



VŠB /Schott Food Display

07.10.2022

Potential collaboration topics

Dr. Scotto

Agenda

- 01** Schott AG: general introduction
- 02** Schott Food Display: general introduction
- 03** Planned investigations
- 04** Open positions

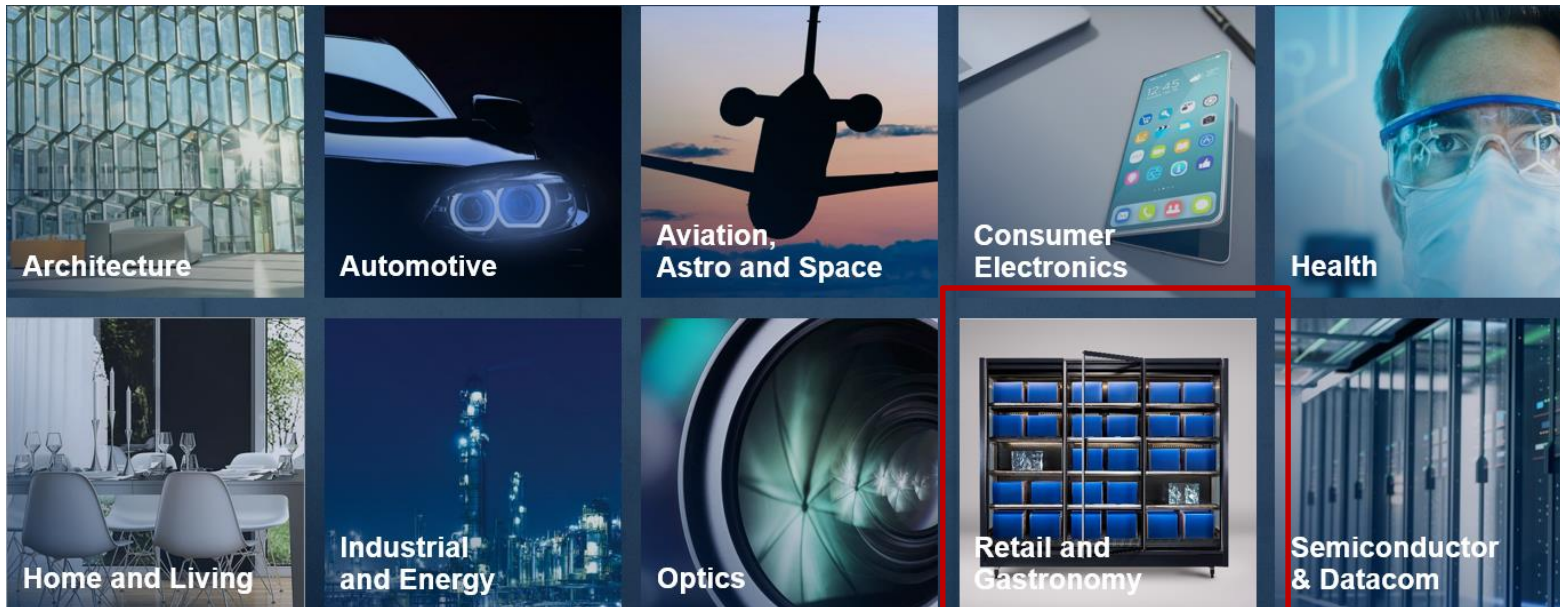
Schott AG: brief introduction

Description

Schott AG: worldwide presence: 43 production sites / 26 sales offices in 34 countries

Over 17000 employees worldwide

Broad product portfolio for various markets



Food Display, Valašské Meziříčí

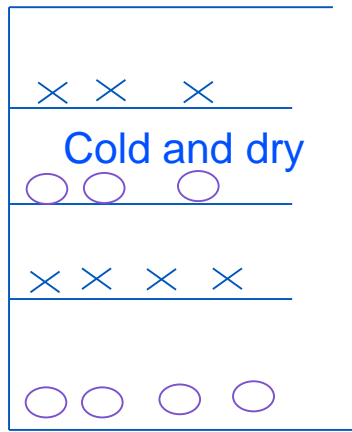
More than 400 employees

Schott Food Display: our mission

Basics

Cabinet (chiller or freezer)

