

A High Tech Cleanroom Container Solution

- modular cleanroom container system
- autark
- transportable
- outdoor



Fig. 1 exterior view of outdoor cleanroom container

A high tech cleanroom solution for special uses

1 The situation

Time and again enterprises reach the limits of their clean room capacity or a new business case demands a controlled clean room environment. There are several ways to respond to such situations:

- Existing clean rooms are extended or upgraded
- New facilities are built
- Clean room resources get outsourced
- The company will dislocate to a new site

Those different strategies often face the same basic problems. How to provide the necessary production area during the transition period? How to get the new facilities on time to meet the project plans?

- Is it possible to work inside a clean room that is getting upgraded?
- How is it possible to minimize production loss or down time until the new buildings and facilities are completed?
- Is it possible to create new clean rooms on site even if the building capacity is limited?
- How can the transition period be organised to ensure full productivity with minimal investments while moving to a new site?

2 The solution → a modular design

To face these challenges SIT offers the possibility to install the successful modular clean room system outdoors. The concept is designed with special care to details like temperature insulated walls. The system is already well-proven on several sites and guarantee our customers a versatile and complete facility with considerable advantages:

- The modules can be placed outside with little time and effort. No factory hall is needed.
- The modules can be delivered within short time.
- The installation time on site can be reduced to a minimum.
- The investments are manageable as well as the time scale.

With a modular construction our customers also gain flexibility in the layout of their facility. The definition of zones can be tailored to their needs. Clean rooms with specified classes, grey areas with air conditioning and process media supply, access locks, material locks and so on can be organised to match their needs. The layout below shows a system that consists of 3 modules, each one with 12 m x 2.5 m.

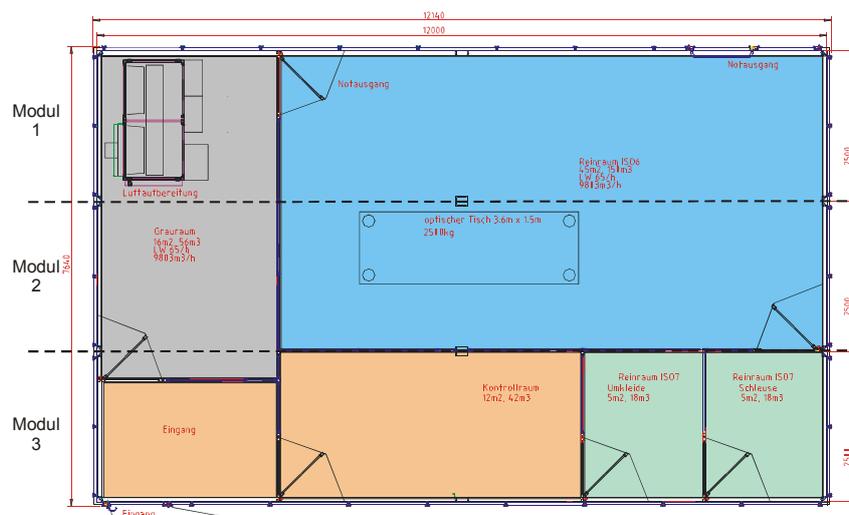


Fig. 2 Layout of a container system consisting of 3 modules

3 The modular cleanroom system for the Max-Planck-Institute

The Max-Planck-Institute in Göttingen, Germany faced the question how to increase the capacity of their clean room facilities until the new buildings on another site were completed. With the modular clean room system from SIT this question was answered quickly and elegantly.

The MPI institute specializes in the solar system research. To develop and produce the optical devices needed for the scientific research they bought two transportable clean rooms. These containers with a footprint of 60 m² und 90 m² were equipped with the complete infrastructure. The specialized telescopes built inside those clean rooms will be equipped with space probes used by the European Space Association.

The company SIT System Integration Technology AG, located in Montlingen, Switzerland provides clean rooms that meet and exceed the high expectations made on a compact system. The modules are transported individually to the customer. Onsite they are assembled together to a complete clean room facility. The foot print, the clean room classes, the media supply and the infrastructure are built according to customer specifications. Based on the modular container system SIT is able to provide a tailored solution with very high quality.

Both modules are placed next to the existing building and are weather-proof and insulated. They are ready for the customer to move in within a week after delivery. Three years later the modules were moved to another location for another project use. Such an installation is not only economic but also sustainable.

4 Building a modular cleanroom

The whole clean room is assembled and completely tested at our facilities prior to shipment. This guarantees the customer highest quality and minimize the installation time onsite.

4.1 Floor and support structure

The floor type in the clean room depends on the application. It can consist of ESD protection panels that are welded tight. To meet the GMP standards the floor and walls are joined completely flush with silicone glue.

A welded steel frame serves as a basic structure for the walls and the filter system. It also ensures the necessary rigidity and the fixation points for an easy transport of the modules.



Fig. 3 ESD protected floor GMP



Fig. 4 basic structure

4.2 Interior and utilities

Just like the floor the walls will be matched to the application of the clean room. If it will be for GMP certified products or research they will be equipped with aluminium sheet metal panels that are creased. All joints on the wall and in corners will be sealed flush and tight with silicone glue (with an anti-fungus compound) to ensure that all surfaces can be wiped down completely for disinfection. As a solution for semiconductor applications or a research lab outside the GMP standards we offer powder coated sandwich panels.



Fig. 5 walls complete

They are fitted directly into the SIT aluminium frame system. Of course it is possible to mix and match windows and solid walls as needed.

The media supply for the whole installation is integrated into the clean room system. We fit pressurised air distribution, DI water, process gasses (including safety compartments) and vacuum systems. If a specialised application requires a certain product we are happy to discuss possible solutions with our customers.



Fig. 6 and 7 media distribution

The air conditioning is one compact unit. All components are integrated into this cabinet. There is a cooling compressor, a dehumidifier as well as a heat exchanger and a steam humidifier. Driven by EC Venti-lators we control the temperature and humidity of the air.

To ensure the clean room is working in the proper range we also control the pressure of fresh and circulated air to maintain the right amount of pressurization within the system. SIT is able to keep the environmental conditions inside the modules within very tight specs to ensure a stable quality of all processes running inside our clean rooms.



Fig. 7 air conditioning



Fig. 8 cooling compressor

4.3 installation

The modules of your system are delivered individually. After that they are set and integrated to form the complete modular clean room system at the site specified by the customer.

Like this the SIT technicians are able to efficiently install the containers with all components and the infrastructure. Only a short installation time is required until the system can be started up



Fig. 9 delivery of modules



Fig. 10 module placed on support



Fig. 11 coupling of the modules



Fig. 12 integration and installation

4.4 Finish

Just one week after the modules were delivered, SIT was able to hand over the system to the Max-Planck-Institute. Thanks to the very good insulation of roof and walls the outdoor installation is not an issue at all (Fig. 13). Among other equipment an optical table

of several tons of weight was installed inside the clean room. This emphasizes that the modular system from SIT with all its advantages makes no compromise but offers highest quality to our customers.



Fig. 13 exterior view after installation



Fig. 14 interior after installation

If you are interested in our solutions please contact us for further information.