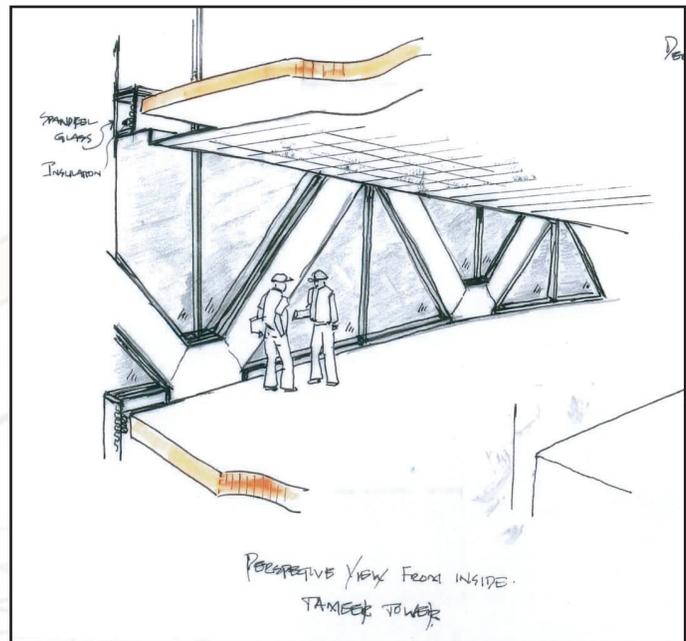
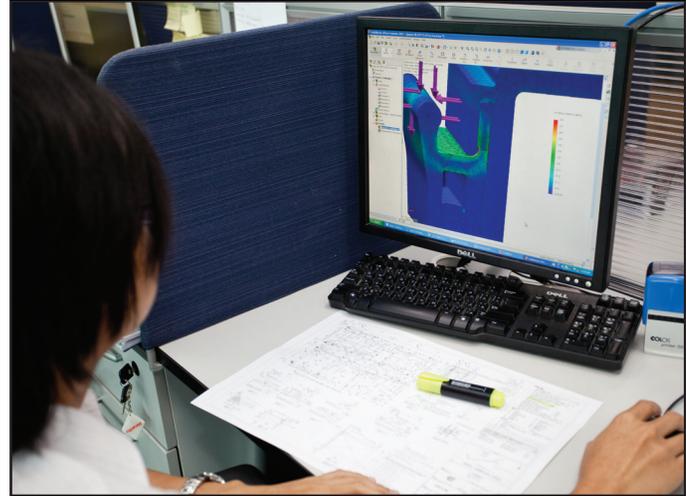
- Recladding Systems
- Sealant Material
- Seismic Joint Designs
- Splice Designs
- Structural Silicone Tests
- All Glass Wall Systems
- Adhesive Anchors
- Mechanical Anchors
- Specialized Gasket Designs
- Thin Panel Design
- Development of Quality Control Program
- Blast and Hurricane Systems

DESIGN SERVICES

REA technical staff provides innovative solutions to design concepts by working closely with the project architect through each step of the delivery process. We develop viable design solutions tailored to suit the project constraints of architectural aesthetics and performance requirements based on sound design and engineering principles.

We offer the following project design services:

1. Façade System Design for :-
 - i. Unitized and stick curtain walling
 - ii. Windows and doors
 - iii. Structural glass assemblies including point fixed glazing
 - iv. Overhead glazing
 - v. Cladding
2. Façade engineering including structural design and analysis
3. Thermal analysis of façade systems
4. Value Engineering – REA provides value engineering services during the design phase to assist in maintaining budgetary constraints for the façade package. Our technical staff actively assists the consultant in determining the most cost effective design solutions to suit the architectural requirements of the project, while also offering alternative design solutions with project cost consideration.



