

DCU and CY series

# Dust Containment Systems

- The safest way to collect highly potent compounds



# Nilfisk delivers experience and continuous innovation to the pharmaceutical industry

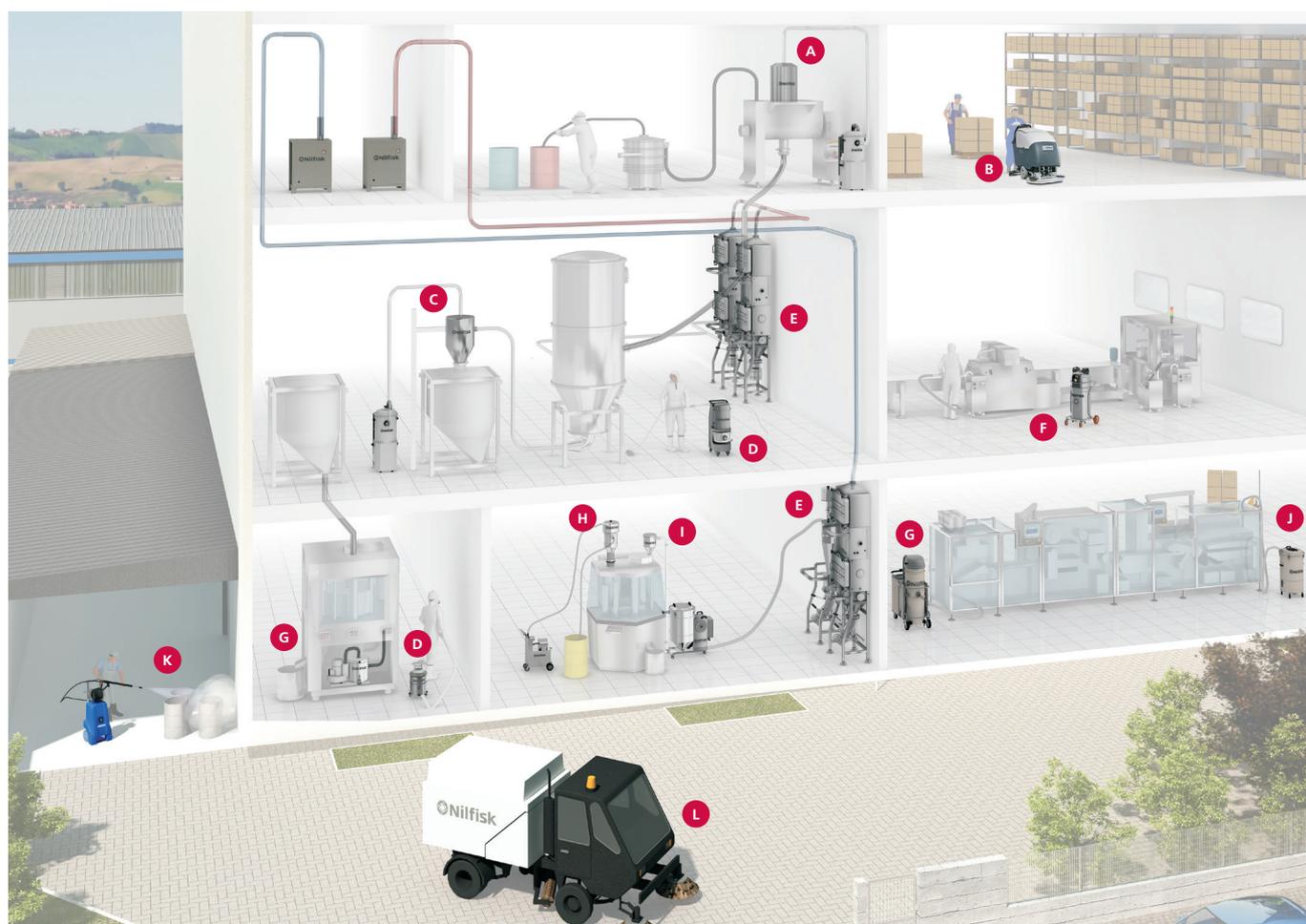
Nilfisk is a leader in the production of industrial vacuum solutions and cleaning equipment for the pharmaceutical industry.

With more than 100 years in the business of industrial equipment and more than 30 years with a dedicated product line for the pharmaceutical sector and dust containment, Nilfisk now partners with the top pharmaceutical companies and OEMs in the industry to bring them the widest range of products, including:

- mobile and fixed industrial vacuums
- pneumatic conveyors for powder, mixtures, granules, tablets and empty capsules
- accessories
- floorcare and outdoor machines.