Shop



Warm and humid
25°C/60% RH

OUR „BUSINESS“

Develop a solution

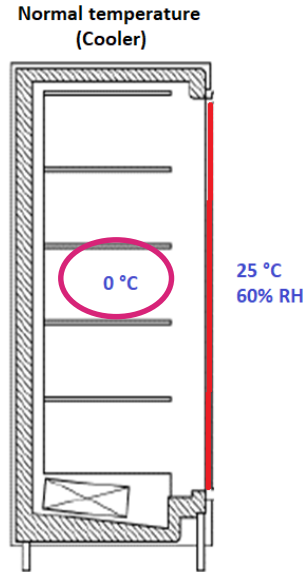
- Energy efficiency & promotional presentation of chilled food in supermarket cabinets
- comfortable access to the food products for the shopper and efficient food management by the retailer

- Widely transparent
- Limiting air mix between cabinet and shop
- Moving

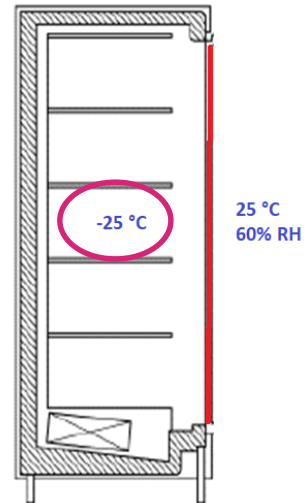
Schott Food Display: our mission

2 basic systems

Chillers



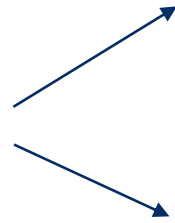
Low temperature (Freezer)



Freezers

+ Further applications
(Semivertical, Bier chiller
-5°C for Brazil market..)

Development, testing
and production of door
systems for



Targets

- Maximal transparency and best visibility of the stored food
- No condensation on outer glass
- Minimal energy consumption

+ mechanical robustness ...



Transparent chiller doors
(high runner)



More modern and interesting
appearance with hidden
cabinet behind printed glass
step

■ Example of Chiller Doors

- Designed for cooling systems (NT)
- 100% transparency and maximal visibility of the stored food
- No optical distortion
- Reliable design, AR glass, self-closing,
 - door stop, hold open



Standard design for Freezer

Increased transparency,
lower energy consumption

■ SCHOTT Termofrost®

- Designed for freezer systems (LT)
- Integrated or assembled handle
- Product available in 3 versions:
 - SCHOTT Termofrost® ECO-Clear AGD (All-glass design, passive door)
 - SCHOTT Termofrost® ECO-Clear X (Passive door)



