AMG

TRANSMISSION **WITH INNOVATION**

Museum of Islamic Art, Doha.
World class surveillance and security technology.

The exceptional quality of the building design, the location and the position of the new Museum of Islamic Art in Doha, Qatar makes it one of the most inspiring projects of its kind in the world.

Viewed as a catalyst for the development of Doha as a cultural and educational centre of excellence, it demonstrates the vision and commitment of the State of Qatar to the international cultural/museums sector.

The Islamic Museum will display the Qatar National Collection of Islamic Art - a world class collection of ceramics, metalwork, jewellery, woodwork, glass and other items made in countries all over the Islamic World from medieval Spain to Central Asia and India.

Reaching a balance in protecting the valuable artefacts and making the museum an open, friendly, and wonderful visual experience, to the visitors and scholars who will use it, has been an interesting challenge for the project planners. T

he result is that they have chosen to implement one of the worlds most sophisticated state of the art surveillance and security technology systems based on fibre optic transmission technology from UK based AMG Systems.

Designed by world-famous architect Ieoh Ming Pei (commonly known as I M Pei), a Chinese-American architect, who also designed the controversial glass pyramid in the Louvre, the entire project encompasses a massive 45,000 square metres.

Exploiting nature's organic patterns combined with the minute man-made designs of this artificial island has rendered the location an ideal one.

Aerial view.

The museum is situated on the southern part of the Doha seafront on an artificial island about 60 metres off the coast. A crescent cape has been added to the island to act as a northward tidal barrier and to block eastward industrial buildings from the view.

Its visibility from all directions adds to its magnificence. Time-defying, the museum emerges from the water offering a magnificent view over Doha's lagoon from the west.

It has its own marinas providing mooring for VIP guests lit with flood lights 20 metres high, visible from quite a long distance across the lagoon.

The museum will also serve as an educational institution offering support to local schools and providing facilities for research scholars from within Qatar and from overseas.

Exhibitions will include a wide array of luxurious, well-preserved artefacts of ivory and silk - some of which are more than 600 years old - that belong to the Islamic Art style manifested in their inscriptions and arabesque.

Such motifs stem from the arts of countries and empires which had converted to Islam between the 13th and the 18th centuries. Guests of the museum will be able to view a piece of an imperial silk pavilion decorated with Quran verses. Also on display is a robe made of silk and gold threads as well as rugs woven of silk and gold with patterns intricately inspired by nature and its aesthetics and fascinating colours. The museum will hence offer an experience to read about and view the art of Islamic civilisation as it has left its indelible fingerprints on human civilisation.

To this end, identifying those areas where "Big Brother" was not imposing on the visitors was vital. The various systems installed in the museum and their flexibility gives the Security & Safety Department the ability to adjust its approach according to the Risk Profile at any time.

With CCTV (including radar detection across the sea approaches), access control, motion detection and the presence of Security & Safety Wardens, we are able to monitor activity to assess the most successful combination to meet the needs of the museum at varying times of the day as well as the needs of the Security & Safety Department.

Ultimately, it is the Security & Safety Department's responsibility to work with the museum's curatorial and education staff to ensure the museum and education centre can fulfil their mission in the most secure and safe environment as discreetly and unobtrusively as possible".

Invisible Big Brother.

"...balancing the need to ensure the security of the artefacts and safety of staff and visitors with the need to make the Museum and Education Centre accessible, welcoming and user friendly"

A comprehensive security and surveillance solution for the museum is of course a must, and there are serious considerations to be made with regards to the overall design. Brian T. Connor (CPP MSyI MInstLM) Head of Security & Safety, Qatar Museums Authority explains.

"Designing the comprehensive security plan for the Museum of Islamic Art involved balancing the need to ensure the security of the artefacts and safety of staff and visitors with the need to make the museum and education centre accessible, welcoming and user friendly.

"One of the challenges facing the Security & Safety Department is the fact that the museum has been built on its own island in Doha Bay.

The design of the building has included open areas, including the bridges from the mainland to the museum, which are designed to give visitors clear and uninterrupted views of the surrounding areas.

