Recommendations by the Quality Task Group (61): 
Requirements for Construction or Conversion of a Hospital Central Sterile Supply Department  
Part 4 – Room Ventilation Systems in the CSSD

In Part 4 of the recommendations on the topic of "Requirements for Construction or Conversion of a Hospital Central Sterile Supply Department" we will discuss the room ventilation systems in a CSSD.  

In Germany, this is regulated by the following: 
– DIN 1946-4 Room ventilation systems in buildings and premises of the healthcare sector (December 2008) 
– VDI 6022 Hygiene requirements for room ventilation systems and equipment (April 2006) 

As already pointed out in Part 3 of this series of recommendations on the requirements for construction and conversion of a hospital CSSD, COOPERATION between all parties is of paramount importance. An agreement must be reached between proprietor/operator, CSSD management, infection control team, engineering department architect/medical engineering specialists and the competent authorities.  

An explanation must be given to explain any failure to observe the pertinent standards and directives. 

The following ventilation pressure-stages schema (Figure 1) must be observed when formulating a ventilation concept.  

A mechanically operated AIR-SUPPLY AND AIR-REMOVAL SYSTEM is needed for the CSSD (DIN 1946-4; 5.4). This standard classifies the CSSD as Class 2 premises. For Class 2 premises, a two-stage filtering system is specified. In VDI 2167, Table 1 of Section 5.5 specifies protective measures for the sterile supplies warehouse, while Annex A gives information on how thermal loads are to be eliminated as well as on the filter stages.

![Ventilation pressure stages schema of a CSSD](image.png)

**Figure 1:** Ventilation pressure stages schema of a CSSD
An air conditioning system is one particular type of room ventilation system where the air undergoes a special type of treatment (control of humidity and temperature), this can also be used in the CSSD instead of the air-supply and air-removal system.

The **PROCESS EXHAUST** air emitted by equipment must be eliminated using a special method so as to comply with the physiological conditions prescribed in the workplace and to prevent humidity-associated microbial propagation, for example:

- Steam purification equipment
- Manual reprocessing
- Ultrasonic equipment
- Washer-disinfectors
- Drying cabinet
- Sterilisers (FO/EO)

An exhaust must be fitted at the top of large equipment, see VDI 2167 Annex A, A 11
- To reduce heat-mediated environmental pollution
- And assure operating safety of all equipment.

**Objectives of room ventilation system**

- Assurance of process quality (pressure stages)
- Assurance of workplace physiological conditions
  - **Removal of thermal loads**
  - **Removal of moisture**
  - **Removal of hazardous substances**
  - **Consideration of number of persons present**
  - **Consideration of heat sources**
  - **Consideration of emission sources**
  - **Fresh air supply**
- Reduction of microbiological contamination

**Planning:**

- Observance of all pertinent regulations
- List of standards regulating planning
- The room air ventilation system, taking account of:
  - Space needed
  - Working procedures
  - Number of employees
  - Fittings/equipment
- Contractually binding assignment of responsibilities for all stages of planning, installation, acceptance, operation, commissioning, inspection, maintenance, see. VDI 6022 4.6
- Acceptance test as per DIN 1946-4
  - Technical acceptance test
  - Hygiene acceptance tests

**Production/Installation:**

- Taking account of the provisions of VDI 6022, Section 4 (hygiene-related aspects of delivery, installation and the environment)

**Operation of air-supply and air-removal system**

- As specified by QM, cleaning, maintenance and repeat technical and hygiene-related **TESTS** and their documentation, see VDI 6022 Section 5.
- The ventilation system must be operated as prescribed in the standard.
- Its operation must be documented see VDI 6022 5.1
- Cleaning intervals and methods for the inlet and outlet grids must be specified.

**Elevator:**

- If elevators (lifts) are to be installed, they must be included in the pressure-stages concept.
- Inspection taking account of fire-protection must be conducted
- The external surfaces of elevators must be amendable to disinfection.

**Gas sterilisers using ethylene oxide gas or formaldehyde gas:**

- Pursuant to the regulations governing hazardous substances (TRGS 513), air-exchange requirements must be observed.

**Inspections and Tests**

- The ventilation system must be operated as prescribed in the standard.
- Its operation must be documented see VDI 6022 5.1
- Cleaning intervals and methods for the inlet and outlet grids must be specified.

**Operation of room ventilation system**

- **INSPECTIONS AND TESTS** must be specified by the operator.

**Elevator**

**Gas sterilisers**