Facade Engineering Services

Façades...Brightening the future

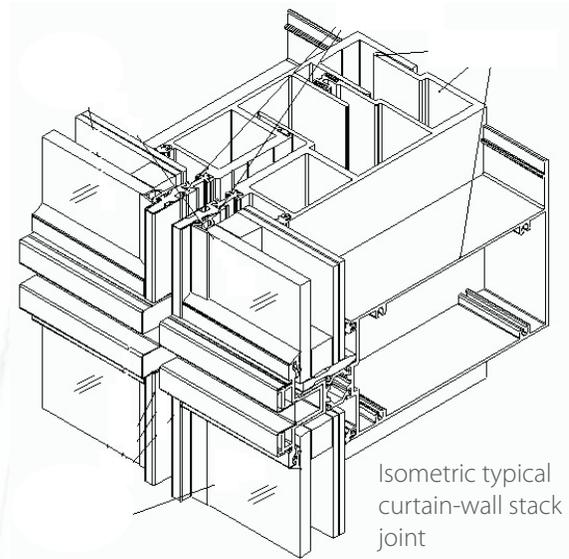
The building fabric offers unique engineering and design opportunity – it combines as filter, moderator and barrier, affecting the day-to-day and life performance of the building and the occupants it protects. Every project has its own particular requirements and we seek to be able to blend (tune) our skills to achieve the best result for our clients.

Services

- Design of curtain wall and cladding systems including:
 - o Rainscreen
 - o Window systems
- Architectural façade development
- Engineered glass structures and tension structures
- Finite Element Analysis
- Thermal Analysis
- Performance testing for façade systems
- Code and authority compliance

Design of new façades

Drawing on our industry experience we work closely with building owners, architects and main contractors and subcontractors to design and develop high-performance façade systems.



Structural adequacy, building movement and tolerances, thermal performance, weather resistance (water and air infiltration), acoustic and fire performance of the various façade systems and their interfaces are all design aspects that impact on our consideration. The application of build-ability and practical construction is central to the way in which we design and work.

We are experienced in the design of various types of cladding systems and building types, including:

- New curtainwall – unitised, stick and hybrid systems
- Windows systems and floor-by-floor shop front systems
- Rain-screen systems incorporating metal panel, engineered ceramics, terracotta, compressed fibre materials
- Boutique façade systems.

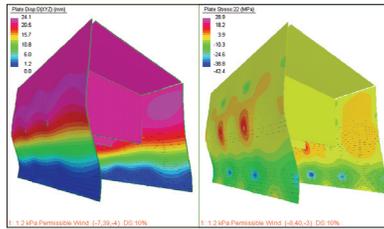
Sustainable use design

We are committed to the integration of environmental considerations into all areas of our corporate activity. This encompasses not only our internal practices and procedures, but also the services that we provide to clients. Our aim is to provide environmental protection and improvement through engineering designs for specifications we prepare.

The impact of the building envelope is well understood in buildings, especially with respect to energy compliance, comfort and condensation prediction. A strong understanding of the building fabric is central to delivering sustainable designs: in terms of material composition, an understanding of energy flows and impact on occupant health and comfort. By understanding these impacts, and working closely with the design team, we believe that we can positively influence the outcome of projects.

Structural design

Structural design includes structural adequacy of Façade systems, specialist engineering of all glass structures.



In all buildings the coordination between structure and façade components is essential to avoid construction issues caused by incompatible movement and tolerances between structural frame and cladding elements.

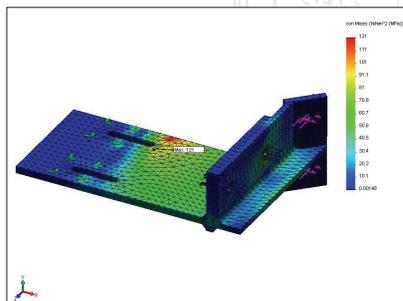
This is even more critical in the case of tall buildings where method of construction and in service movements such as creep, inter-storey drift, floor rotation, floor-to-floor deflection and wind sensitivity directly impact on the design of the cladding system.

Our extensive experience as engineers and industry professionals enables us to bring a coordinated façade structure interface for all cladding systems to project work.

The early development of building movement and tolerance reports and coordination with the various packages are recommended.

