

## Abstract

This article presents the *Mizwalah Rehal*, a contemporary Islamic sundial designed for the An Najihin Mosque in Melaka, Malaysia. The sundial integrates astronomical function, Islamic symbolism, and sculptural form to commemorate knowledge and learning. By combining the symbolic elements of the *qalam* (pen) and the *rehal* (Qur'an stand), the Mizwalah Rehal serves both as a functional timekeeping instrument and as an educational artefact rooted in Islamic intellectual heritage.

## Introduction

In 2022, the author was commissioned to design sundials for the An Najihin Mosque, located at latitude 2.27° N and longitude 102.24° E in Melaka, Malaysia. Following discussions with the mosque committee, a conceptually driven design was agreed upon. A traditional vertical gnomon sundial and a new design sundial were constructed. The new design sundial is named *Mizwalah Rehal*. It derives its title from the Arabic word *mizwalah* (sundial) and *rehal*, a traditional Qur'an or book holder widely used in the Muslim world.

The design aims to commemorate the Islamic tradition of knowledge, scholarship, and learning by embedding symbolic meaning into both form and function.

## Conceptual and Symbolic Design

The Mizwalah Rehal incorporates two central symbols of knowledge in Islamic civilisation: the pen (*al-qalam*) and the Qur'an.

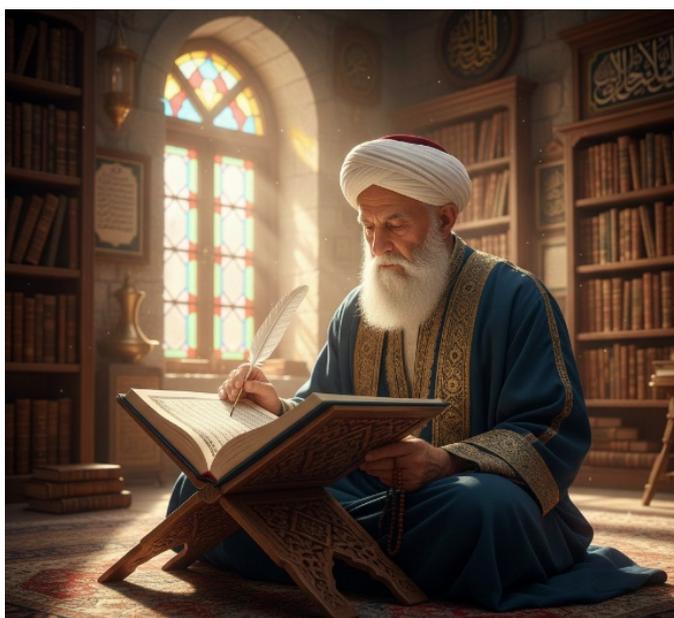


Figure 1: A Muslim scholar reading the Quran on Rehal

The shadow-casting element of the sundial, known as the gnomon, is shaped in the form of a quill pen. In Islamic thought, the pen holds profound significance. It is explicitly mentioned in the Qur'an, most notably in Surah *Al-Qalam* (Chapter 68), and is associated with divine knowledge, wisdom, and the recording of truth. The pen symbolises learning, intellectual responsibility, and the transmission of knowledge across generations.

The surface upon which the shadow falls is shaped as a *rehal*. Traditionally, the rehal is a low wooden stand used to hold the Qur'an or other texts while reading,

often while seated on the floor. For Muslims, the Qur'an represents the revealed word of Allah and the ultimate source of guidance for humanity

Metaphorically, the quill-shaped gnomon appears to 'write' time and date upon the rehal as the Sun moves across the sky. The quill is also used as pointer for the reader to point to the verse or sentence being read. This poetic interaction reflects the act of reading and recording knowledge, reinforcing the educational narrative embedded in the sculpture.



*Figure 2: The Mizwalah Rehal on decorated concrete plinth*



Figure 3: The Maker beside the Mizwalah Rehal

## Sundial Configuration and Astronomical Function



Figure 4: The Three sundial surfaces with gnomon

The Mizwalah Rehal integrates three sundials within a single sculptural structure, each oriented to indicate different periods of the day and corresponding prayer times:

1. **Direct East-Reclining Sundial**

This face indicates morning hours from 08:00 to 12:05. It also marks dawn prayer time and sunrise.

