

## Dead Sea Scrolls Exhibition

Protection of the Dead Sea Scrolls at the Reagan Library, California



## The Dead Sea Scrolls

The *Dead Sea Scrolls*, also called the Qumran Caves Scrolls, are a set of ancient Jewish manuscripts from the second temple period. The scrolls are considered one of the greatest archaeological discoveries of modern times, providing insights into the history of Judaism and Christianity and showing the variety of Jewish thought and practice at the time. They are therefore invaluable artefacts which are highly sensitive to their environmental conditions.

### The Business Challenge

In 2024, Fortecho was tasked with designing a solution to protect the Dead Sea Scrolls during a temporary exhibition at the Reagan Library, California. The library's existing security systems could not be used but the team at the library would be central to monitoring the protection of the objects.

The Scrolls were to be housed in display cases and it was a requirement of the project that **daily environmental reports** would be sent to **3 different teams around the world** (Israel, USA and Europe). These three locations also needed to be able to access **real-time data** to monitor the environmental conditions of the scrolls. Each team was granted a username and password allowing access into the Fortecho software to review **live data** and pull any further custom reports.



# The Approach

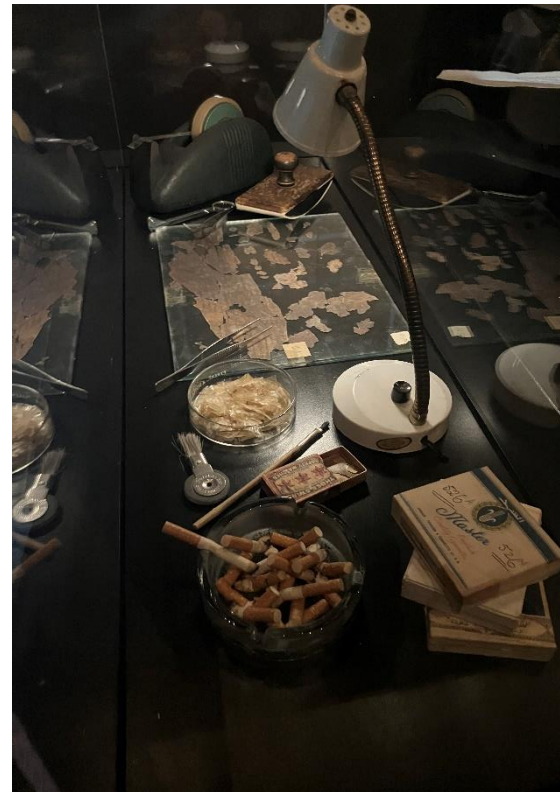
Fortechno Solutions worked closely with engineers and security consultants to design and implement a bespoke active RFID solution. 4 network readers were installed in hidden but accessible locations across the rooms in which the scrolls would be encased. This IP reader network affords the space complete RFID coverage without compromising the library's pristine aesthetic.

25 Fortechno tags were installed within the cases to monitor temperature, relative humidity and lux levels. **As well as providing real time data, the Fortechno system also monitors for rapid shifts in temperature and relative humidity and cumulative lux levels**, ensuring holistic protection of the scrolls.

For example, Cumulative Light Exposure ("Integrated Light (Lx/Hours)") is included in the daily report sent to all three sites as shown below. This value is critical to ensure the scrolls are not exposed to more light than agreed with the lender for the exhibition.

Along with these 25 case tags monitoring for environmental changes, 9 additional tags and magnetic contacts were used to trigger alarms if the cases were opened. These tags monitor for unauthorized access as well as any attempted attack or shock to the case.

The Fortechno system was set at a high-resolution period to record environmental data every 5 minutes. See below for an example of the data set collected.



Report Period	Mean Value (lx)	3.95	0.85	0.78	0.96
	Hours	24.00	24.00	24.00	24.00
	Integrated Light (lx.Hrs)	94.86	20.40	18.77	22.97
	Missing Data Points Value Value	-1.00			

*"Full Stop Productions had the privilege of working with Running Subway Productions, Israel Antiquities Authority, and Dr. Risa Levitt to bring the **Dead Sea Scrolls: 75th Anniversary Exhibition** to North America—a once-in-a-lifetime showcase of incredibly rare and fragile artifacts. The project demanded the highest levels of security and environmental control to protect these invaluable artifacts, and Fortechno was instrumental in helping us meet every requirement to the letter. Their solution integrated seamlessly into our design, preserving the integrity of the visitor experience while providing state-of-the-art protection behind the scenes. We were especially impressed by the professionalism and responsiveness of the Fortechno team throughout the process. Their technology gave us complete peace of mind and allowed us to focus on creating a world-class exhibition."* – **Chris Nobels, Co-Founder, Full Stop Productions, Inc.**

TEMPERATURE & HUMIDITY	GROUP	rH(min)	rh(Max)	T(Min)	T(Max)
Scrolls	20-46	45.0%	49.0%	17.0 °C	23.0 °C
Organics	20-50	47.0%	53.0%	17.0 °C	23.0 °C
Ginosar Boat Fragments	20-50_2	47.0%	53.0%	17.0 °C	23.0 °C
Coins	20-20	15.0%	25.0%	15.0 °C	25.0 °C
Slingstones/Arrowheads	20-20_2	17.0%	23.0%	17.0 °C	23.0 °C
Ostraca	20-20_4	16.0%	38.0%	17.0 °C	23.0 °C
Painted Plaster	20-50_3	47.0%	53.0%	17.0 °C	23.0 °C
Trevor Letter	21-50	44.0%	56.0%	19.0 °C	23.0 °C

ILLUMINANCE	GROUP	L (max)
Wood/Leather/Trevor Letter/Plaster	50-500	49.5 lux
Scrolls & Scroll Wrappers	25-250	24.5 lux
Ostraca	30	29.5 lux

## NOTES:

Alarm Thresholds for RELATIVE HUMIDITY are 2% beyond the range minimum/maximum to allow for climate control correction

Alarm Thresholds for TEMPERATURE are 2°C beyond the range minimum/maximum to allow for climate control correction

Alarm Thresholds for LUX are .5 lx below the maximum

SCROLLS: Alarm thresholds for LUX are based on sensor positions within the case, not the actual position of the scrolls. Delta value between sensor and scroll position confirmed in the field for <25lx at scroll.



**Fortecho tags in white and black monitoring environmental data within display cases**

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*Working with the team behind the Dead Sea Scroll exhibition has been enlightening. We have been able to increase the capability of our software to suit the needs of three separate conservation teams across two continents. Lux monitoring & reporting is now at the forefront of the Fortecho offering.*

**Bart Miller, Commercial Director  
Fortecho Solutions**

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Fortecho's wireless tag battery life of nearly a decade means there is no need to constantly touch or move the sensitive scrolls, vastly reducing the risk profile of the exhibition.

Overall, the use of the Fortecho system means that these invaluable historic artefacts can be displayed to a wider audience within this exhibition whilst ensuring their prosperity for future generations.

## Get in touch

**CONTACT US TO DISCUSS YOUR  
INDIVIDUAL ART PROTECTION  
REQUIREMENTS.**

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