Skills

- Curtain-wall and cladding calculations
- Glass strength calculations
- Design of load bearing glass structures
- Design of non-linear and tension structures
- High wind, impact and blast resistant design



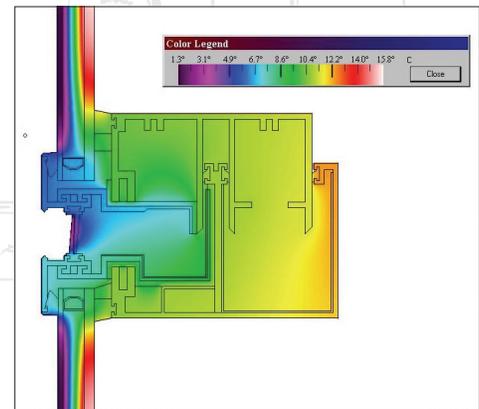
Mechanical interface and building science

Energy flow, thermal comfort

The performance of the façade – both in terms of thermal transmission and selection of glazing – greatly impacts not only on the building's energy consumption but also on the health and comfort of building occupants. The latter is particularly important for successful residential buildings.

We undertake thermal modelling to assess the thermal performance of different building fabric and glazing types for all climates.

Our unique understanding of glazing products and of the energy flow through the building fabric enables us to balance the shading coefficient and thermal heat transfer to help optimise the performance of the mechanical ventilation and improve indoor comfort conditions. This process involves our façade engineers working closely with architects, mechanical engineers and building owners.



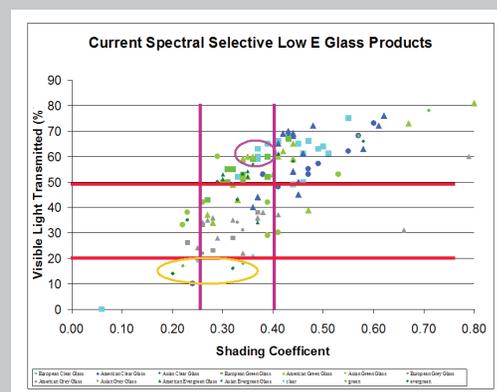
Skills

- Heat flux, U value and temperature profile calculations
- Condensation risk analysis
- Building regulation compliance
- Glass selection studies
- Thermal comfort

Materials and systems investigation

The condition of existing façades has a significant impact on the performance of the building with regard to the image it presents, the internal comfort and productivity of the occupants as well as the ongoing maintenance costs. These directly impact on the ROI for the building owner. Understanding the condition and performance of existing façades is a necessary precursor to being able to make accurate decisions about the future performance of the building.

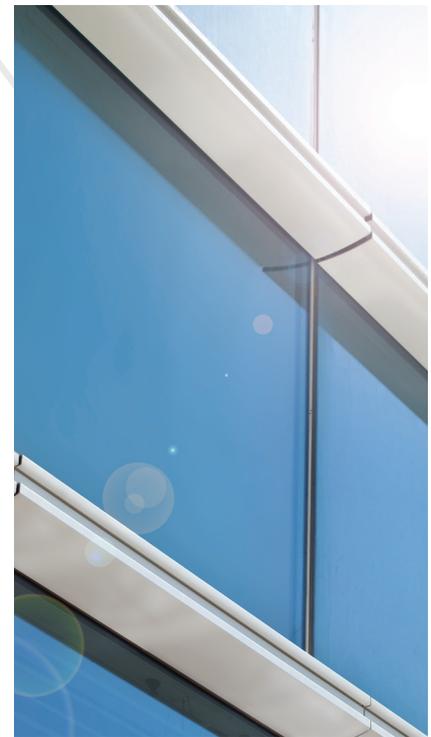
Our staff have experience with a broad range of building performance problems and have specialist expertise in most types of building fabric including glazing, and most types of envelope systems (curtain walls, rain-screen cladding).



