



Getting Climate Control Under Control

SECOND INTERNATIONAL CLIMATE CONTROL CONFERENCE ¹



Case Study: MUSEUM ODENSE

**MUSEUM
ODENSE**

MUSEUM ODENSE

- Location: Odense, Denmark
- Climate: Cool-Humid
- Museum brands:
 - H.C. Andersen's House
 - Carl Nielsen's Museum
 - TID
 - The Funen Village
- Type of collections:
 - Archeological
 - Historical
- Staff: 114



H.C. ANDERSEN'S HOUSE

- A case study

Modern building made of concrete, wood and large glass sections

Annual visitors: 193.000



H.C. ANDERSEN'S HOUSE

- A case study

- Exhibition area
- Fairytale space
- Ville Vau



**MUSEUM
ODENSE**

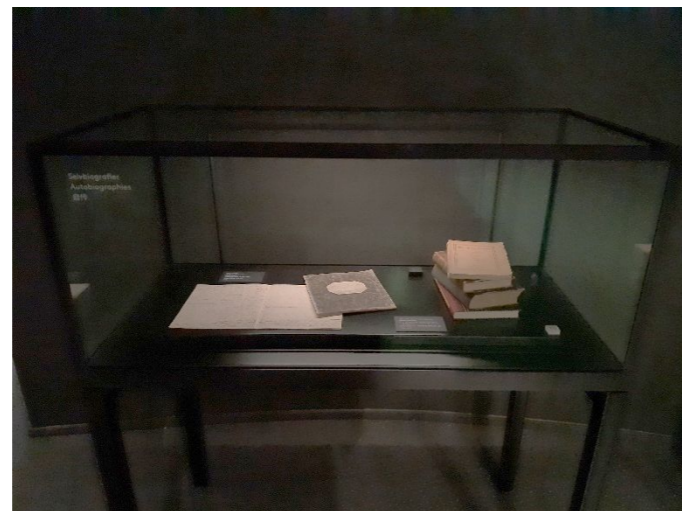
H.C. ANDERSEN'S HOUSE

- A case study

Collection in the exhibition:

- Paper
- Mixed materials
- Sculptures, frescoes

Permanent exhibition



H.C. ANDERSEN'S HOUSE

- Climate Control Challenges

- 6 HVAC systems
- Exhibition area
+ humidification
- Memorial Hall
separate humidification





H.C. ANDERSEN'S HOUSE

- Project Objectives

- Optimize system settings
- Minimize energy consumption
- Reduce carbon footprint

