



**NKP**



**isotec**



# Training



**Isolator – basic principles and use**

# Isolator Use and Principle

- Why are Isolators used?
- Isolator – general overview
- Which type of Isolator
- Overview of Principle
- Examples for different application
- Considerations
- Summary

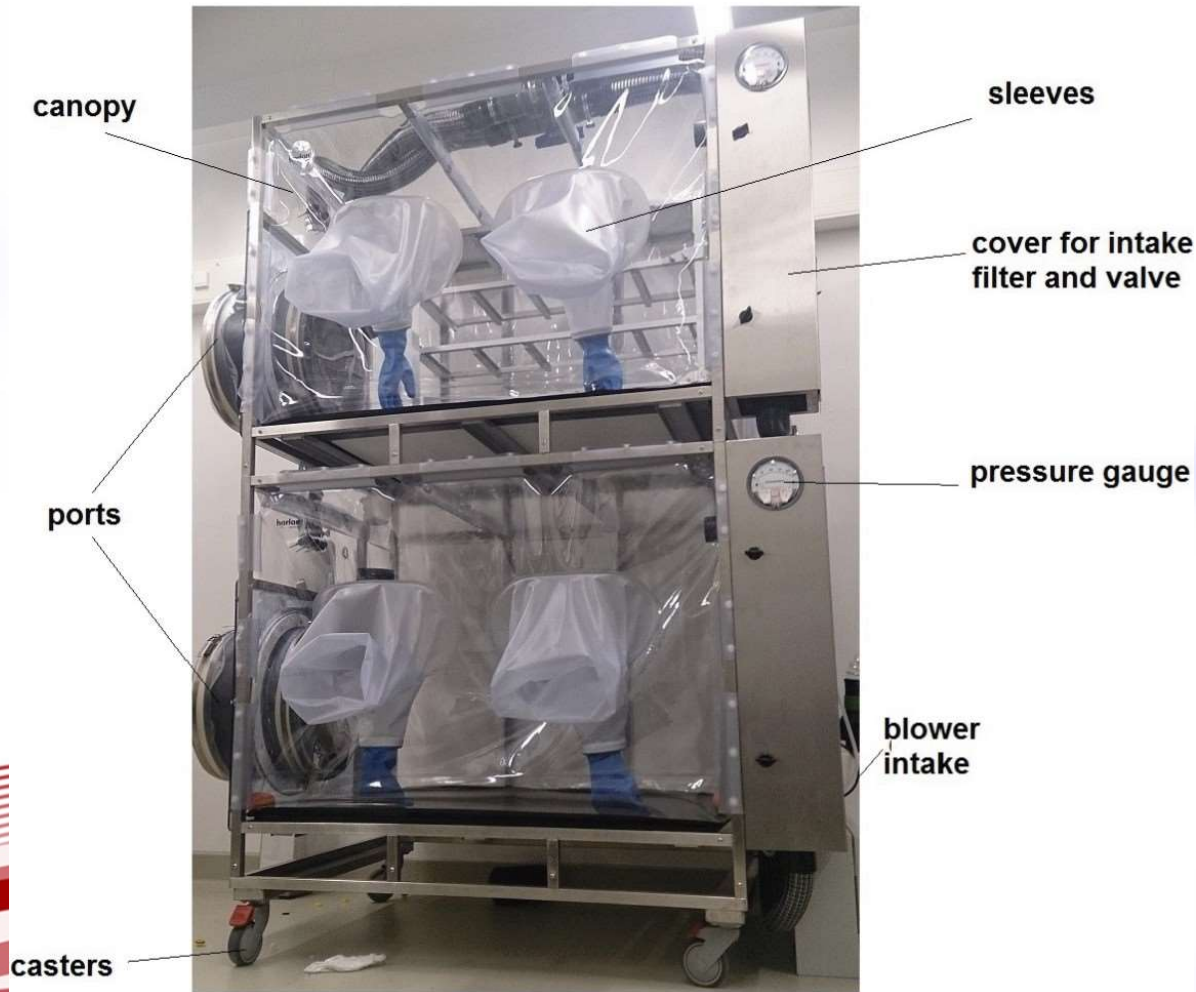


# Why using Isolators?

There are only two principal reasons to use an Isolator.