This has led to some of the walls being at relatively low levels offering a possibility that someone could fall into the sea. To counter this there will be Security & Safety Wardens in all risk areas and we also plan to have two inshore rescue boats on duty whenever the museum is open to the public.

We further had to consider, that the Museum of Islamic Art is the first of a major investment in National Museums in Qatar - and in time will be joined by additional museums around Doha City.

The overall security plan for the Qatar Museums Authority calls for all museums and stores to be on a single, integrated platform mirroring that implemented in the Museum of Islamic Art".

The Consultant's point of view.

Consultant Kevin Gausden from Quadrant Security Group worked on the specifications for the project and he explains the design of the surveillance solution in more detail; "During the design phase of the Museum of Islamic Art, many aspects had to be considered. The design criteria required pre-alarm images from all 420 cameras being recorded at real-time (25 frames per second) uncompressed video. An IP solution would not have met the criteria due to inherent issues regarding latency/bandwidth requirements and video compression techniques. Whilst different fibre transmission companies were approached and evaluated, AMG Systems provided a professional service and worked with Quadrant Security Group to develop the design solution and transmission requirements. The harsh Middle East environment, the stability of the AMG Systems product range, the Quality of Service and and the ongoing technical support all added to the selection".

"A multi-core fibre Backbone Infrastructure is utilised to carry multiple disciplines from local floor control cabinets to the Security Equipment Room where the AMG receivers convert the images back to coax terminations on a real time uncompressed video basis. The Synectics Modular Digital Recording System is installed as the "Front End" Integrated Control System and records the images on a "Time Lapse Later" basis thus providing the requirements of the Real Time Pre-Alarm.

The AMG products were not only utilised for Video and Telemetry transmission but also provided the Network for the ISIS Limited AspectARTS™ Artwork RFID Tagging System using the inbuilt RS232/485 Ports. The RFID tagging system, amongst others, delivers the signals from pressure pads on the exhibition displays as well as vibration detection and door-to-door magnetic reads.

Tests were carried out by both ISIS and AMG Systems to confirm compatibility prior to approval being given to the use of the RS Ports being utilised for the AspectsARTS™ Network Infrastructure. This also provided a project cost saving against the use of individual fibre converters and allowed fibre cores to be saved for future project expansion".

"The AMG product ranges provide transmission solutions for not only CCTV but other applications to be transmitted along side the Real Time Uncompressed Video such as RFID Networks / RS232/485 Data Systems & Alarm Gathering Nodes and Ethernet medium bandwidth connectivity. The product ranges are completely scalable making AMG an ideal solution for most CCTV systems".

AMG

Product specification, quality and support.

With an original total budget of approx. QR873 Million (US $ 239 Million) of which the security solution alone was for US $5.25 Million, the contract for this prestigious project was the object of fierce competition in the industry.
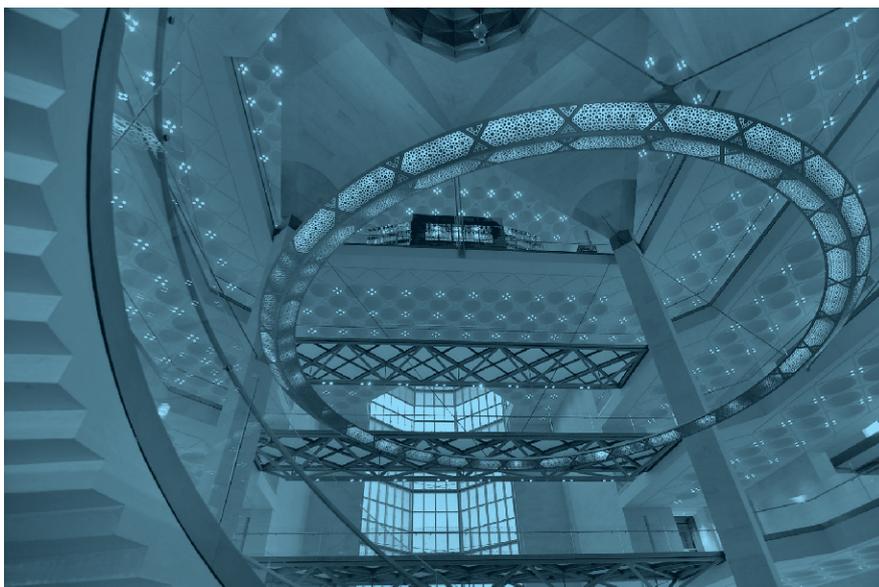
The Museum's impressive sweeping staircase.

