

Weiss Klimatechnik creates a clean room solution for the production of fuel cell components

WHY

New construction of a production facility for fuel cell components

HOW

Clean room solution according to requirements including mini-environments

WHAT

Planning technical building services, execution, startup, acceptance and system verification

WHY - The challenge.

The solution was conceived for the development and production of components for hydrogen fuel cells. The basis for this is formed by membrane electrode assemblies (MEA) for fuel cells and electrolysers. This involves up to seven extremely thin layers that meet specific customer needs thanks to the various the various compositions of materials. Put together in what is known as a stack, they form the core of a fuel cell. The production of MEAs must take place under controlled clean room conditions in order to ensure consistent product quality.

HOW - The idea.

The MEAs are produced under clean room conditions in accordance with ISO EN 14644-1 particle purity classes ISO 7/8. However, in the production process, there are sub-areas with higher requirements. Here, mini-environments that completely shield the sensitive areas in the production chain from the environment are used. In accordance with ISO EN 14644-1, they guarantee particle purity classes ISO 5/6 as well as small tolerances with regard to temperature (± 1 K) and humidity (± 3 % r.h.). This reduces costs and allows valuable resources to be used with precision.



Case Study

Weiss Klimatechnik creates a clean room solution for the production of fuel cell components

WHY

New construction of a production facility for fuel cell components

HOW

Clean room solution according to requirements including mini-environments

WHAT

Planning technical building services, execution, startup, acceptance and system verification

WHAT - The solution.

The complete solution consists of a clean room with integrated mini-environment, ventilation and air-conditioning technology with dryer as well as the customised intelli.4 control system. The controller ensures that the respective conditions are maintained in the complete system and that it works in a particularly efficient and energy-saving manner.

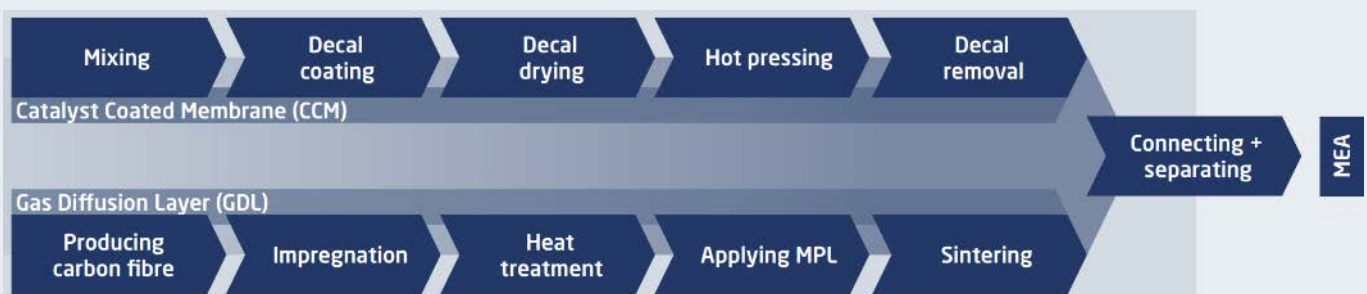
Product selected: Air-conditioning unit Vindur[®] Compact

In order to reduce energy costs even further, air-conditioning is mainly provided using recirculated air with a proportion of outside air. Fresh air is only supplied to the extent required for personnel and the room pressure. This saves resources and still guarantees the high quality requirements.

Production under clean room and measuring room conditions

MEA production
Clean room ISO 7/8
ISO 5/6 process system
(FFU cover)
Clean room condition
Temperature 22°C (± 1 K)
Humidity 40-55% (± 3%)*

*Depending on the overall concept



Overview of turnkey services

- Planning and project supervision
- Design and execution
- Flexible project management
- Installation and commissioning
- Maintenance and qualification
- Worldwide after-sales service