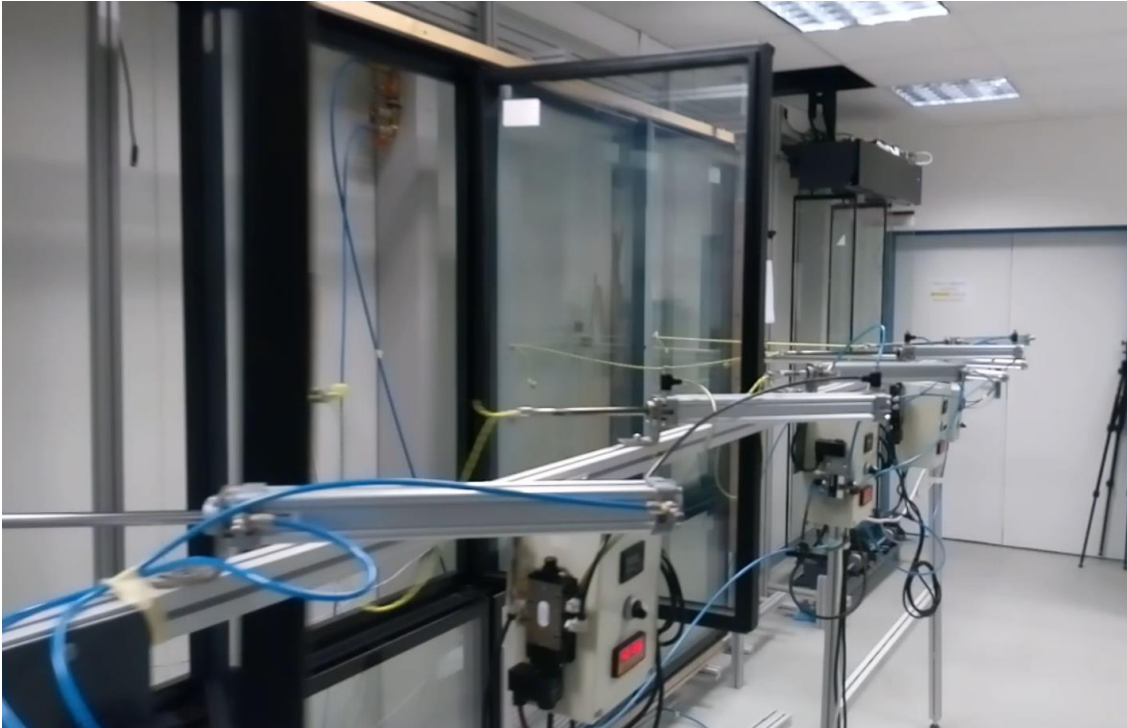
Termofrost® ECO-Clear
(no frame)

Testing laboratory

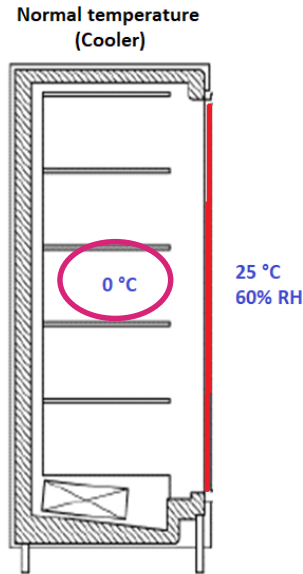
Climate lab (climatic test)



Mechanical lab (life time tests)



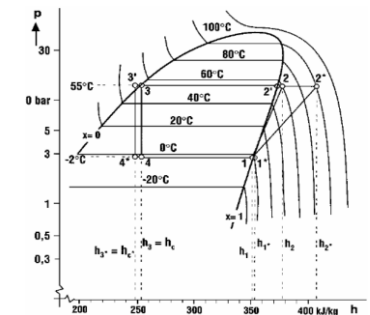
Topic 1: energy measurement on cabinet



- **Motivation:** Quantification of thermal losses of standard cabinet
 - Contribution of the doors to overall consumption
- **Method:** Measuring cooling power needed to keep constant temperature in cabinet
- **Equipment:** Chiller Cabinet equipped with Flowmeter (Available in Schott laboratory end of October)
 - Measurement of Flow of Cooling Liquid in system + Temperature and pressure of inlet and outlet
- **Investigations:**
 - Refine and validate methodology (use of data, measurement of different door configuration scheduled starting 11.22)
 - Interpretation of measured data
 - Comparison to simulations