Experts in installation of complex security solutions, Specialized & Interactive Systems L.L.C based in Dubai was awarded the contract. General Manager at SIS, Bruce Haigh, explains; "The AMG line of products were familiar to us as we had considered them on some projects in Dubai prior to the museum project. We had researched several suppliers of Fibre transport systems and were happy with the technical specification and performance of the AMG products.

In terms of price there were other suppliers that were aggressively targeting this project and who had offered us a lot better pricing. In the end the product specification and quality as well as the support we received from AMG Systems, were the criteria that influenced our final decision in selecting AMG as the supplier for the CCTV transmission system. And I'd like to add, that AMG has been extremely supportive throughout the project and assisted in the design of the system".

SIS installed a fully dual redundant system using the AMG4600 series. The 4600 series is specifically designed for low cost multi-channel point-to-point video transmission over multimode optical fibre - together with associated Ethernet and low speed data and audio signals.

It is a highly resilient, managed, low cost, transmission system for both compressed and uncompressed video signals, and is available for 4 and 8 channel point-to-point video transmission with data/audio and Ethernet in dual redundant applications.

A total of 420 cameras are installed of which 21 are Pan Tilt Zoom (PTZ). Most of these are installed inside the museum although a certain number of cameras cover the perimeter and the surrounding parkland.

A special feature is the 4 radar pods on the building - which are sweeping the sea approach constantly - that are connected into the transmission system. Hence, when a movement is spotted the nearest camera is automatically set to trail the boat - or the diver - across the bay for visual verification and threat assessment.

Bruce Haigh says, "The camera signals are routed to 2 Control Rooms - however future planning is looking at establishing a single Central Control Centre to which all individual site control rooms will report via the WAN. All the cameras can be viewed at any time in any of the control rooms, as long as the operator is given viewing privileges".

The Marina which is located to the north side of the museum is primarily intended for VIP use and will moor 4 vessels. The docking area will also be used for changeover of the personnel in the 2 rescue boats which will constantly be at sea during the museums opening hours.

Finally, it is worth noting that The British Museum has been retained to work with the Qatar Museums Authority, previously the National Council for Culture, Arts and Heritage (NCCAH), on the planning, opening and operation of the new Museum of Islamic Art in Doha.

The project is currently in the final stages of completion including the surrounding landscaping. The official opening is scheduled for 22nd March 2008.

General Data.

Total built-up area	45,000 m2
Max height	60 m
Total Exhibition Area	3,000 m2
Temporary Galleries	870 m2
Study Galleries	400 m2
Library	820 m2
Conservation & Study	400 m2
Collection Stores	1,800 m2
Auditorium (167 seats)	230 m2
Restaurant	560 m2
Shop	300 m2
Marina	4 Boats