This established experience allows Nilfisk to continuously improve and innovate a range of pharma specific solutions, now extended with the new and innovative dust containment systems for handling APIs and HPAPIs.

## A complete range of solutions



**A** Feeding of a mixer

**B** Floor cleaning

**C** Powder conveying from a dryer to a bin

**D** Cleanroom vacuums

**E** Dust containment

**F** Cleaning of equipment

**G** Recovery of dust from process machines

**H** Feeding of capsule filling machines with powder

**I** Feeding of capsule filling machines with empty capsules

**J** Recovery of scraps from blistering/cartoning machines

**K** Washing of equipment

**L** Outdoor cleaning

# DCU and CY series

## - How to select the right system

The new dust containment range is composed of 2 families: the DCU and the CY series.

The DCU series is equipped with HEPA absolute filters and retains the finest dust particles.

The CY series is the high efficiency filterless pre-separation unit to be used in combination with DCU220 - DCU220WIP series.

The filter units need to be connected to a suction unit.

### PLUS:

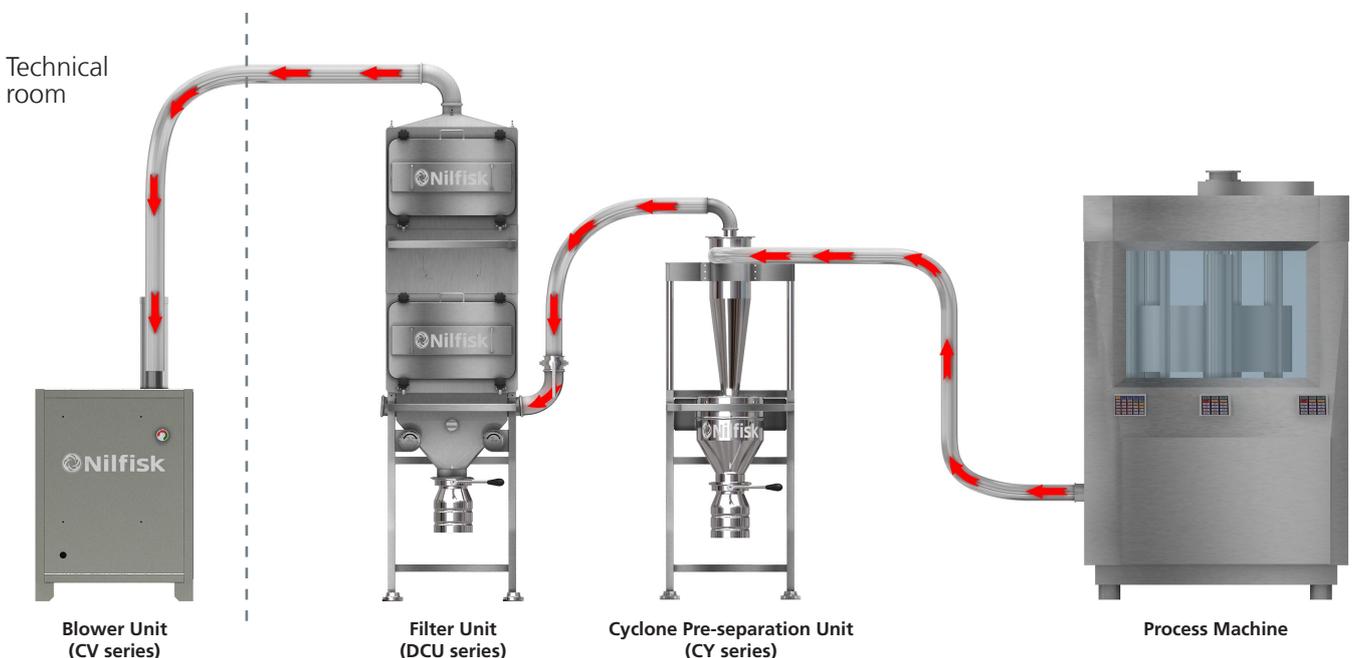
- Up to OEB 5
- Up to 1080 m³/h in very compact size
- GMP design
- Reduced maintenance costs
- Available in WIP version

Nilfisk DCU and CY series, the easiest to use dust containment filter systems OEB5 approved, together with the widest direct presence worldwide.