- Computer Thermal Simulation
- Window 6 Center of Glass
- Therm 6 Frame and Glazing
- WIS (Advanced Window Information System)
- LEED® Accredited Professionals
- Thermal Stress Analysis
- Glass
- Stone
- Framing
- Sealant Joints
- Window 6 Software
- Center of Glass Energy Performance
- Monolithic Glass

- IG Units
- Insulated Spandrel Panels
- Therm 6 Software
- Frame and Glazing Energy Performance
- Overall Thermal Transmittance (V Factor) per NFRC 100 Procedures
- Overall Visible Transmittance (VT) per NFRC 200 Procedures
- Simulated Condensation Resistance Factor (CRF)
- Simulated Condensation Resistance Values (CR) per NFRC 500 Procedures
- Dew Point Analysis

- WIS (Advanced Windows Information System)
- Double Skin Façade system analysis
- Thermal simulation & 2D Heat transfer (U-value & g-value)
- Solar, visual & light transmission
- Transparent system ventilation (Free & Forced) study
- Shading device positioning
- Air cavity temperature coefficients & air flow rate



LEED[®]

High Performance Green Building

Façades for Sustainability

The worldwide relentless increase of CO2 emission particularly in the Gulf region due to high consumption of energy for cooling buildings is signaling an alarm for architects to emphasise more on climate-responsive buildings (High Performance Green Building, HPGB) especially the façades and the right selection of glazing to produce low-energy architecture.

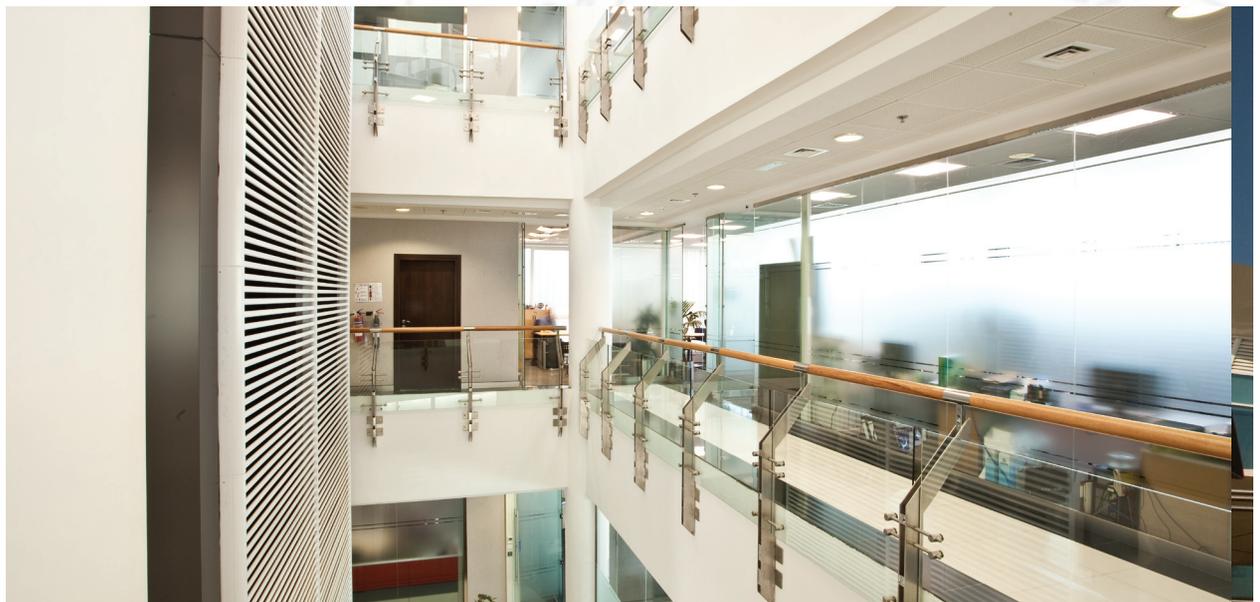
LEED[®] (Leadership in Energy and Environmental Design) system is a point based system where projects earn LEED[®] points for satisfying specific Green building criteria. Within each of the six LEED[®] credit categories, projects must satisfy particular prerequisites and earn points. The six categories include:

- Sustainable Sites – 14 points
- Water Efficiency – 5 points
- Energy & Atmosphere – 17 points
- Materials & Resources – 13 points
- Indoor Environmental Quality – 15 points
- Innovation in Design – 5 points



Reem Emirates Aluminum's advanced façade technology addresses the two major categories of LEED[®] system viz: Energy & Atmosphere and Indoor Environmental Quality (IEQ). These two categories account for 32 points of LEED[®] rating. Thus our technology covers about 46% of total points considered by LEED[®] system to become a Green building.

