

Project Case Study

RAJ MAHAL THEATRE – DUBAI PARKS AND RESORTS

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The Project

The Raj Mahal Theatre is a purpose-built, 856-seat indoor performance venue located within the Bollywood Parks zone of Dubai Parks and Resorts (DPR). The facility has been designed to emulate the architectural language of a traditional Indian royal palace while integrating contemporary stage engineering systems to support a diverse range of live performances.

The theatre serves as a key entertainment anchor within DPR, supporting high-frequency daily shows in a theme park environment. Its operational requirements necessitate robust, repeatable, and flexible technical systems capable of accommodating theatrical productions, live music performances, multimedia events, and corporate functions with minimal reconfiguration time.

From a strategic standpoint, the project required the delivery of a high-performance, broadcast-capable lighting infrastructure that aligns with international theatre standards while maintaining operational simplicity for non-specialist users typical in a theme park setting.



Scope of Work

Oasis Enterprises was engaged to deliver a complete Production Lighting and House/Work Lighting solution, encompassing design coordination, engineering, supply, installation, testing, and commissioning.

a. Production Lighting System

The production lighting system was engineered to provide a scalable and flexible platform capable of supporting complex lighting designs. Key components included:

- **Dimming and Power Control Systems:**

A distributed dimming architecture was implemented, incorporating both dimmed and non-dimmed circuits to support conventional and intelligent lighting fixtures. Load distribution was carefully balanced across phases to ensure system stability and compliance with electrical standards.

- **Lighting Control Network:**

A DMX512-A and Ethernet-based control backbone was deployed, enabling high-speed, reliable communication between control consoles, nodes, and fixtures. Network segmentation and redundancy considerations were incorporated to minimize the risk of signal failure during live performances.

- **Fixture Package:**

A comprehensive suite of luminaires was supplied, including LED profiles, moving heads, wash lights, and effect fixtures. Fixture selection was based on lumen output, color rendering index (CRI), beam flexibility, and energy efficiency, ensuring suitability for theatrical and concert applications.

- **Rigging Integration:**

Lighting positions were coordinated with the stage rigging system to ensure optimal coverage, accessibility for maintenance, and compliance with load-bearing constraints.

Scope of Work

b. House and Work Lighting System

The house and work lighting systems were designed to support both operational functionality and audience experience:

- **Architectural Lighting Controls:**

A centralized control system with programmable presets was implemented, allowing seamless transitions between show, pre-show, intermission, and maintenance modes. User interfaces were designed for intuitive operation by both technical staff and general operators.

- **Emergency and Safety Integration:**

The system was integrated with the life safety network, ensuring compliance with local civil defense requirements. Emergency lighting levels and automatic override functions were incorporated.

- **Energy Efficiency Measures:**

LED-based fixtures and intelligent control strategies (e.g., occupancy-based switching and dimming curves) were utilized to reduce energy consumption and operational costs.

c. System Integration

A key aspect of the scope was ensuring seamless integration between:

- Production lighting systems
- Architectural lighting controls
- Stage management systems
- Electrical infrastructure

Interface protocols and control hierarchies were clearly defined to prevent conflicts between systems and to allow coordinated operation during live events.

Client Requirements



The client, in conjunction with Theatre Projects Consultants, defined a set of performance-driven requirements which were translated into technical deliverables:

- **Flexibility:** The system was required to accommodate rapid changeovers between different show formats without extensive reprogramming or hardware adjustments.
- **Reliability and Uptime:** Given the high-throughput nature of a theme park venue, systems were designed for continuous daily operation with minimal downtime. Redundancy was incorporated in critical control paths.
- **Ease of Operation:** Interfaces and control systems were designed to be accessible to operators with varying levels of technical expertise, reducing reliance on specialist personnel.
- **Compliance:** All systems were designed and installed in accordance with applicable international standards (e.g., IEC, BS, and ESTA guidelines) and local UAE regulations.
- **Aesthetic Integration:** Lighting fixtures and infrastructure were coordinated with the architectural design to preserve the thematic integrity of the venue.