## Unit selector

	DCU114	DCU115	DCU112	DCU113	DCU220	DCU220WIP
Mobile						
Fixed						
Wash-In-Place, complete unit						
Airflow up to 650 m³/h						
Airflow up to 1080 m³/h						
Single HEPA Filtration, BagIn BagOut system						
Double HEPA Filtration, BagIn BagOut system						
Intergrated Cyclonic pre-separation unit						
Separate Cyclonic pre-separation unit (CY series)						
Integrated Star filter pre-separation unit (no BagIn BagOut system)						
Wash-In-Place, only cyclone pre-separation unit (optional)						
Construction material - AISI 304						
Construction material - AISI 316L						
Material discharge with contamination-free dust bag						
Total safe handling						

	CY202	CY203
Fixed		
Airflow up to 650 m³/h		
Airflow up to 1080 m³/h		
Wash-In-Place (Optional)		
Construction material - AISI 316L		
Material discharge with contamination-free dust bag		

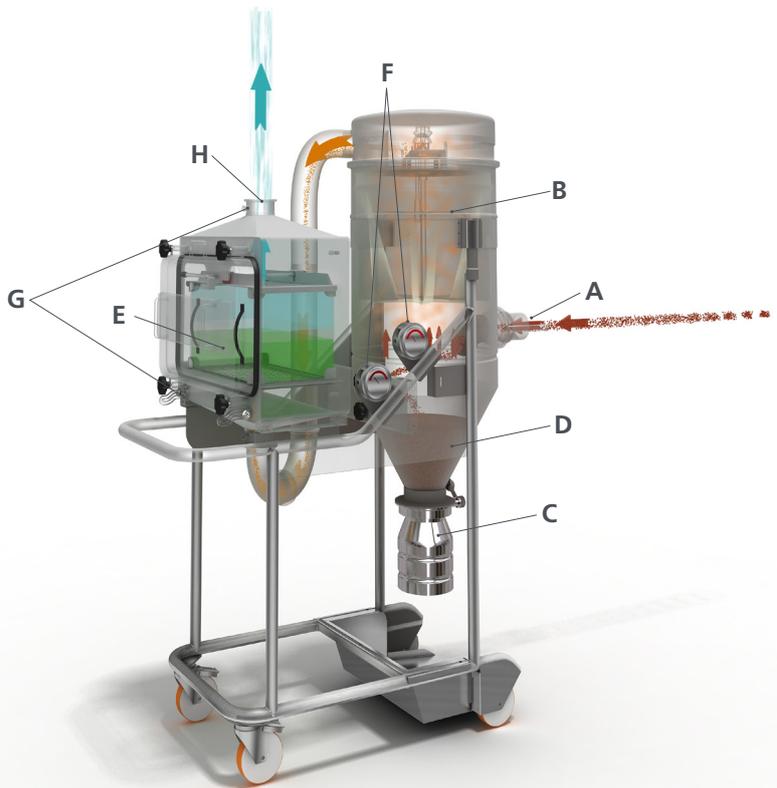


# Star filter with HEPA14 BagIn BagOut

- DCU114, DCU115

Mobile stand-alone filter unit equipped with star filter and HEPA14 BagIn BagOut filter. Fully AISI304 stainless steel, safe disposal of the collected material and safe replacement of the HEPA filter. The star filter can be cleaned with

the manual filter shaker and needs to be replaced in the equipment maintenance room. Two different sizes available with airflow rates up to 1080 m<sup>3</sup>/h.



- A** Machine inlet with manual butterfly valve
- B** Main star filter
- C** Material discharge with butterfly valve and contamination free dust bag
- D** Container capacity up to 30 L
- E** Absolute HEPA14 filter BagIn BagOut filter replacement system
- F** Visual indication of the status of the filters
- G** DOP/DEHS Ports
- H** Machine outlet

			
		<b>DCU114</b>	<b>DCU115</b>
Max vacuum	kPa - mbar	25 - 250	25 - 250
Max airflow	m <sup>3</sup> /h - L/min <sup>1</sup>	550 - 9166	1080 - 18000
Main filter type	-	Star Filter - Antistatic M Class	Star Filter - Antistatic M Class
Main filter area	m <sup>2</sup>	1.95	3.5
HEPA filter stage(s)	-	1	1
HEPA14 filter area	m <sup>2</sup>	10	10
HEPA14 filter replacement system	-	BagIn BagOut	BagIn BagOut
Filtering efficiency	%	99.995%	99.995%
OEB level production phase	-	OEB5	OEB5
OEB level maintenance phase <sup>(1)</sup>	-	OEB4	OEB4
Material discharge system	-	Contamination-free dust bag	Contamination-free dust bag
Container capacity	L	30	30
Wash-In-Place (WIP)	-	No	No
Construction Material	-	Stainless Steel AISI 304	Stainless Steel AISI 304
Length x Width x Height	cm	152.1 x 71 x 182.6	161.5 x 71 x 206.8