1. To protect the content from the environment
2. To protect the User from the content of the Isolator

# Isolator –general overview -Set up



The Isolator consists of the following:

- Frame
- Canopy (containment Unit)
- Port
- Blower / fan Unit
- Filtration / Pipes

With this „framework“ it is possible to contain contents at different status to the environment around it



## Protect content

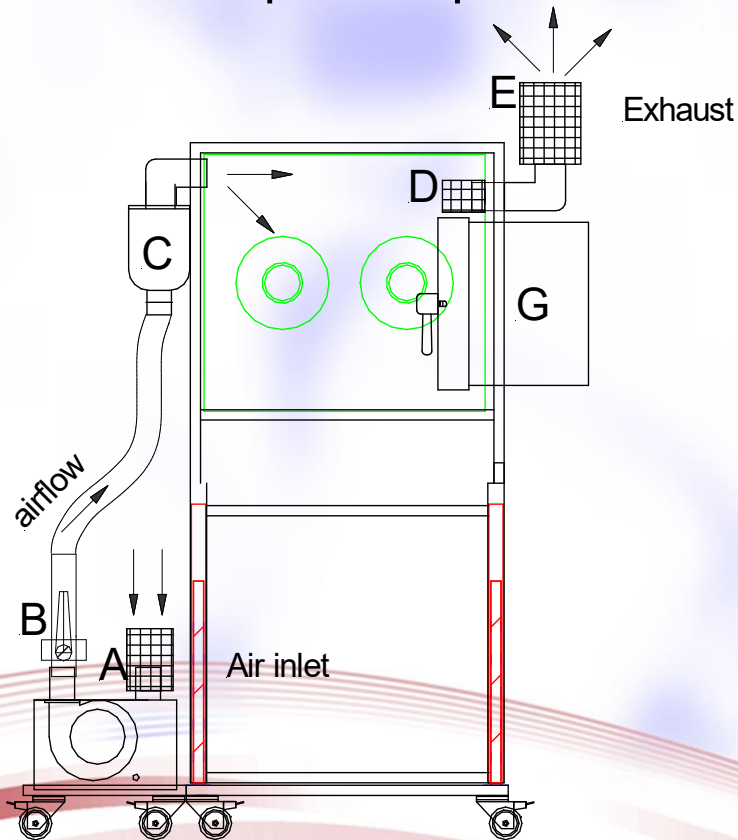
- Isolator run at positive pressure
- HEPA filtration to protect content
- Usually Germ free or selected bacteria which do not present a infection issue for the User

## Protect User

- Isolator run at negative pressure
- HEPA filtration to protect user
- Connection to room exhaust recommended
- Used for infectious material / studies which can harm the User