Project Challenges

a. Thematic Architectural Constraints

The ornate, palace-inspired architecture imposed limitations on fixture placement, cable routing, and equipment visibility. Solutions included:

- Concealed cable management systems
- Custom mounting solutions to integrate fixtures within architectural elements
- Coordination with interior designers to ensure minimal visual impact

b. High-Demand Operational Environment

The theatre operates within a theme park context, requiring:

- Rapid system responsiveness
- Minimal maintenance downtime
- Robust hardware capable of withstanding frequent usage cycles

This necessitated the selection of industrial-grade components and the implementation of preventative maintenance strategies.

c. System Scalability and Future-Proofing

To accommodate evolving production requirements, the system was designed with:

- Spare capacity in power and data infrastructure
- Modular network architecture
- Compatibility with emerging lighting control protocols

d. Coordination Across Disciplines

Extensive coordination was required between:

- Theatre consultants
- MEP contractors
- Architectural and interior design teams
- Audio-visual and rigging specialists

Clash detection, interface management, and phased installation planning were critical to ensuring successful delivery.





Project Outcomes

Oasis Enterprises successfully delivered a fully integrated lighting solution for the Raj Mahal Theatre, aligning technical performance with the operational demands of a high-capacity theme park venue. The project demonstrates a structured engineering approach, effective multidisciplinary coordination, and adherence to international standards, resulting in a reliable and future-ready performance environment.

The completed installation achieved the following measurable and functional outcomes:

- **Operational Flexibility:** The theatre can support a wide range of productions, from scripted theatrical performances to dynamic live concerts, without requiring significant system reconfiguration.
- **System Reliability:** The lighting infrastructure demonstrates stable performance under continuous operation, with redundancy measures minimizing the risk of system failure during live shows.
- **Enhanced User Experience:** The integration of production and architectural lighting systems enables seamless transitions and enhances the overall audience experience.
- **Energy Efficiency:** The adoption of LED technology and intelligent controls has reduced overall power consumption compared to traditional systems.
- **Compliance and Safety:** All systems meet or exceed regulatory requirements, ensuring safe operation for both performers and audiences.

Installed Items/BOQ

PRODUCTION LIGHTING CONTROLS

MA	GrandMA2 Light	1
MA	GrandMA2 Replay Unit	1
MA	GrandMA2 Ultra-Light	1

LIGHTING NETWORK

DLINK	24 port fibre switches	3
Extreme	48 port Ethernet switches	5

PRODUCTION LIGHTING - Distribution & Power Controls

ETC	SENSOR 3 48	8
SES/LINK	Company switches Type 1	7
ABB	Company Switch type 2	6

WORKLIGHT/HOUSELIGHT Power Controls & Control System

ETC	PARADIGM ARCH CONTROL PROCESSOR 2	3
ETC	PARADIGM P/CCS CENTRAL CONTROL	1
ETC	SERVER	
	SENSOR 3 48	2

LIGHTING FIXTURES

ETC	Source 4 profile	10
Thomas Engineering	Par 64	24
ETC	Source 4 PAR	12
ETC	Lustr +	24
ETC	D40	12
Clay Paky	Alpha Spot HPE	36
Clay Paky	Alpha Wash 1500	36
Robert Juliet	VICTOR 7-14.5degree 1800W	6
GLP	Impression X4 Bar 20	16
Clay Paky	Alpha Profile 800ST	12
Clay Paky	Sharp wash 330	20
Martin	Atomic	12

Client Testimonial

“I am pleased to provide this testimonial in support of Oasis Enterprises based on their involvement in major themed entertainment developments, including Motiongate and Bollywood Theme Parks in Dubai Parks and Resorts.

Oasis Enterprises demonstrated strong technical capability in delivering integrated Audio-Visual, Show-Lighting, and Theater Systems. Their team developed coordinated, IP-base and DMX/sACN control solutions, ensuring reliable system performance, effective integration with ICT/ELV infrastructure, and alignment with project delivery requirements.

They also showed solid expertise in theater and stage systems, including rigging and stage machinery, with a clear focus on safety, redundancy, and operational functionality. Their coordination across disciplines ensured buildable and well-integrated solutions.

Oasis Enterprises is a capable and reliable partner for complex entertainment systems within large-scale developments.”

Bashar Sandouqa

Sr. Electrical Manager - Parks & Attractions

Qiddiya Project

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