

# Transforming Church by Utilizing Device-Enabled Research Projects

Casternay, Netherlands

## Applications

Smart Buildings and Church  
Indoor Ambience Monitoring  
Temperature and Humidity Monitoring

## Number of Devices Deployed

11 \* Milesight EM300-TH Sensor

## Location

Casternay, Netherlands

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Success Story

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## Papers & Media Coverages

Research Paper	<a href="https://www.cell.com/current-biology/abstract/S0960-9822(23)01304-0">https://www.cell.com/current-biology/abstract/S0960-9822(23)01304-0</a>	CellPress
Media Coverage	Bionews, December 15, 2023	Bionews
Media Coverage	Science, November 20, 2023	Science
Media Coverage	Scientific American, November 21, 2023	SCIENTIFIC AMERICAN
Media Coverage	Sky News, 20 November 2023	sky news
Media Coverage	Daily Mail, November 20, 2023	MailOnline

## Background

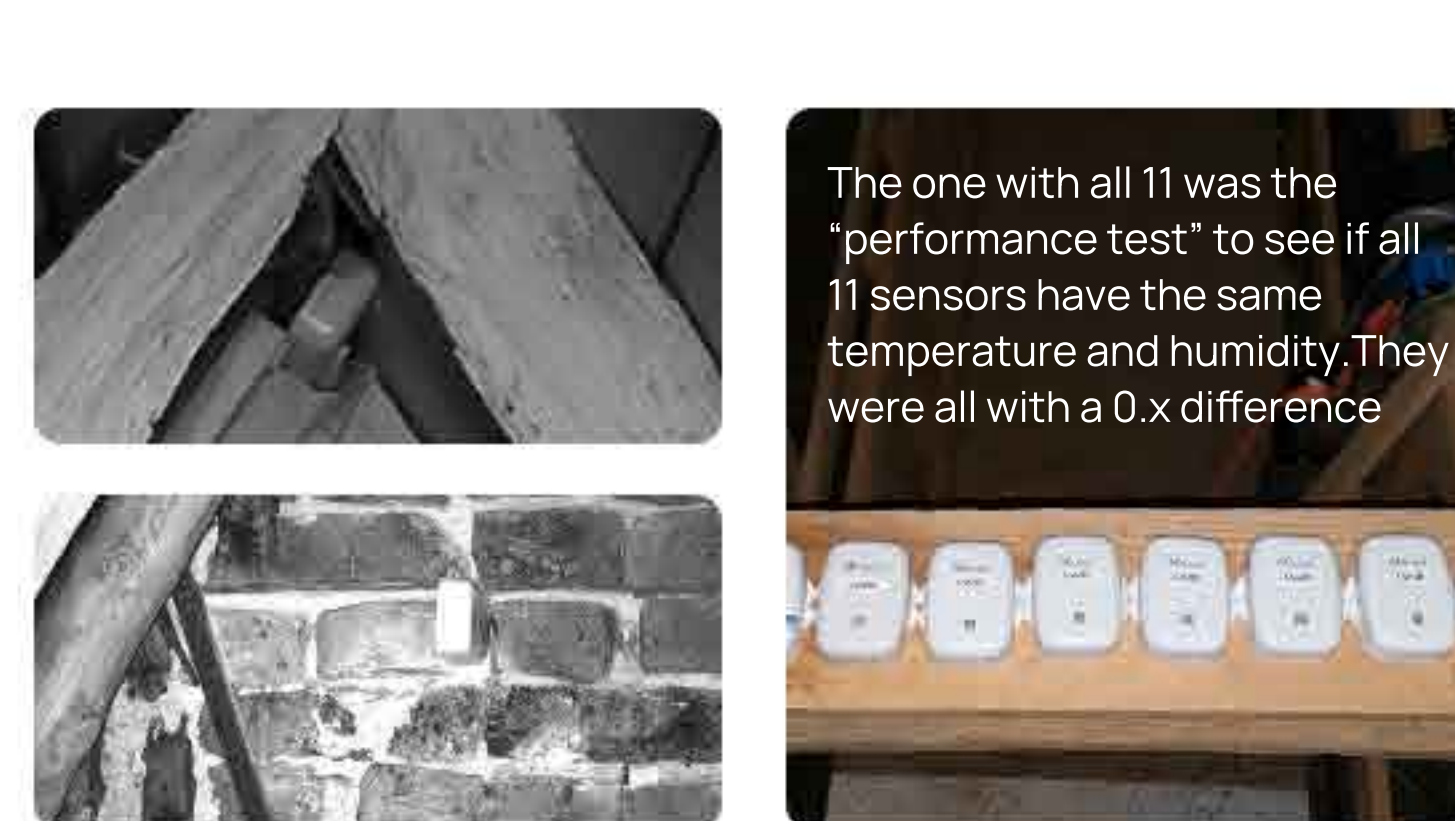
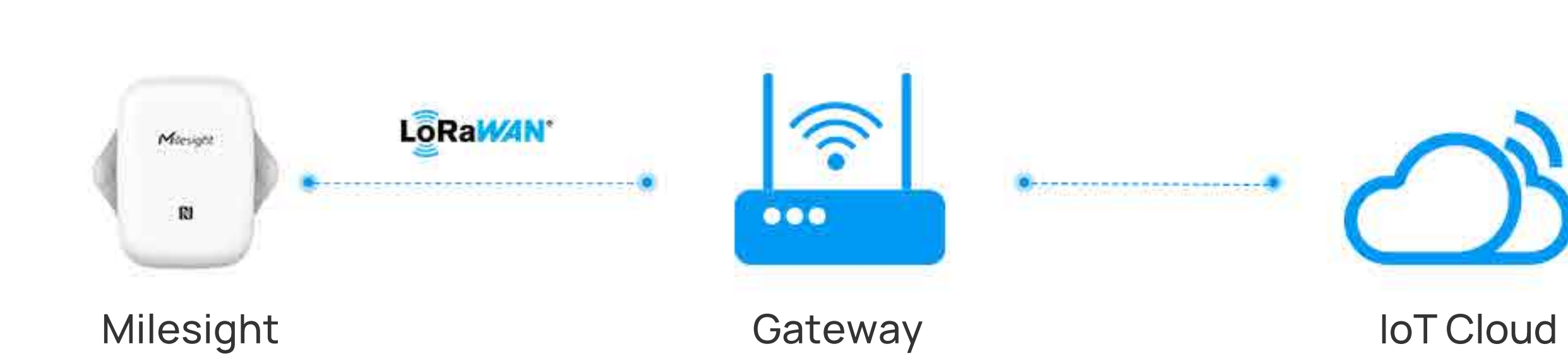
The church is home to Europe's largest colony of Laatvlieger-bats, a species of bat. The purpose of Jan Jeucken's research is to record temperature and humidity for 3 years so that a so-called zero measurement has taken place. In the current habitat, the Serotine bat feel optimal. Should the church be modified for another (residential) purpose, the habitat in the church attic will have to remain identical in order to prevent the habitat of the Serotine bat from being disturbed.



