

## Schüttorf Chapel, Germany



### Daikin systems create a comfortable environment for cemetery visitors

The Schüttorf Cemetery Chapel in Lower Saxony is distinguished by a large glass exterior, which gives its prayer room a bright and friendly outlook. Whilst aesthetically pleasing, the area quickly heats up on sunny days, requiring cooling, while winter days call for substantial heating.

As part of a refurbishment programme, the building technology has been brought up to date. A range of requirements, from cooling performance in the lying-in-repose area to heating and cooling of the prayer room, are now being met with the installation of new refrigeration and cooling technology in the form of Daikin's Mini-ZEAS and Mini-VRV systems.

The original building was erected in 1965, with the help of a generous donation from local family-owned manufacturer Criegee. The ambitious design by architect, Knut H. Krieger was based on a Finnish model. Fifty years on, not only was renovation of the building necessary, but a need for more space meant an extension was required. During the programme of work, systems throughout the building were renewed and modernised.

Architects Middleberg Venhaus led the renovation project, with specialists Rönne Technik responsible for planning and on-site

installation of the technical equipment. This included all aspects from cooling and air-conditioning, to photovoltaic and storage technology.

#### A clean, comfortable solution

The new extension houses four modern farewell rooms and a further multi-purpose area, the latter allowing the expansion of the prayer room. During the reconstruction, a solution was adopted which now provides a comfortable environment using renewable energy, rather than oil or gas, and which also addressed the problem of the overheating during summer arising from the front glass elevation.

As in most facilities of its kind, the cemetery in Schüttorf is off-grid with no access to an oil or gas supply, while electrical power is freely available or can otherwise be produced by photovoltaic equipment. This makes Daikin technology as a renewable source of energy a natural choice.

#### Controlled cooling for Chapel of Rest

A commercial cooling solution developed for smaller applications, the Mini-ZEAS unit delivers an optional performance of 3-4 PS using the proven scroll compressor technology pioneered by Daikin. CO<sub>2</sub> emissions are minimised thanks to the low filling requirements of the refrigerant agent used, R-410A.



“Thanks to low sound levels and concealed installation, the Chapel can be perfectly climate-controlled, while allowing the community to say goodbye in a suitable environment.”

Rainer Harmsen, Protestant Reformed Church Schüttorf

## Project Requirements

- ☒ Air conditioning
- ☐ Air curtain
- ☐ Air purification
- ☐ Control
- ☒ Heating
- ☐ Hot water
- ☒ Refrigeration
- ☐ Ventilation
- ☒ Cooling

Year of installation  
2018

## Installed Systems

- > Mini-ZEAS
- > Mini-VRV

*"One criterion governing our choice was the excellent safety and quick installation of the Mini-ZEAS unit, thanks to a factory test and the delivery of the unit pre-filled with cooling agent. We have opted for cooling with a model that provides 4 HP with 8.4 kW", says Christian Brauer, master builder for cooling systems at Rönne Technik in Schüttorf.*

Special importance was placed on the setup of different climate zones, while the layout of the ante-room, climatized transfer area and cooling chambers provides a protective barrier against dew generated by the humidity of the outdoor air.

### Mini VRV – powerful yet compact

A Mini VRV air-to-air heat pump provides climate control within the 170 m<sup>2</sup> large prayer room and adjacent 35 square metre large lobby area. This space-saving solution offers all the benefits of Daikin's advanced VRV-IV technology, such as the unique VRT (variable refrigerant temperature) control capability, a high-performance heat exchanger and a refrigerant-cooled control panel. Delivering a cooling and heating capacity of 15.5 kW, the Mini-VRV maintains

“Energy efficiency is good, despite increased consumption”

Martin Middleberg, Middleberg Venhaus

an optimum temperatures in the Chapel in summer and winter. Indoor units have been integrated into the window seating, providing a discreet solution.

### Quiet, invisible and simple to control

The temperature, and many other functions such as energy savings, changes in requirements, whisper mode operations and kWh display, can now be remotely viewed by Daikin and individually adapted, through the uniquely-designed simple control unit and cable-operated remote control.

Schüttorf Cemetery offers a model example for energy-efficient building technology and a solution that is especially suitable for applications in noise-sensitive surroundings where there is little infrastructure.



The indoor unit is concealed within the ceiling, providing a discreet cooling solution for the laying-out rooms.



The compact outdoor Mini-ZEAS and Mini-VRV units were installed out of sight between the Chapel and new extension building.



The Daikin remote control offers direct access to all important functions, such as energy savings, adjustment of settings according to requirements and much more.