elis CLEANROOM

How to choose the right cleaning system for your cleanroom?

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Introduction

In each facility, within different rooms, different cleaning methods are needed. This means that a different Standard Operating Procedure (SOP) is used per room. This may be due to differences in the work carried out per room.

Manual cleaning processes can be difficult to standardise and validate. Through training and pragmatic, logical and understandable procedures in combination with efficient, ergonomic designed equipment, it allows you to meet the high requirements for cleaning cleanrooms.

Effective cleaning and contamination control are essential for a well-functioning, efficient cleanroom in which your products are protected. That may sound simple, but it's a tricky task that takes many details into account, and that starts with choosing the right cleaning system.

This document shows a generic overview of different types of cleaning systems specially developed for critical spaces.

There are so many aspects to make the right choice for your cleanroom cleaning system. Here we offer you advise, information and an explanation of the choice of materials for your cleanroom cleaning system.

Types of cleaning systems

Within the world of cleanroom, generic distinctions are created in to 4 categories of cleaning systems;

Type	Delivery method	Treatment method
Disposable	Pre-dosed	Ready for cleaning immediately
Disposable	Dry	For manual cleaning pre-dosed (or not at all)
Reusable	Pre-dosed	Ready for cleaning immediately
Reusable	Dry	For manual cleaning pre-dosed (or not at all)

After a mop has been delivered dry and you can choose to pre-dose it yourself or use it dry. The latter is rare, but it does occur. This is also the reason it is included as a category.

Based on the requirements and guidelines, an SOP is produced for the space in which the cleaning system will be used. This will prescribe exactly how the work should be carried out.

"Onion peel" theory

In this section a very generic overview has been drawn up of various cleaning systems that you can use within your cleanroom.

Within each category, you can also see the differences based on the composition of materials, fabric quality, absorption level, price etc. All these different aspects don't make the choice any easier, because you may not know exactly which aspects you should look out for and which are really important to you.

To guide you through this, the "onion peel" theory has been drawn up for you.

This offers you a structured direction in the make your choice. The theory can be defined as asking a number of crucial questions (peeling) that leads to the choice of the right system (core) that is specially suited for your cleanroom.

You will need to "peel off" the following ten layers to get to the core:

1. What classification(s) cleanroom(s) do you possess and is the cleanroom cleaning system suitable for that? What does that show? It could also mean that you need multiple systems if you have multiple classifications.

2. How many square metres of space do you have? And what does this mean in relation to the cleaning system? You can look at the frequency of rotation, the composition of the cleaning system and/or the extent to which the its operation remains intact.

3. What should the cleaning system achieve? You can think of which application you want to use it for (coarse cleaning/fine cleaning/floors/tables/machines etc.). When testing, you will need to check whether the aspects that are important to you (absorption capacity/no particle delivery/contact time, etc.) allign within the requirements.

“Onion peel” theory

4 How are the ergonomics of the cleaning system? Your employees have to work with the system and you would rather have them working than at home sick.

5 Which detergents and disinfectant do you use and can the cleaning system withstand them? You can choose to adapt the agents to the material you choose, but you may want to keep these agents because of the coating of the floor.

6 To what extent is the cleaning system easy to use? Think of preparing the cleaning system, the ergonomics, handling the materials etc.

7 To what extent can you use the cleanroom cleaning system in your cleanroom? Due to various modular designs, trolleys can now be made larger and smaller and this can save handling.

8 Do you have any room for the storage of the cleanroom materials at all? Think of keeping mops/wipes in stock.

9 To what extent does the quality of the cleaning system remain consistent depending on how you use it? And is that demonstrable? Think of the mechanical use, but also any heat resistance (sterilisation).

10 What are the costs of the cleaning system? Also consider the costs of the waste stream, the possible Water For Injection (WFI), chemicals, etc.

Cleaning systems assessment tool

If there are any questions you may have regarding cleaning systems it is recommended you ask the suppliers of the cleaning systems.