<sup>(1)</sup> Not valid for star filter change

## OPTIONALS

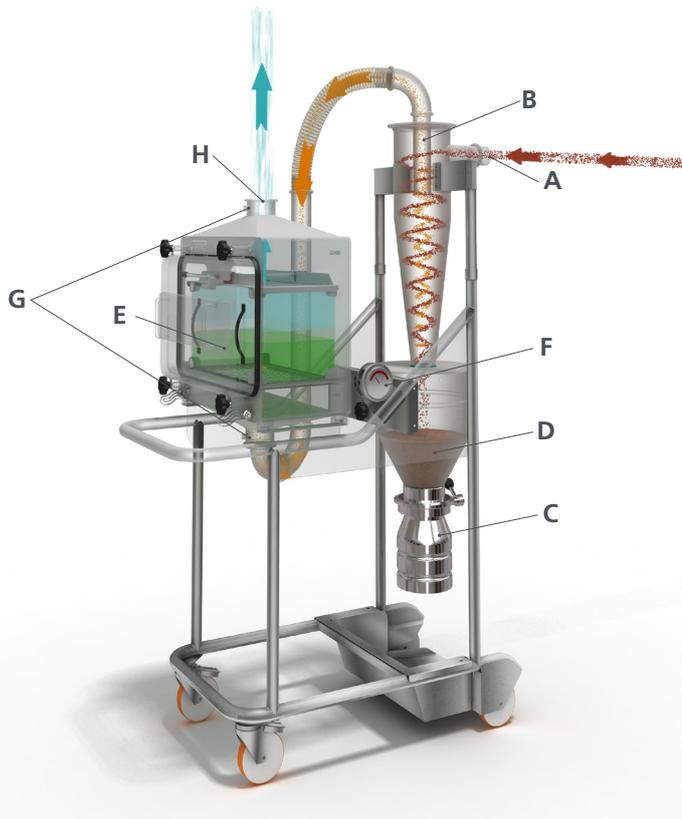
- Washing of pipeline and safe disconnection of the unit
- Container level sensor
- Filter clogging sensor
- Acoustic-Visual alarm
- Automated valves
- Stainless steel support for HEPA filter change

# Cyclone with HEPA14 BagIn Bagout

- DCU112, DCU113

Mobile stand-alone filter unit equipped with cyclone pre-separation unit and HEPA14 BagIn BagOut filter. The AISI316L cyclone, available in WIP version as optional, separates the dust without any filter element. Thanks to the

filterless technology, all maintenance operations on the unit are performed in a totally safe way and the costs are reduced. Two different sizes available with airflow rates up to 1080 m<sup>3</sup>/h.



WIP of cyclone (optional)

- A** Machine inlet with optional manual butterfly valve
- B** Cyclone pre-separation unit
- C** Material discharge with butterfly valve and contamination free dust bag
- D** Container capacity up to 30 L
- E** Absolute HEPA14 filter BagIn BagOut filter replacement system
- F** Visual indication of the status of the absolute filter
- G** DOP/DEHS Ports
- H** Machine outlet

		DCU112	DCU113
Max vacuum	kPa - mbar	25 - 250	25 - 250
Max airflow	m <sup>3</sup> /h - L/min'	650 - 10833	1080 - 18000
Cyclone pre-separator efficiency	%	> 96% (*)	> 95% (**)
HEPA filter stage(s)	-	1	1
HEPA14 filter area	m <sup>2</sup>	10	10
HEPA14 filter replacement system	-	BagIn BagOut	BagIn BagOut
Filtering efficiency	%	99.995%	99.995%
OEB level production phase (*)	-	OEB5	OEB5
OEB level maintenance phase (**)	-	OEB4	OEB4
Material discharge system	-	Contamination-free dust bag	Contamination-free dust bag
Container capacity	L	30	30
Wash-In-Place (WIP)	-	Only Cyclone pre-separator - Optional	Only Cyclone pre-separator - Optional
Construction Material	-	Stainless Steel AISI 304	Stainless Steel AISI 304
Length x Width x Height	cm	145.4 x 71 x 223.2	145.2 x 71 x 280.3