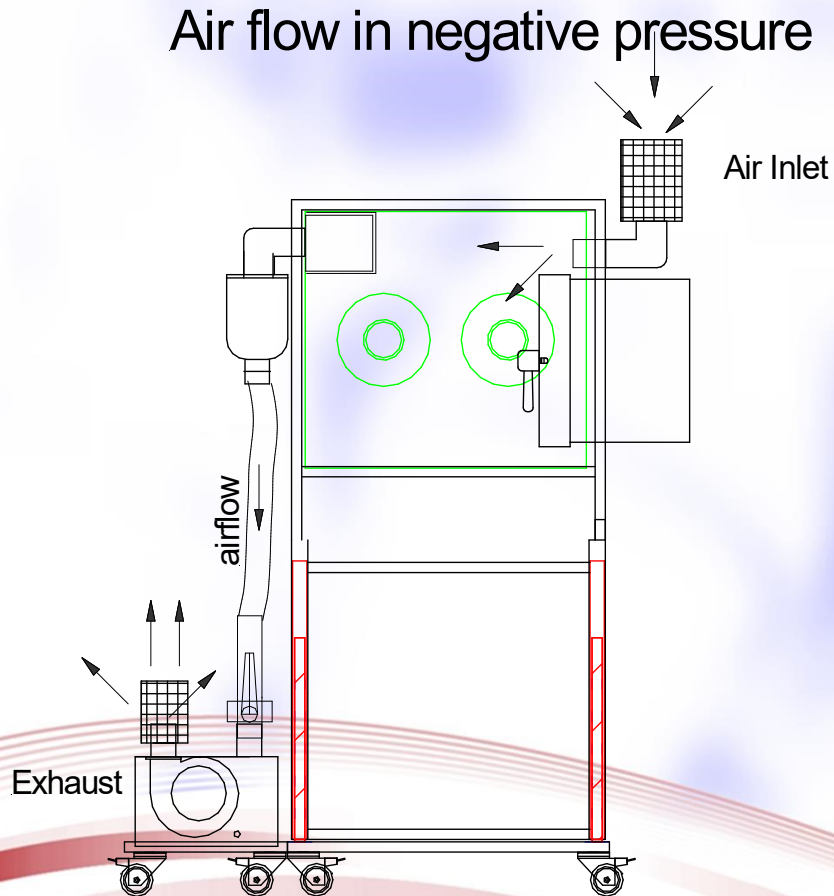
# Overview of Principle

Air flow in positive pressure



- The air is drawn from the Room via the fan Unit (A)
- The fan blows the air via the tubing through a Filter (C) into the Isolator canopy (containment Unit)
- The air passes through the isolator and exhausts via a pre-filter (D) and through another HEPA filter (E) into the room air
- The environment inside the Isolator needs to be sterilised prior to first use using gas sterilisation or liquid sterilant which are very strong in order to remove all traces of bacteria, viruses and spores
- Material is only imported through the port (G) when autoclaved or sterilised via another method to ensure no bacteria/virus/spore can enter

# Overview of Principle



- The air is drawn from the Room via a HEPA filter, due to the Fan being connected to the Isolator to draw the air from the containment Unit
- The air passes through the isolator and exhausts via a pre-filter or second HEPA and through another HEPA filter into the fan Unit
- Then the air is blown into the room again or directly connected to a room exhaust
- The environment inside the Isolator needs to be cleaned or sterilised prior to first use using gas sterilisation or liquid sterilant. This is defined by the User if the material entered needs to be protected as well or not.
- Material is only imported through the port.
- The material leaving the isolator needs to be sterilised – decontaminated before it can be exposed to the staff



# Examples for Applications

## Positive Pressure

- Germ free breeding
- Embryo Transfer
- Vasectomy
- Commensal bacteria / Schaedler Flora
- Non hazardous set-ups
- Transport / holding



# Examples for Applications

## Negative Pressure

- Quarantine / unknown Status
- Microbiome with S2 class  
Bacteria
- Viral research
- humanisations
- hazardous set-ups – potential harmful for user

# Considerations

To choose the correct Isolator for your research it is important to consider a few points:

- What is my available space? The layout of the rooms have a big impact on the type / style of Isolator best suited
- Experience of staff – do they know already what is required when working on Isolators / Special protocols
- Comfort of Staff- do I want to invest in height adjustable systems for a better ergonomic work environment
- Sterilisation options – is an autoclave available – which size or do you need to consider only cold sterilisation?
- How can you integrate the Isolator set-up in the current animal rooms or do you have the luxury of having these completely separate
- Which type of work do you want to perform? Strictly Germ free or do you want the possibility to expand to S2 Studies as well?



# Summary

- NKP Isotec will help to support your project right from the planning stage, working with you to meet your requirements
- It is important to us to clarify all your questions, which is why we have a dedicated project contact at your disposal
- I hope we could give you an impression about the principal of Isolators and show you that our main aim is to provide an isolator which is reliable and easy to use
- Our practical experience and my background in experimental breeding will be also at your disposal for this project
- We pride ourselves on our responsive, dedicated customer service and support both before, during and after sale. We welcome your questions