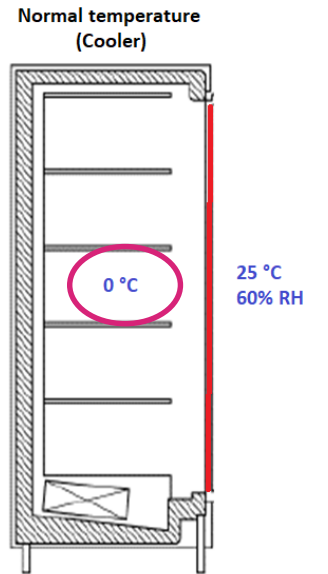
Determination of cooling power needed



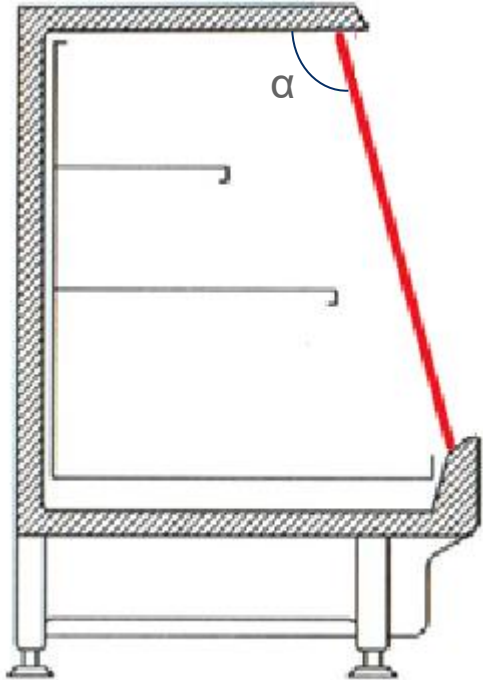
Topic 2: Energy losses due to leakages



- **Motivation:** Quantification of thermal losses through air leakages
 - Leakages around the doors (gaps) unavoidable
 - Mixing of cold and warm air => additional warm air to be cooled
 - Increased consumption of cabinet
- **Investigations:**
 - Simulation of the steady state for different gaps between doors
 - Impact on cabinet consumption
- **Method:**
 - Air flow simulations based on model of Chiller Cabinet
 - Quantification of losses for different widths of gaps



Topic 3: Thermal losses in semivertical systems



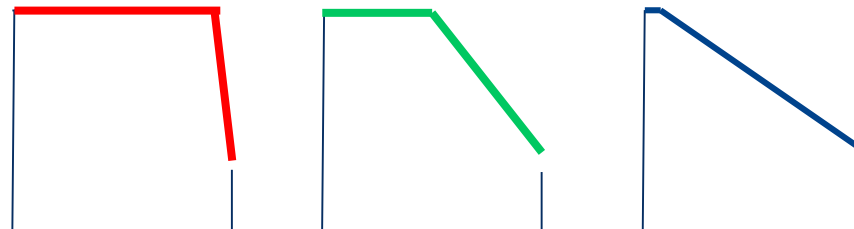
➤ Motivation

- New developments of semivertical systems
- Demonstration that thermal losses are depending on glass orientation
 - A semivertical system may be thermally less demanding than a vertical system
- Optimize door design in case of semivertical application

➤ Tool: Air flow simulations of different inclinations of the door system

➤ Investigations:

- Dependence of outer glass temperature on glass inclination



Open positions

1) Development engineer

- Find a technical solution as per customer request and project specification
- Focus on delivering according to project timing and agreed cost target
- Ensure high quality output
- 3D modelling in SolidWorks
- 2D drawing creation including tolerance and material specification (metal and plastic parts, ...)
- Item preparation and release in SAP
- Participation in prototype and sample built
- Cooperation with testing engineers on design verification and validation
- Communication with customers

2) Simulation engineer

- CAE analysis and optimisation of thermodynamical and mechanical properties of developed products
- Comparison of simulation results with real test results - correlation
- Preparation, realisation and evaluation of climatic tests
- Compilation of measurement results, of results of simulation, and creation of database
- Active participation to new product development and optimization of existing designs
- Collaboration with development engineers, interpretation of test results, optimization of designs
- Continuous learning and competence growth