Case Study

weisstechnik realises climate-control and clean-room technology for fertility clinic

WHY	HOW	WHAT
In-vitro fertilisation and other treatments in accordance with GMP guidelines and DIN 1946-4	Clean-room technology for IVF lab Climate control technology for medical treatment room. Turnkey project	Vindur® Compact 75.3 climate control unit Vindur® TOP secondary air cooler intelli.4® control unit with web visualisation

WHY – The challenge.

The TFP Fertility Germany GmbH fertility clinic commissioned the climate control of an IVF lab in an existing building for its Düsseldorf premises. The lab is going to be used among other things for in-vitro fertilisation under hygienically secure conditions. The climate control technology required for this must fulfil the requirements of various standards: nine lab rooms have to be set up as GLP clean rooms class D and one additional treatment room has to meet DIN 1946-4 for rooms of class II (reduction of microbial contamination in medical areas).

To ensure the required air hygiene, eight of the nine rooms were to be fitted with additional high efficiency particulate air filters. Temperature regulation was to be made controllable in each individual room in order to allow hygienically optimal conditions for various uses that would also be optimal for both patients and staff. A suitable should be integrated to minimise any possible odours. The entire system was to be controllable from a PC.

HOW – The idea.

In the planning, stand, tried-and-tested components were selected so as to be able to offer the highest degree of efficiency and safety. The duct system with inflow, outflow and fresh air ducts, the air locks and the switch and control system were adapted to the spatial conditions.

In the GMP D clean room areas and in the class II treatment room, the ventilation is executed in the form of a turbulent displacement flow. A compact integral climate-control unit works in circulation mode with a fresh air percentage of around 10%. This ensures that persons in the rooms are provided with sufficient fresh air. The integral climate-control unit also ensures the necessary air pressure for the pressure cascade.

The climate control in the treatment room is executed by means of a secondary hygiene air cooling unit that complies with the strict hygiene requirements for AC systems in rooms with personnel in accordance with DIN 1946-4 room class II.

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What - The solution.

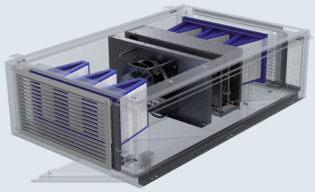
The GMP D clean room system has nine rooms with a total area of 159 m2. The Vindur® Compact 75.3 integral climate-control unit works in circulation mode and generates an inflow volume of 6,245 m3/h for the clean room area and the associated air locks. The fresh air proportion is 700 m3/h. The air is filtered in two stages. In eight rooms with additional terminal H14 HEPA filters on the swirl diffusers, it is filtered in three stages. The overpressure required in the clean room is controlled via a variable volumetric flow regulator in the exhaust air in combination with a pressure sensor.

The DIN 1946-4 room class II treatment room has an area of 17.2 m2. The climate control here is by means of the Vindur® Top secondary air cooler with an inflow volume of 350 m3/h. The fresh air proportion is 150 m3/h. The unit is integrated into the room's suspended ceiling and is easily accessible for cleaning, disinfection and filter changing.

Selected product: Vindur® Compact 75.3 climate control unit and Vindur® Top secondary air cooler

One room is set up as the control room for the temperature control and conditioning of the air. An electrical heating element in the air ducts allows other rooms to be heated on demand. A special active charcoal filter is fitted in the inflow duct to filter out any possible odours.

The entire system is controlled by means of the fully integrated intelli.4® control unit. The integrated web visualisation allows the system to be operated and programmed from a PC via a web browser. All data can be documented easily and in compliance with standards.



Special construction features

- weisstechnik turnkey services: planning, assembly, commissioning
- Integration of clean-room standards and requirements for medical areas
- Fully integrated intelli.4® control unit with web visualisation
- Particularly compact Vindur® Compact integral climate-control unit
- Innovative Vindur® TOP secondary air cooler with thermal disinfection