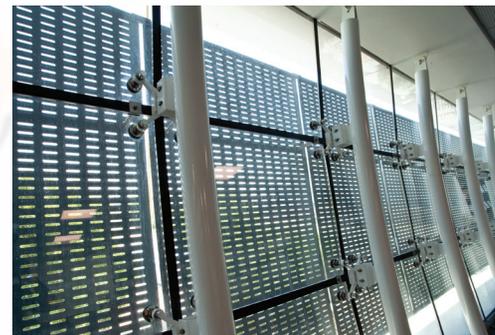
LEED[®] Accredited Professionals (LEED[®] AP) are green building professionals that have





demonstrated their knowledge and understanding about green building practices and principles. REA has on staff LEED® Accredited Professionals who are available to assist client with meeting their green building goals.

We understand the practical issues related to the "design and build" aspects of your green building to ensure you achieve maximum energy efficiencies through sustainable design of facades on high rise buildings. Our award winning Double Skin Façade technology addresses key issues such as Solar shading, Infiltration, Visual light transmission vs solar gains, integration of high performance façades and AC systems and performance issues related to hot and humid climates.



LABORATORY MOCK-UP AND TESTING



Reem Emirates Aluminum validates the design by performing the required tests on a mock-up sample through third parties that will be witnessed by the client's representative.

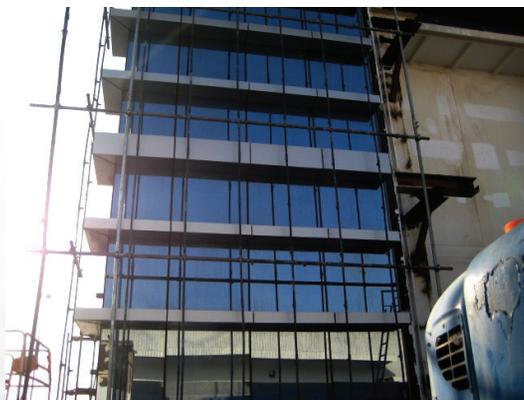
As a façade specialist Reem Emirates Aluminum Technical and Engineering Team provide assistance to the Client Representative through reviewing project specification for the testing requirements.

A selected Independent Testing Agency will prepare a Method Statement for the testing methodology that will be reviewed and approved by the Client Representative.

Installation of the sample elements will be arranged and monitored by Reem Emirates Technical and Engineering team, Installation team and QA/QC Test Coordinator at an Independent Testing laboratory.

The Independent Testing Agency carries out the testing according to the approved Method Statement and internationally recognized standards.

The test results are recorded and the reports are prepared by the Independent Testing Agency.