CHAMPIONS



Maria Lauridsen
Sustainability
manager



Grylle Carstensen
Paper Conservator



Jan Nielsen
Head of Economy



Bo Johansen
Facility manager



H.C. ANDERSEN'S HOUSE

- Parameters

2021

- 40-60% RH
- 19°C
- Zone compensation
- Seasonal adjustment
- 24/7

2022

- 40-60% RH
- 19°C
- Zone compensation
- Seasonal adjustment
- Night shutdown

H.C. ANDERSEN'S HOUSE

- Methodology & Process

- Sensor installation
- On-site visit



Roomalyzer sensors from IoT fabriken



H.C. ANDERSEN'S HOUSE

- HVAC system adjustments

2021

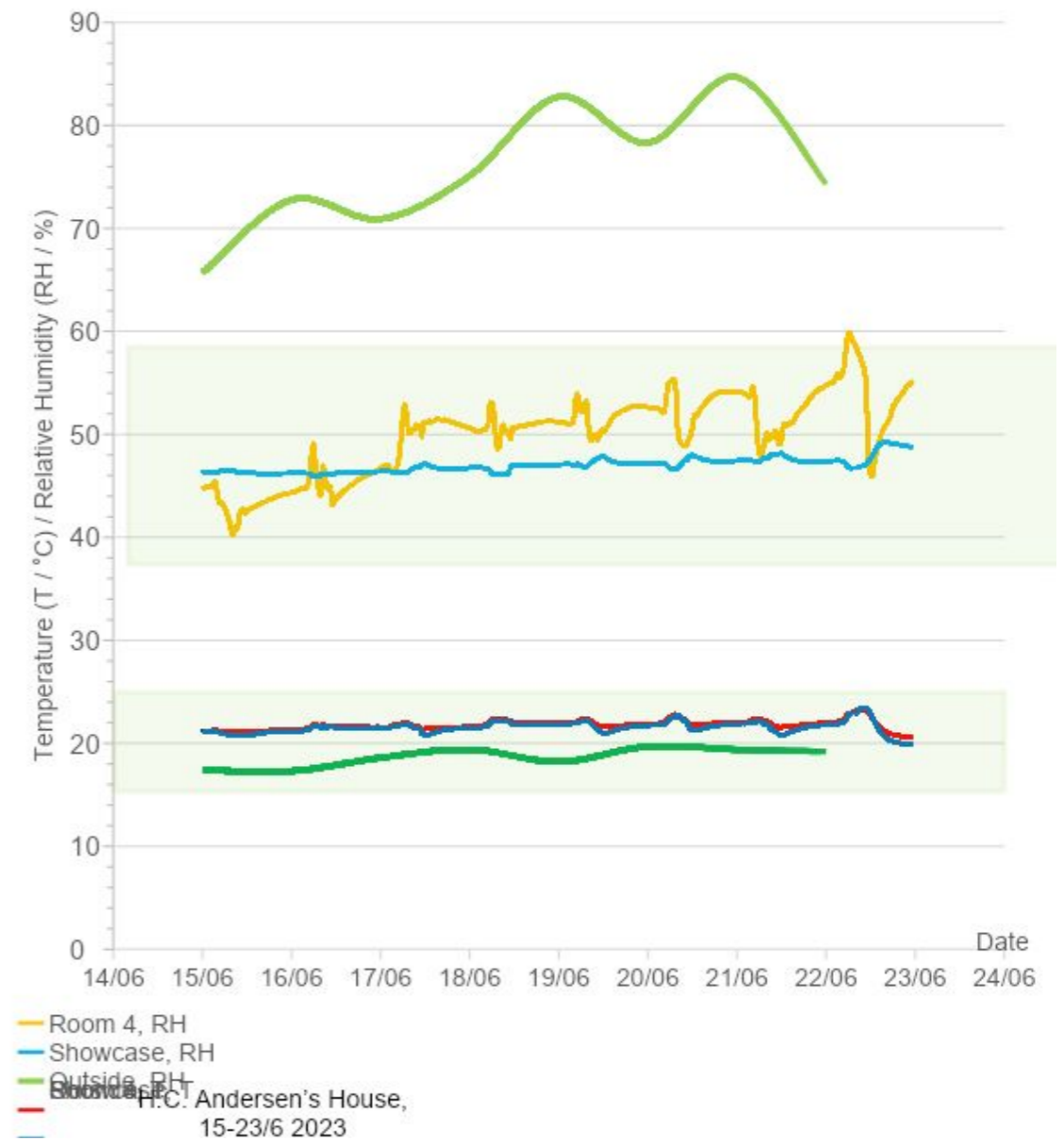
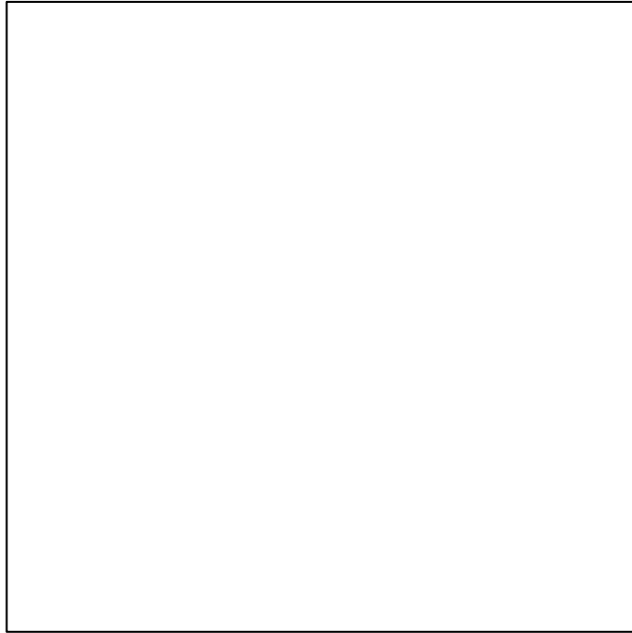
- 40-60% RH
- 19°C
- Zone compensation
- Seasonal adjustment
- 24/7