(\*) Using placebo dust (0,97kg/dm<sup>3</sup>)  
 (\*\*) Using placebo dust (0,6kg/dm<sup>3</sup>)

**OPTIONALS**

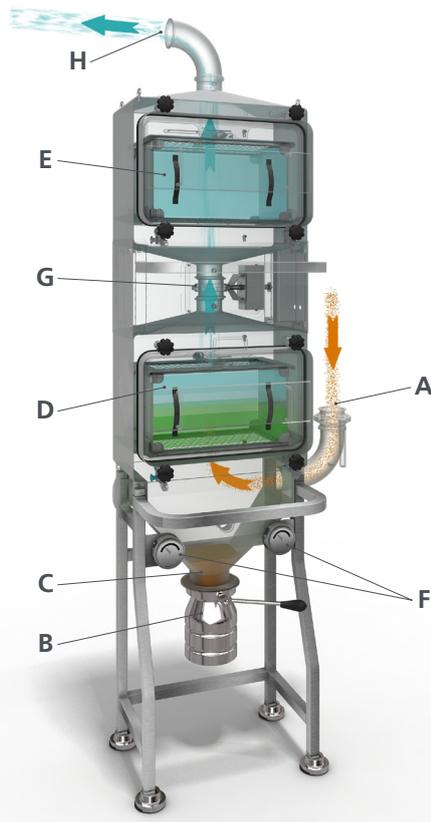
- Manual butterfly valve on machine inlet
- Washing of pipeline and safe disconnection of the unit
- Wash-In-Place (WIP) of cyclone pre-separation unit
- Container level sensor
- Filter clogging sensor
- Acoustic-Visual alarm
- Automated valves
- Stainless steel support for HEPA filter change

# Double HEPA14 BagIn BagOut

- DCU220

AISI304 fixed filter unit equipped with 2 HEPA14 BagIn BagOut filters. All maintenance operations on the unit are performed in a totally safe way and the security filter secures the highest safety during operations. Available in ver-

tical and horizontal configuration, it needs to be used in combination with the CY series, depending on the airflow requirements.



- A** Machine inlet with manual butterfly valve
- B** Material discharge with butterfly valve and contamination free dust bag
- C** Container capacity up to 30 L
- D** Absolute HEPA14 filter BagIn BagOut filter replacement system
- E** Security Absolute HEPA14 filter BagIn BagOut filter replacement system
- F** Visual indication of the status of the absolute filters
- G** DOP/DEHS Ports
- H** Machine outlet

			
		<b>DCU220 V</b>	<b>DCU220 H</b>
Configuration	-	Vertical	Horizontal
Max vacuum	kPa - mbar	25 - 250	25 - 250
Max airflow	m <sup>3</sup> /h - L/min'	1080 - 18000	1080 - 18000
HEPA filter stage(s)	-	2	2
First HEPA14 filter area	m <sup>2</sup>	10	10
First HEPA14 filter replacement system	-	BagIn BagOut	BagIn BagOut
Security HEPA14 filter area	m <sup>2</sup>	10	10
Security HEPA14 filter replacement system	-	BagIn BagOut	BagIn BagOut
Filtering efficiency	%	99.995%	99.995%
OEB level production phase (*)	-	OEB5	OEB5
OEB level maintenance phase (**)	-	OEB4	OEB4
Material discharge system	-	Contamination-free dust bag	Contamination-free dust bag
Container capacity	L	30	30
Wash-In-Place (WIP)	-	No	No
Construction Material	-	Stainless Steel AISI 304	Stainless Steel AISI 304
Length x Width x Height	cm	63 x 101 x 292	63 x 179.3 x 203.6

## OPTIONALS

- Washing of pipeline and safe disconnection of the unit
- Container level sensor
- Filter clogging sensor
- Acoustic-Visual alarm
- Automated valves
- Stainless steel support for HEPA filter change
- Single HEPA14 unit available

(\*) Using placebo dust (0,97kg/dm<sup>3</sup>)