2. **Horizontal Sundial**

The horizontal surface indicates time between 12:30 and 14:00, marking the period around *Zohor* (Noon) prayer time.

3. **Direct West-Reclining Sundial**

This face indicates afternoon hours from 14:15 to 18:30, encompassing *Asar* prayer time, 1.5 hours before sunset (*Maghrib*), and 2.5 hours before *Isha* (evening) prayer time.

Together, these configurations provide information on zonal apparent solar time, Islamic prayer times, and seasonal dates throughout the year.

---

## **Time, Date, and Seasonal Markings**

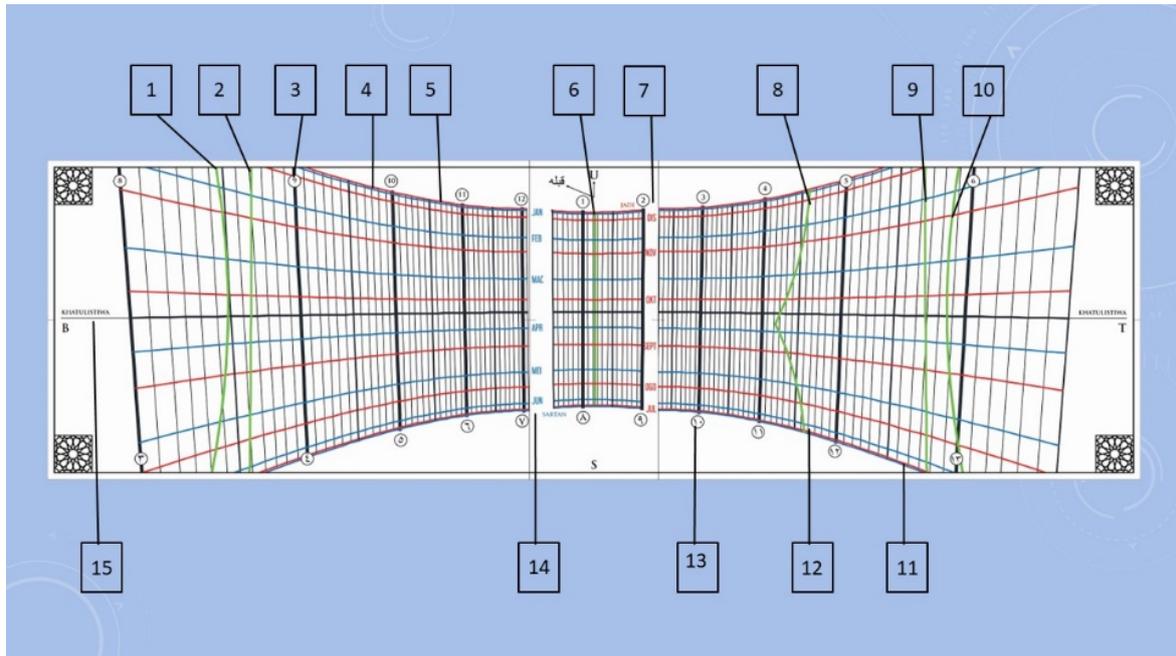
The rehal plates are engraved with a systematic arrangement of lines:

- **Vertical lines** indicate hourly, down to 5 minutes divisions of apparent solar time.
- **Horizontal lines** represent date and seasonal markers.

Key astronomical references include:

- Winter and summer solstice lines
- Equinox line

- Monthly markers, with colour coding to distinguish between January–June and July–December



Ref No	Information given	Ref No	Information given
1	2.5 hrs after Fajar	8	Start Asar prayer time
2	1.5 hrs after sunrise (syuruk)	9	1.5 hrs to sunset (Maghrib)
3	Zonal apparent time from 0900 till 1800 hrs. Local Apparent time that have been corrected with longitude difference from 120-degree time zone. Time from 9 am till 6 pm are indicated by vertical lines. Equation of Time correction must be added to obtain Malaysian Standard Time	10	2.5 hrs to Isha prayer time
4	Winter Solstice line	11	Summer Solstice line
5	First of January	12	First of July
6	Start zohor prayer time	13	Apparent Time in Makkah (from 4hrs till 13hrs). Equation of Time correction must be added to obtain Saudi Arabia Standard Time.
7	RED Horizontal lines denote first of months of July to December	14	BLUE horizontal lines denote first of January till June.
		15	Equinox line