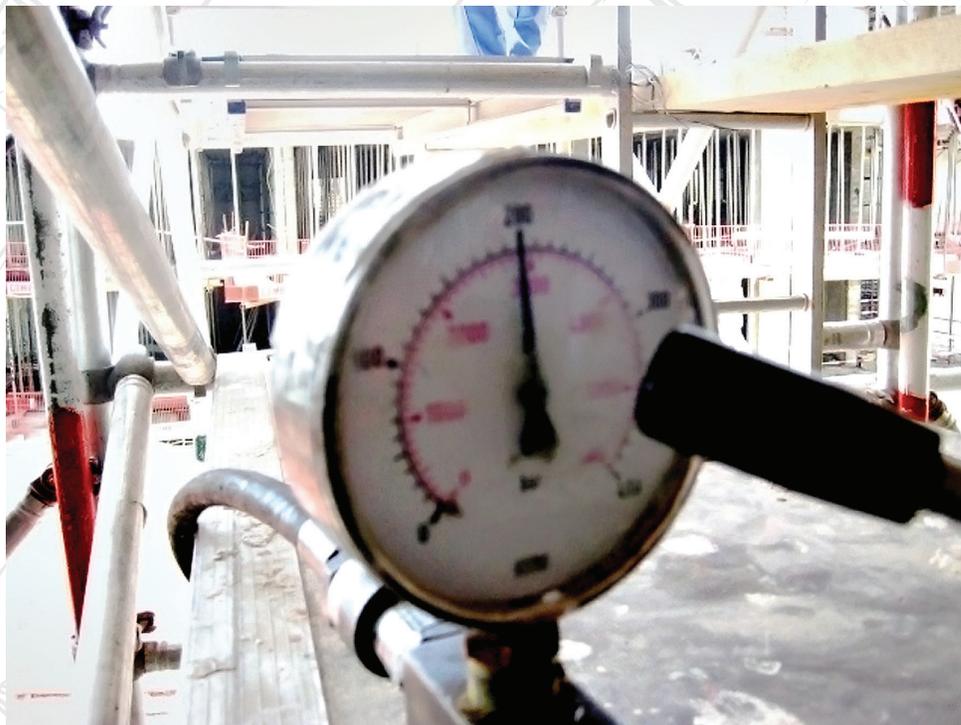
FIELD TESTING

Reem Emirates Aluminum QA/QC and Installation Team review project specification for the field testing requirements and arrange the testing in collaboration with the Client representative.

REA QA/QC Test Coordinator and the Project Management team provide Method statements for the testing approved by the Client representative.

Either REA QA/QC Test Coordinator or Independent Testing Agency carries out the testing in accordance to the approved Method Statement, Inspection and test plans and internationally recognize standards.

The Test results shall be recorded and a report shall be prepared either by Test Coordinator or by the Independent Testing Agency.





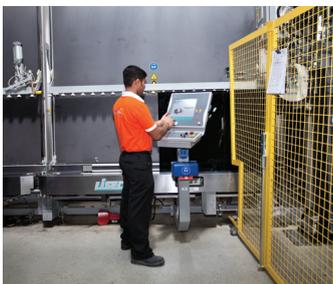
141-25



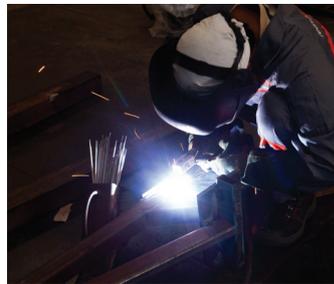
PICTURE GALLERY

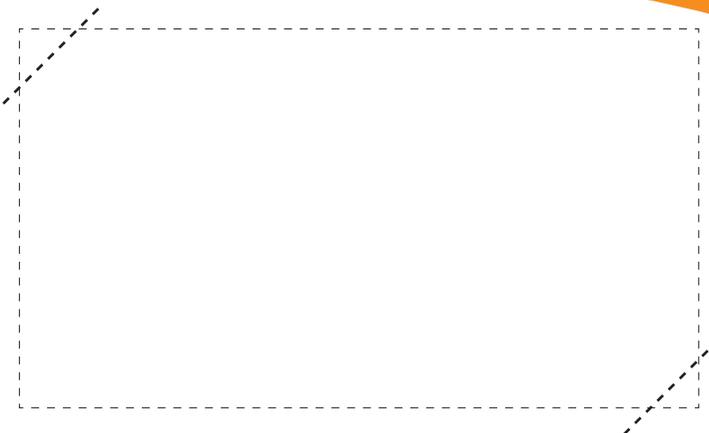


PICTURE GALLERY



PICTURE GALLERY





REA OFFICE LOCATIONS

Reem Emirates Aluminum LLC

Sector No.M-41,Plot No. 7FR6,
8FR6,ICAD-1 , Mussafah,
P.O. Box 36863, Abu Dhabi,
United Arab Emirates.
Tel : +971 2 599 4200
Fax : +971 2 550 1812
Email: enquiry@reemalum.com

Reemalum Philippines Inc.