2023

- 40-60% RH
- 22°C (20° - 26°C)
(Ville Vau 20°C)
- Outside compensation
- Seasonal adjustment
- Night shutdown

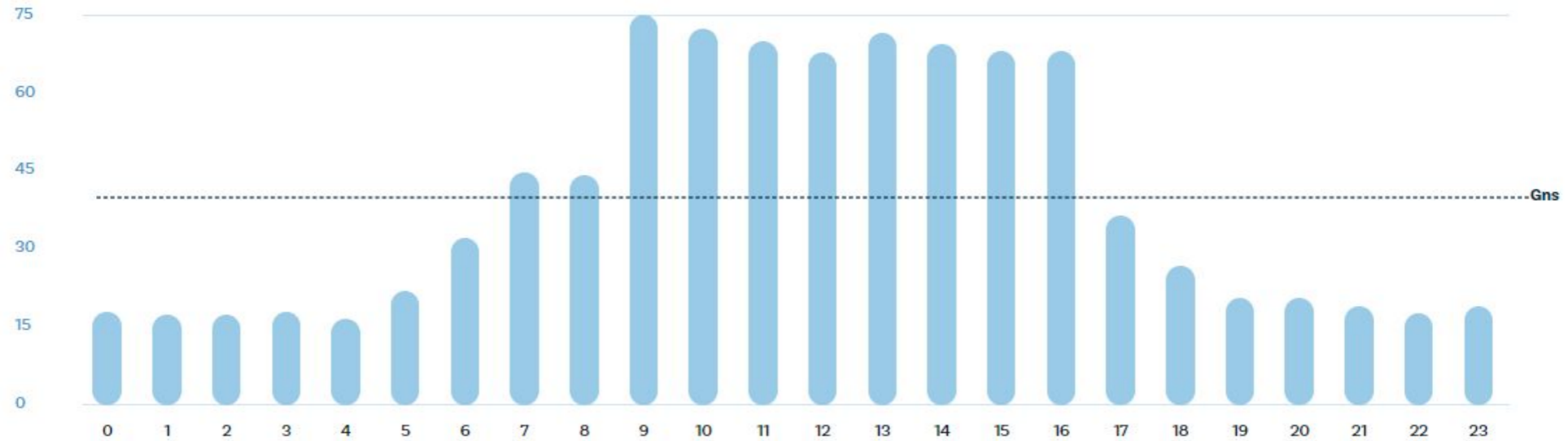
H.C. ANDERSEN'S HOUSE

- Outcome



H.C. ANDERSEN'S HOUSE

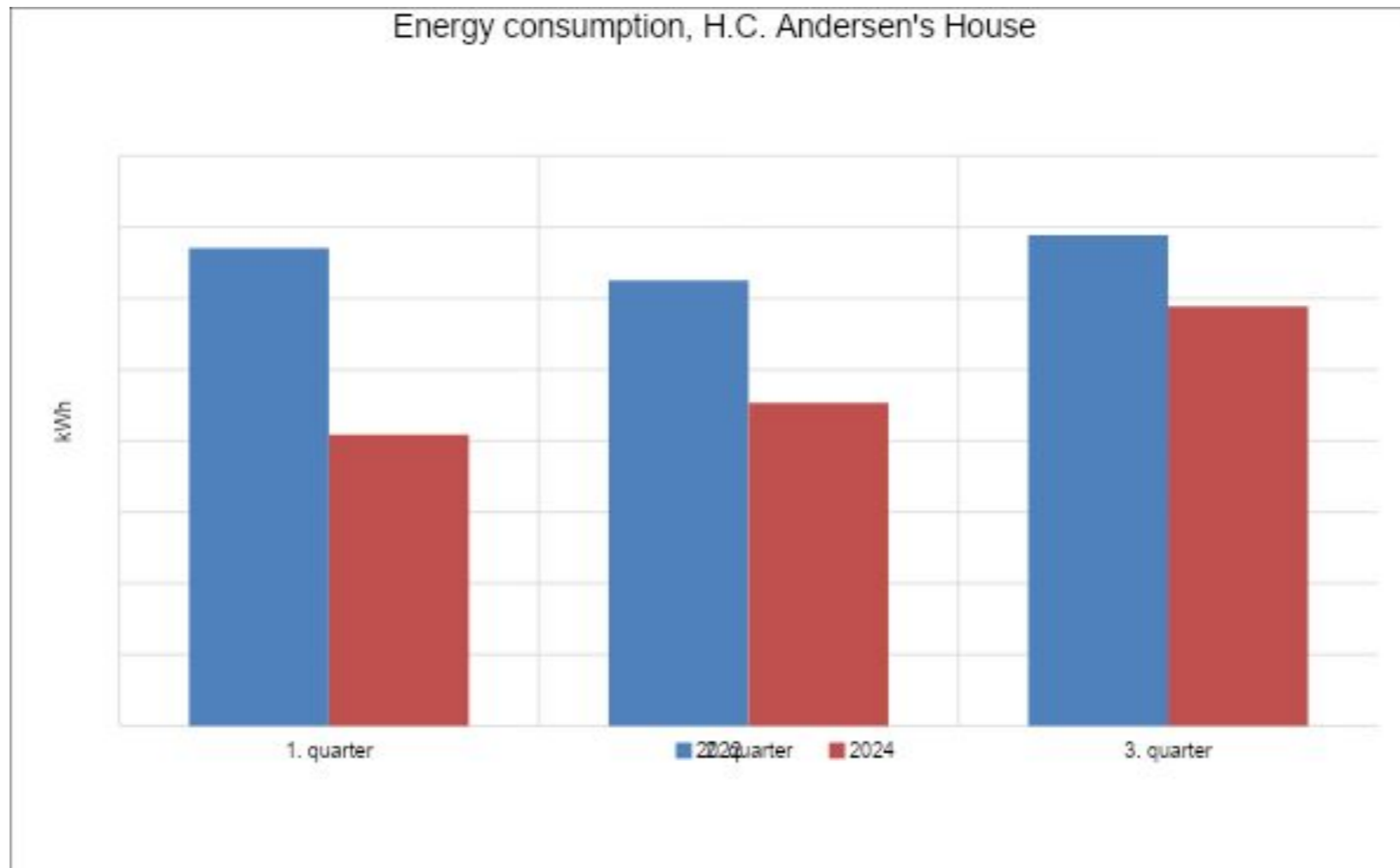
- Outcome



Energy consumption, H.C. Andersen's House, 23/10 2023

H.C. ANDERSEN'S HOUSE

- Outcome





H.C. ANDERSEN'S HOUSE

- Collaboration & Results

- Awareness
- Service agreement
- Interdisciplinary cooperation



H.C. ANDERSEN'S HOUSE

- Next steps

- Continuous monitoring
- 3 year inspection of frescoes
- Seasonally adjustment of HVAC settings

H.C. ANDERSEN'S HOUSE

- Conclusion

- HVAC night shutdown
- Cleanup in HVAC system settings
- Expanding climate parameters



- Minimize energy consumption



- Reduce carbon footprint



TIPS AND RECOMMENDATIONS



HVAC
system
cleanup

Calibration

Monitoring

Interdisciplinary
collaboration

Service
agreement

Thank you!

Grylle Beck Carstensen
Museum Odense

A world you think you know - HCA House