The 4600 series at a glance.
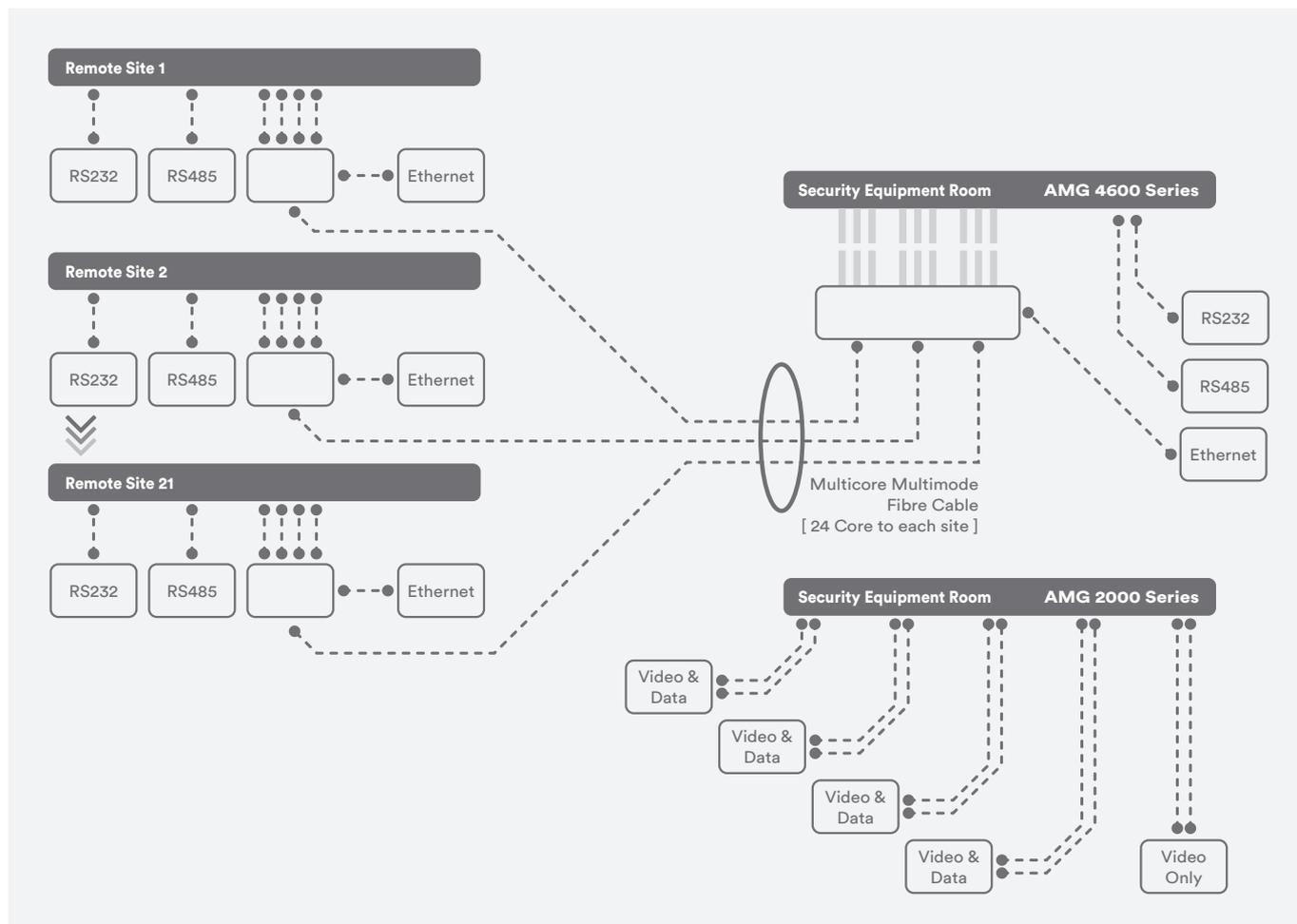
System Diagram showing the
MOIA's overall design.

— Full bandwidth digital transmission
format – no compromise on video
quality.

— No compression – real-time video –
no inherent latency.

— Single fibre operation – reduced
infrastructure requirement.

— High camera counts – up to 64
channels on singlemode fibre.

— Single, dual and 4 channel insert
modules – both for singlemode and
multimode.

— 100BaseT Ethernet data transmission
option – data interface boards selects
100BaseT or RS232/422/485.

— Unlimited repeat – for long distance
transmission.

— SNMP compliant network
management - for remote fault reporting
and diagnosis

— Dual redundant variants – both for
singlemode and multimode fibre.

— Multiple simultaneous video plus data
transmission – enables remote control of
camera functions plus bidirectional data.

— Multiple drop off points – easy
routing for multiple control rooms.