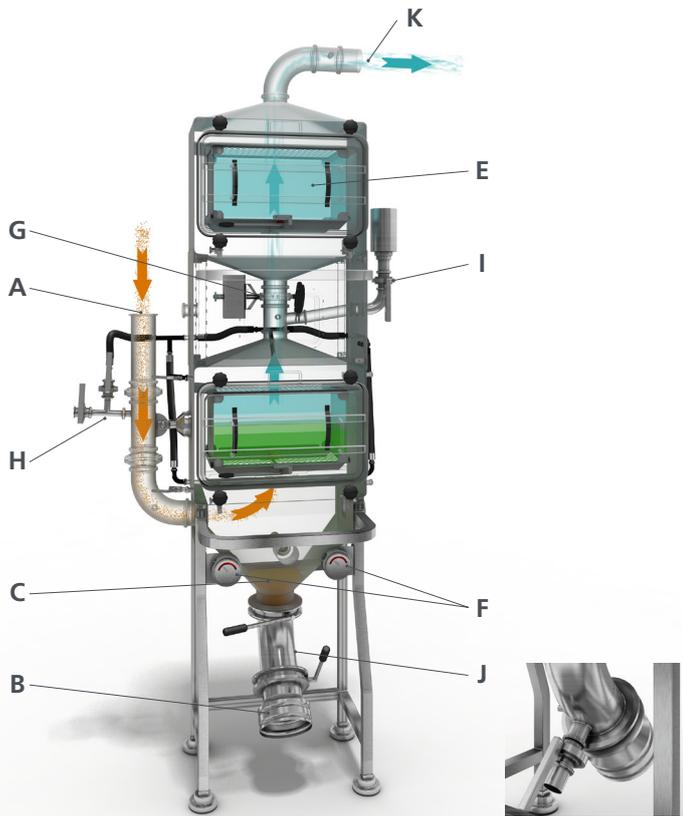
(\*\*) Using placebo dust (0,6kg/dm<sup>3</sup>)

# Double HEPA14 BagIn BagOut WIP

- DCU220WIP

AISI316L fixed filter unit equipped with 2 HEPA14 BagIn BagOut filters, suitable for Wash-In-Place for deactivation of the dust on the inside surfaces at the end of use. All maintenance operations on the unit are performed in a

totally safe way and the security filter assures the highest safety during operations. Available in vertical and horizontal configuration, it needs to be used in combination with the CY series, depending on the airflow requirements.



- A** Machine inlet with manual butterfly valve
- B** Material discharge with butterfly valve and contamination free dust bag
- C** Container capacity up to 30 L
- D** Absolute HEPA14 filter BagIn BagOut filter replacement system
- E** Security Absolute HEPA14 filter BagIn BagOut filter replacement system
- F** Visual indication of the status of the absolute filters
- G** DOP/DEHS Ports
- H** Valves and pipes for WIP
- I** Venting HEPA filter for WIP
- J** Manual butterfly valve for total safe WIP liquid discharge
- K** Machine outlet

		
		<b>DCU220WIP</b>
Configuration	-	Vertical
Max vacuum	kPa - mbar	25 - 250
Max airflow	m³/h - L/min'	1080 - 18000
HEPA filter stage(s)	-	2
First HEPA14 filter area	m²	10
First HEPA14 filter replacement system	-	BagIn BagOut
Security HEPA14 filter area	m²	10
Security HEPA14 filter replacement system	-	BagIn BagOut
Filtering efficiency	%	99.995%
OEB level production phase	-	OEB5
OEB level maintenance phase	-	OEB4
Material discharge system	-	Contamination-free dust bag
Container capacity	L	30
Wash-In-Place (WIP)	-	Yes
Construction Material	-	Stainless Steel AISI 316L
Length x Width x Height	cm	63 x 139.2 x 292