Next, it is recommended to list your selected cleaning systems, which may be for you, on the X axis in Excel. Each aspect mentioned below gives you a ranking (degree of importance) and puts it on the Y-axis.

Finally, you assign scores to each aspect and these are multiplied by the ranking. This enables you to make an informed choice based on well-founded arguments, that is also easy to trace.

TECHNICAL ASSESSMENT		REUSABLE SYSTEM			DISPOSABLE SYSTEM 1			REUSABLE SYSTEM 1		
Considerations	**Weighting**	**Detail**	**Rating**	**Score**	**Detail**	**Rating**	**Score**	**Detail**	**Rating**	**Score**
Suitable for any room	10	All areas	10	10.0	All areas	10	10.0	All areas	10	10.0
Material	5	Microfibre	4	2.0	Polyester/ Microfibre	1	0.5	Microfibre	3	1.5
Autoclavability	10	Yes	10	10.0	Partly	5	5.0	Partly	5	5.0
Number of square metres	6	25m²	9	5.4	12 m²	5	3.0	10 m²	4	2.4
Absorbency	10	High	9	9.0	Low	3	3.0	Average	6	6.0
Suitable for all types of cleaning	10									
Ergonomics	7									
Resistance detergent / disinfectant Use of detergent / disinfectant in combination with the cleaning system	10									
Convenience of use	6									
Storage materials	4									
Technical score				54.4			37.5			40.9

Review tool for cleaning systems

TECHNICAL ASSESSMENT		REUSABLE SYSTEM			DISPOSABLE SYSTEM 1			REUSABLE SYSTEM 1		
Considerations	**Weighting**	**Detail**	**Rating**	**Score**	**Detail**	**Rating**	**Score**	**Detail**	**Rating**	**Score**
Total price (including waste stream, WIFI, chemicals, etc.)	8									
Delivery	5									
Validation	10									
Supplier score				54.4			37.5			40.9

The above model is just an example.

Choice of material

As previously stated there are two types of material on the cleanroom market.
This concerns disposable and reusable. The question of which is the best option has no clear answer.

The questions to get to the core, as on the tables show are enough to choose the right cleaning system for your specific critical space. However, statements are regularly issued about disposable or reusable material and these are often very coloured without any depth. Do you ask yourself to what extent these statements for this particular material have been examined and then settle for those results?

On the basis of two examples, this will become clear:

Statement 1: ''a disposable mop has less risk of cross contamination than a reusable mop."

Statement 2: "a reusable mop is more cost-saving than a disposable mop."

What does that show? In what space is this disposable manufactured? What does that process look like? Are the mops qualitatively comparable or is it like comparing apples with oranges? Do you also count hidden costs such as, for example, logistics and stock?

It's not always a clear choice if you look beyond just the statements.
You are also sometimes willing to pay a little more for convenience or for the certainty that something is right. You will also have to make the same consideration for the choice of your system for a critical space.

What is important to you and your employees? And in order to get consensus within your organisation, it might even be wise to work with the operators to come up with the right choice based on the "onion peel" theory.

Conclusion

Will your cleanroom also become cleaner after treatment with the chosen cleaning system? That is actually the only question that needs to be asked in the context of protection of the products you work with.

For both a reusable and a disposable product this can be found with an IST/SOLL1 situation by means of monitoring. Within the first step for choosing your cleaning system, you will need to determine that the cleaning system in question has the right validations for your application and your cleanroom.

All components of a cleaning system must also meet the requirements you set.
In addition, it should not adversely affect the production process and products, and must offer a high degree of efficiency and reliability. Previously, there are essential requirements that you need to choose your cleaning system.
However, it is important to also look at the convenience and ergonomics of the system when making your choice.

As you have been able to read, there can be a huge number of aspects important in making the right choice for your cleaning system.

Hopefully this document gives elements to make a well-founded choice for the right cleaning system for your cleanroom.

* 1 IST situation: you decide what the situation is and where you are (current situation)
SOLL situation: you describe where you want to get out and the way to it (desired situation)

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