rotronic
MEASUREMENT SOLUTIONS

TEMPERATURE MAPPING & GDP-COMPLIANT WAREHOUSE QUALIFICATION

A cold store for air freight shipments was built at the World Cargo Center (WCC) at Leipzig/Halle Airport so that complete aircraft loads of temperature-sensitive goods can be stored. The WCC has direct access to the apron and thus guarantees short transport routes to and from the aircraft as well as to the trucks.

Photo: Leipzig/Halle Airport, Kathrin Falke

Leipzig/Halle Airport

The warehouse area was certified according to the European guideline "Good Distribution Practice" (GDP) at the same time as it was commissioned. This quality system proves compliance with the high standards in the distribution of medicinal products for human use regarding their storage at the site. The cold store, operated by PortGround, can store goods at temperatures of +2°C to +25°C.

The mapping by Rotronic formed the basis for a clean assessment of the climatic conditions in the cold store!
In order to meet the customer requirements of PortGround GmbH as well as the high standards of the Good Distribution Practice (GDP) guideline, Rotronic carried out a winter climate mapping of the new cold rooms. Initial contacts

between PortGround GmbH and Rotronic had already existed at the time the storage areas, 20-foot containers as well as parking spaces were to be qualified with the help of a mapping. Talks on the planning and execution of the mapping work were held at that time with the responsible employees. The procedures for the interim storage of sensitive products with regard to the influence of temperature and maintenance of the necessary temperature were discussed in detail with the employees of PortGround GmbH.

To map a warehouse or other storage facility, it is first necessary to identify the risk areas in which risks to product quality arise due to unacceptable violations of temperature and humidity limits.

As a result of new findings from discussions with employees of PortGround GmbH and the changed transport volume, separate cold storage rooms were designed and installed.

PortGround GmbH and Rotronic then subjected the new cold rooms to a risk assessment and determined the number and measurement locations of the data loggers to be used.

General procedure

The control and variability of storage spaces are influenced by a number of factors. Once the risk areas have been identified, a test plan must be developed for the mapping test, describing the following circumstances and the basis for each decision:

- Types of data to be generated – e.g. temperature, relative humidity and their measurement intervals
- Number of sensors to be used
- Determination of the sensor positions
- Duration of the investigation
- Summer and winter mapping
- Requirements for calibration of the data loggers
- Permissible limit values for temperature and relative humidity
- Report generation requirements
- Determination of sensor distribution

To this end, the data loggers are positioned in the warehouse in all three dimensions according to a uniform model. In addition, data loggers are then used in critical areas where draughts from loading ramps, heat or cold radiation from external walls, solar heating through windows, heating by lamps, air circulation from traffic or the HVAC system, temperature extremes due to inadequately insulated areas, local influences from room heating and air conditioning systems and draughts from typical activities for warehouse buildings have an effect.

After completion of the test, the Rotronic HW4 software is used to read out the files saved by the data loggers. The HW4 software shows the recorded data and displays the selected results in charts for the mapping report. With all relevant information such as:

Photo: Leipzig/Halle Airport, Kathrin Falke

Cold store at the World Cargo Center (WCC) of Leipzig/Halle Airport

- Raw data with time and date
- Calculated values such as humidity, temperature minimum, temperature maximum, MKT
- The characteristic curves of all data loggers over the test period
- The device settings
- Date and time of the test
- The calibration information

The superposition of the individual sensors can be displayed in a graph to provide a quick overview of possible extremes in temperature and relative humidity. The outside temperature and humidity should also be recorded. Then, for example, a temperature peak can be associated with a time when the gates of the loading ramp were open.


HygroLog HL-1D

The HL-1D is a compact, low-cost data logger with an accuracy of ±3.0 %RH and ±0.3°C. The internal memory can store up to 32,000 lines. Free evaluation and configuration software HW4-Lite.

Safe operation of the cold rooms illustrated

After the reports for the evaluation of the mapping were generated, they were evaluated and discussed together with the employees of PortGround GmbH.

A total of 50 HL-1D data loggers were used for recording the data. The temperature curves obtained from the recorded data resulted in recommendations and procedures for operation of the cold rooms. In conclusion, safe operation of the cold rooms could be demonstrated.
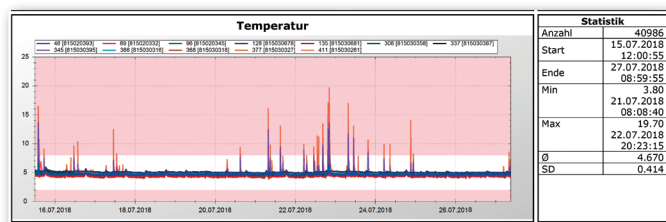
Rotronic data loggers record temperature and humidity at multiple points in the room during a mapping. The stored values are downloaded with the HW4 software and displayed graphically. The "deflected" peak values in this example show measurements of a logger positioned at the entrance door to see the influence of storage and retrieval.

Rotronic AG

Founded in 1965, Rotronic AG develops, manufactures and markets solutions worldwide for measuring and monitoring relative humidity, temperature, CO_2, differential pressure, pressure, flow rate, dew point and water activity. It offers the following GXP services for the logistics and transport industry:

- Warehouse qualification & validation (climate mapping)
- Transport qualification
- Climate chamber mapping
- Maintenance and installation of measuring systems
- On-site calibrations

Flughafen Leipzig/ Halle GmbH

Flughafen Leipzig/Halle GmbH is a subsidiary of Mitteldeutsche Flughafen AG. Around 2.4 million passengers and 1.2 million tonnes of air freight were registered in 2017. This makes Leipzig/Halle Airport the second largest cargo airport in Germany.
www.leipzig-halle-airport.de

PortGround GmbH

PortGround GmbH is a subsidiary of Mitteldeutsche Flughafen AG. It offers ground handling, freight and other comprehensive services around the clock at the airports in Dresden and Leipzig/Halle airports. **www.portground.com**

Video mapping
Interested? Then scan the QR code!

ROTRONIC AG · Grindelstrasse 6 · CH-8303 Bassersdorf · T: +41 44 838 11 11 · www.rotronic.ch · measure@rotronic.ch
Find your local contact on: www.rotronic.com/international

A PST Company

53024E/2019-01