## OPTIONALS

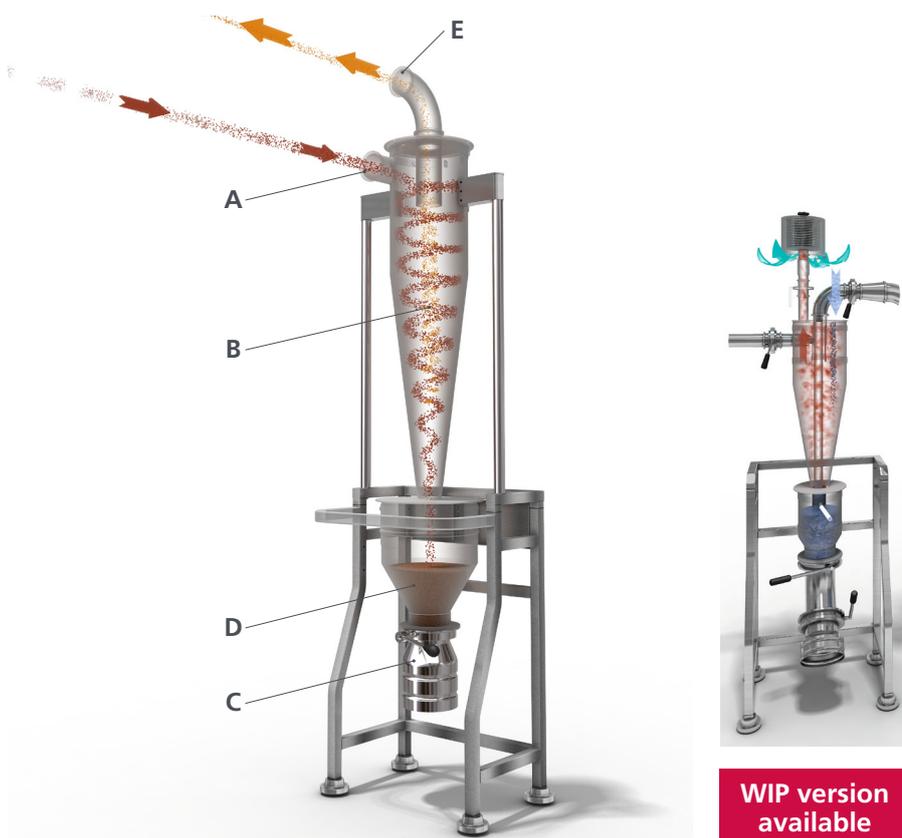
- Container level sensor
- Filter clogging sensor
- Acoustic-Visual alarm
- Automated valves
- Stainless steel support for HEPA filter change
- Single HEPA14 unit available

# Cyclone pre-separation unit

- CY202, CY203

AISI316L filterless pre-separation unit with efficiency up to 99%. Available in Wash-In-Place version for deactivation of the dust on the inside surfaces at the end of use. Thanks to the filterless technology, all maintenance operations on

the unit are performed in a totally safe way and the costs are reduced. Two different sizes available with airflow rates up to 1080 m<sup>3</sup>/h.



**WIP version available**

- A** Machine inlet with optional manual butterfly valve
- B** Material retained by cyclonic effect
- C** Material discharge with butterfly valve and contamination free dust bag
- D** Container capacity up to 30 L
- E** Machine outlet, DCU220-DCU220WIP unit side

			
		<b>CY202</b>	<b>CY203</b>
Max vacuum	kPa - mbar	25 - 250	25 - 250
Max airflow	m <sup>3</sup> /h - L/min'	650 - 10833	1080 - 18000
Efficiency	%	> 96% (*)	> 95% (**)
OEB level production phase	-	OEB5	OEB5
OEB level maintenance phase	-	OEB4	OEB4
Material discharge system	-	Contamination-free dust bag	Contamination-free dust bag
Container capacity	L	30	30
Wash-In-Place (WIP)	-	Yes - Optional	Yes - Optional
Construction Material	-	Stainless Steel AISI 316L	Stainless Steel AISI 316L
Length x Width x Height	cm	63 x 76 x 218	63 x 76 x 269

## OPTIONALS

- Washing of pipeline and safe disconnection of the unit
- Wash-In-Place (WIP) of the unit
- Manual butterfly valve on machine inlet
- Container level sensor
- Acoustic-Visual alarm
- Automated valves
- Stainless steel support for HEPA filter change

# Safe handling



## SAFE HEPA14 FILTER REPLACEMENT

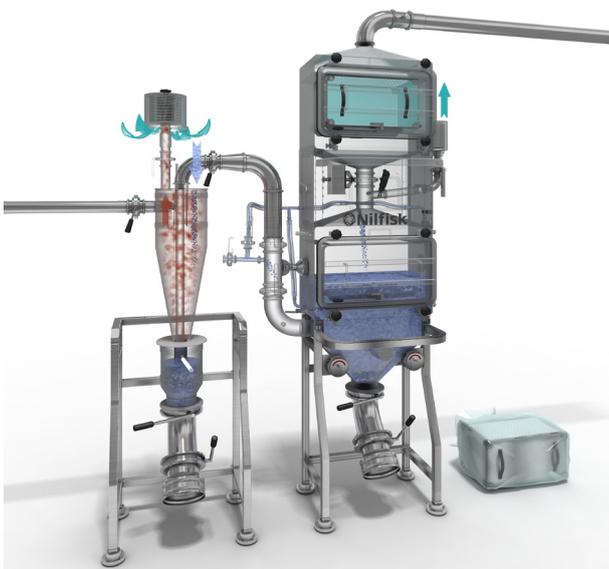
The HEPA14 filter is safely removed thanks to the BagIn BagOut (BIBO) system.