## Challenges

"The church of Casternay may possibly be repurposed for another (residential) use in the future. The current microclimate is perfectly suited for the colony of Laatvliegers (bats) that have been housed there for many decades. If the church is to be modified for another (residential) purpose, the living environment in the church attic must remain identical to prevent the habitat of the late flyer from being disturbed."

## Solution



In an increasingly digital world, even the most traditional institutions are embracing technology to enhance operations and ensure the comfort and safety of their congregation. This success story highlights how a historic church utilized LoRaWAN products to implement a smart temperature monitoring system, ensuring optimal conditions for worshippers while preserving the integrity of the building's heritage.

- Step 1: Wireless Temperature Sensors**  
LoRaWAN-enabled temperature sensors were strategically placed throughout the church's interior to monitor temperature levels in real-time. These sensors were designed to be discreet and unobtrusive, ensuring they did not detract from the building's aesthetic appeal. The one with all 11 was the "performance test" to see if all 11 sensors have the same temperature and humidity. They were all with a 0.x difference
- Step 2: Gateway Installation**  
A LoRaWAN gateway was installed within the church premises to collect data from the temperature sensors and transmit it securely to a cloud-based platform for analysis. On March 26, 2021 (Placement gateway in Casternay) the user placed a LoRaWAN Wireless gateway in the church of Casternay. In this church lives the largest colony of Laatvlieger bats in Europe. To measure the temperature and humidity, 2 (and later 1) Milesight EM300 sensors were placed here. On March 14, 2023, Jan Jeucken of the De Laatvlieger Foundation installed 11 pieces of temperature and humidity sensors in the church of Casternay. With these 11 sensors, a micro climate survey will be conducted for the next 3 years. Every 20 minutes the 11 sensors record temperature and humidity. 10 sensors are placed in front part of the ship and 1 sensor is mounted on the north side on the outside so that the relationship between inside and outside temperature and humidity can also be determined.
- Step 3: Cloud-Based Monitoring Platform**  
The data from the sensors is sent to Datacake's platform. The successful implementation of a smart temperature monitoring system powered by LoRaWAN products demonstrates how technology can enhance the worship experience while preserving the heritage of historic buildings. This success story serves as an inspiring example of how technology can support the mission of faith-based organizations while honoring tradition and history.

## Featured Products



### EM300-TH Temperature and Humidity Sensor

- IP67 Rated and UV Resistance
- Support Retransmission for Reliable Communication
- Up to 10 Years Battery Life
- Detect Temperature and Humidity with Higher Accuracy
- Store Capacity with 2,800 Sets of Historical Data Records
- Certified for EN12830 Standard

## Results

"The ultimate goal of Jan Jeuken is to create a knowledge document of the Laatvlieger / Serotine bat, so that we can better protect them. I am also building church attic-like constructions with similar microclimate conditions, in order to be able to place them worldwide as an alternative to churches that are about to disappear or are given a different purpose," says Jeucken. This is also threatening for the church in Casternay. I'm not religious at all, but I do hope that we can preserve many churches and other historic buildings and stop the merciless madness of insulating cavity walls. With the prospect of Christmas, it is impossible to sell that there will soon be nowhere for bats to give birth to their young."

## Discover More about Milesight Product



CoWork Series →

Smart Building →

## Why Choose Milesight



"I have 11 of these EM300 in a church to study the indoor climate of a bat colony, the largest Laatvlieger colony in Europe. After 2 years battery life still on 92-95%. Great how IoT can be used"

--Marc van Bracht, TTN Venray



## Partner



### About The Things Network Venray

#### \*\*MISSION\*\*

The mission of #TTN0478 is to establish and maintain a 100% coverage, free, open, and freely accessible LoRaWAN network in and for the municipality of Venray.

The initiators aim to achieve this network together with entrepreneurs and enterprises from the municipality of Venray.

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Company

What Product are You Interested in?

Country

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Message

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Business Type

Verification Code

Let's Talk



Milesight is a fast-growing and innovation-driven technology company with a focus on 5G, AI, IoT and LoRaWAN. With advanced IoT insights, the company is committed to driving next-level technology innovation and business efficiencies in an actionable and locally adapted way.

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Intelligent Traffic

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LoRaWAN® Gateway

IoT Controller

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