7F Salustiana D. Ty Tower,
104 Paseo de Roxas Avenue,
Lagaspi Village, Makati City
Philippines 1229
Tel: +63 2 892 8165 / +63 2 893 2367
Fax:+63 2 894 1201
Email: enquiry@reemalum.com

Reemalum Qatar

Tel.: +974-495-4605
Fax: +974-495-4600
P.O.Box 24863, Doha, Qatar
Email: enquiry@reemalum.com

Reemalum KSA

P.O. Box 36863, Abu Dhabi,
United Arab Emirates.
Mob.: +966 54 385 8644
Email: enquiry@reemalum.com

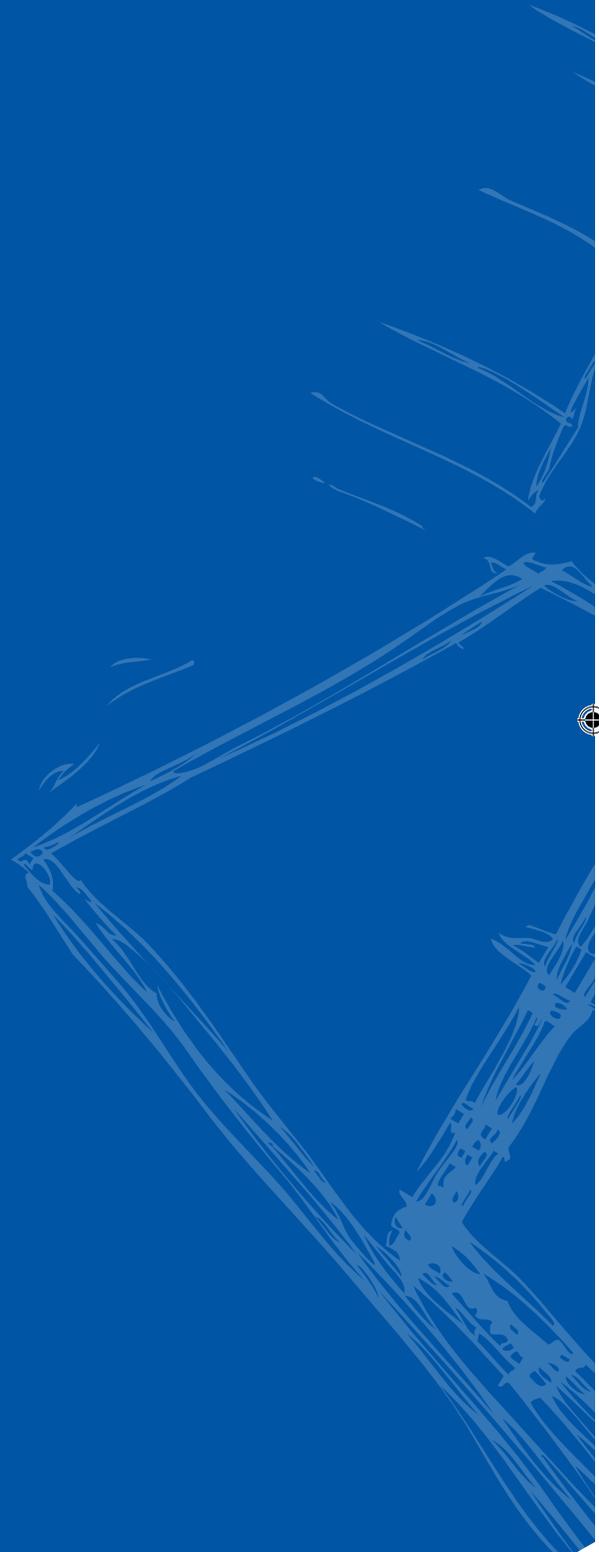




www.reemalum.com

Reem Emirates Aluminum LLC

Sector No.M-41,Plot No. 7FR6,
8FR6,ICAD-1 , Mussafah,
P.O. Box 36863, Abu Dhabi,
United Arab Emirates.
Tel : +971 2 599 4200
Fax : +971 2 550 1812
Email: enquiry@reemalum.com



REEM PRO
Mock-up