The maintenance personnel does not get in contact with the contaminated particulate filter during the removal process. So, they are protected from the hazardous contaminants retained by the filter unit.

The sealed bag containing the filter is then removed and disposed of.

## SAFE MATERIAL DISPOSAL

The hopper is emptied opening the butterfly valve. The material is collected into a contamination-free dust bag which can be safely sealed, removed and replaced by the operator without getting in contact with it.



## WASH-IN-PLACE (WIP)

The cyclone unit and filter unit can be washed inside - both by complete flooding and sprayballs - so as to deactivate the dust on the surfaces.

The exhaust air is filtered through HEPA filters, while the washing liquid can be safely discharged.

The WIP process can be validated with fluoresceina tests before installation.

# Not only solutions provider, but your partner, everywhere

By choosing Nilfisk you will get access to:

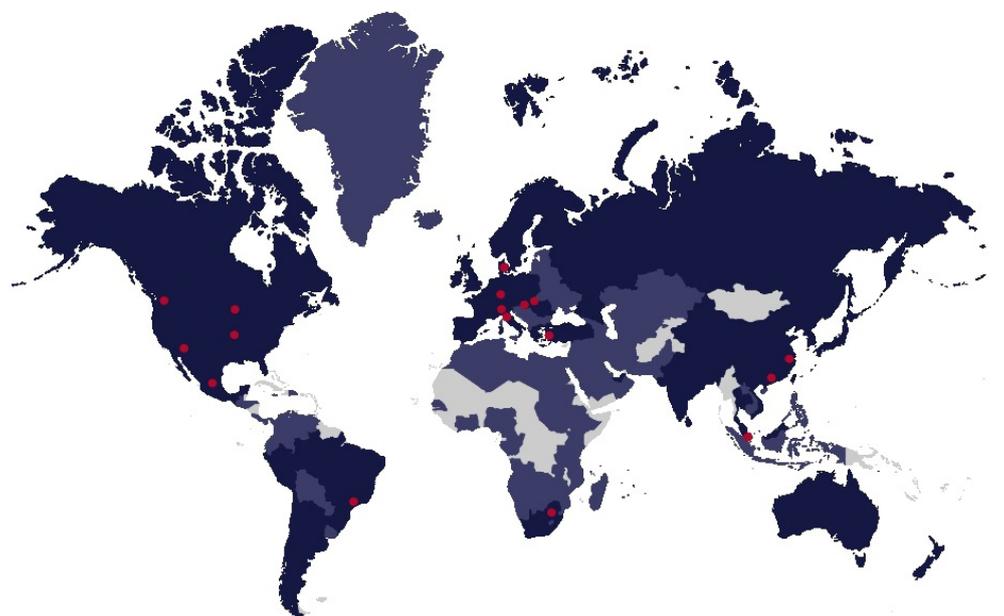
	<b>User requirements (URS)</b>		<b>Site survey</b>
	<b>Engineering and tailor-made solutions</b>		<b>Installation</b>
	<b>International Certifications</b>		<b>Validation and commissioning</b>
	<b>After Sales Support</b>		<ul style="list-style-type: none"><li>· FAT - SAT</li><li>· WIP validation tests with fluoresceina</li><li>· OEB test before installation on-site</li><li>· Tests performed according to ISPE Good Practice issued by SMEPAC Committee</li><li>· Training</li></ul>

## We follow our customers to the end of the Earth

Nilfisk is directly present in 45 countries and has partners in more than 70 countries.

This means that you have a direct contact with the local Nilfisk team of experts and support from the Italian headquarter.

This «service excellence» allows Nilfisk to be a partner to the biggest pharmaceutical manufacturers and OEMs worldwide.



 Branches

 Authorized dealers

 Manufacturing facilities

# Quality in the dust containment series...



# ... quality in the complete product range for pharma and OEMs



Fixed or mobile industrial vacuums for the labs, cleanrooms and pharmaceutical production areas



Pneumatic conveyors for powder and empty capsules