The sundial displays zonal apparent time from 09:00 to 18:00, corrected for longitude relative to the 120° time zone. Users must apply the Equation of Time correction to convert apparent solar time to Malaysian Standard Time. Additionally, the sundial includes reference lines for apparent time in Makkah, which can be converted to Saudi Arabian Standard Time using the same correction.

## Materials and Construction

The Mizwalah Rehal is constructed using a stainless-steel structural framework. Time and date markings are produced through laser etching on stainless-steel plates, that are then coloured, ensuring durability and clarity. The structure is mounted on a concrete plinth adorned with Islamic geometric patterned tiles, reinforcing the aesthetic and cultural identity of the installation.

An information plaque is affixed to the plinth to guide users in reading and understanding the sundial. The plaque includes a QR code linking to an educational website that provides further explanations on sundial usage, basic astronomy, and animated illustrations of the Sun–Earth relationship throughout the year.

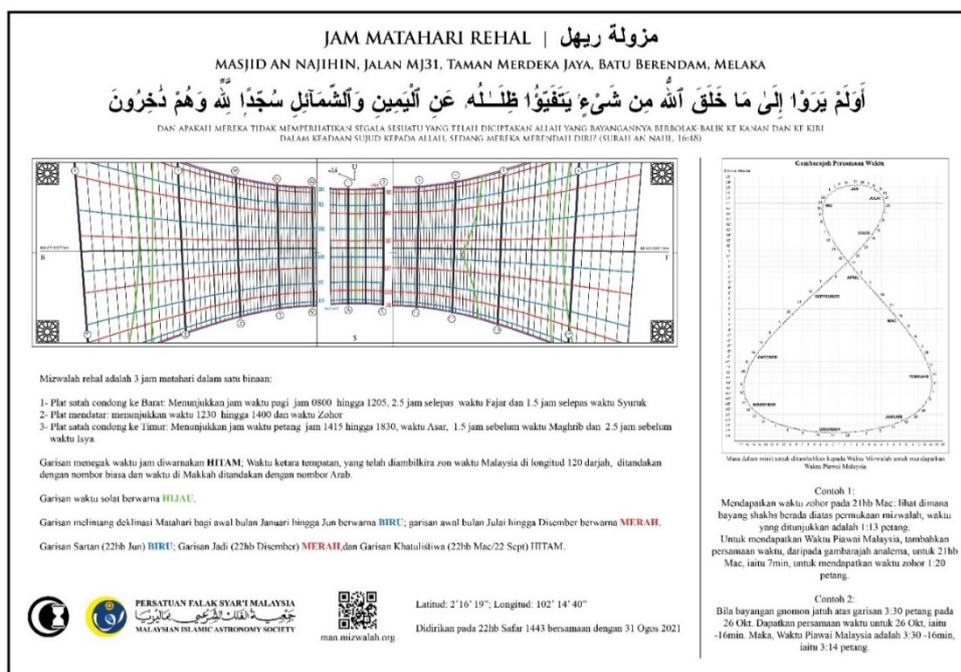


Figure 5: Information plaque

## Educational and Cultural Significance

Beyond its primary function as a timekeeping device, the Mizwalah Rehal serves as an educational tool and a public reminder of Islam's rich scientific and astronomical heritage. By uniting symbolism, astronomy, and religious practice, the sundial invites reflection on the historical relationship between faith and science in Islamic civilisation.

---

## **Conclusion**

The Mizwalah Rehal stands as a synthesis of art, science, and spirituality. Through the symbolic dialogue between the quill-shaped gnomon and the rehal surface, the sundial commemorates knowledge as both sacred and practical. Installed within the mosque environment, it not only marks time and prayer but also embodies the enduring Islamic commitment to learning, scholarship, and the pursuit of understanding.

---

### **Maker:**

Syed Kamarulzaman Kabeer  
President, Malaysian Islamic Astronomy Society