Nederman

NF3000 Filter

Suitable for collection of many different types of dust including Wood, Paper and Plastic

Nederman

NF3000

NFK - NFP - NFS (1,500 - 300,000 m³/h)

Suitable for collection of many different types of dust including wood, paper and plastic.

- Modular
- Expandable
- Customizable range
- Fully automatic operation
- Low profile (5,000 mm.)
- No compressed air requirement
- Multiple waste collection options
- Zoned system design

NFK Filter with chain conveyor *(10,000 - 300,000 m³/h)*

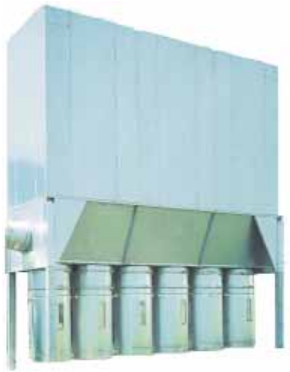
NFK Filter is a modular chain filter made of galvanized steel. (Size of base module: 1200 x 1200 mm). The filter is self-supporting; it has telescopic supporting legs and is suitable for outdoor locations. Each module of the double module filter construction, type J (width = 2400 mm), is fitted with a combined inspection and explosion relief door. Side venting is standard. (Option – top venting or UP-ward venting. A regeneration fan can be mounted for reverse air cleaning of the filter bags according to a pre-set sequence. Positioning of the regeneration fans - optional on the roof or on the side. Superbag 2000 antistatic polyester filter bags are standard (50 per double module). The filter hopper and the inlet section (optional) separate the medium/large particles and distribute the air to the filter bags. A double chain conveyor in the bottom of the hopper moves the collected material to a rotary valve for out-feeding.

NFS Filter with screw conveyor / rotary valve *(5,000 - 50,000 m³/h)*

NFS Filter is designed for small and medium-sized air volumes and can handle large volumes of heavy material concentration. The filter is for use in situations requiring non-pressurised material discharge directly into a silo, container or separate material transport system. The filter can be supplied for either continuous operation, or with a pause for cleaning of the filter bags every four hours. The NFS Filter can be installed both indoors and outdoors.

NFP Filter with bin *(1,500 - 33,000 m³/h)*

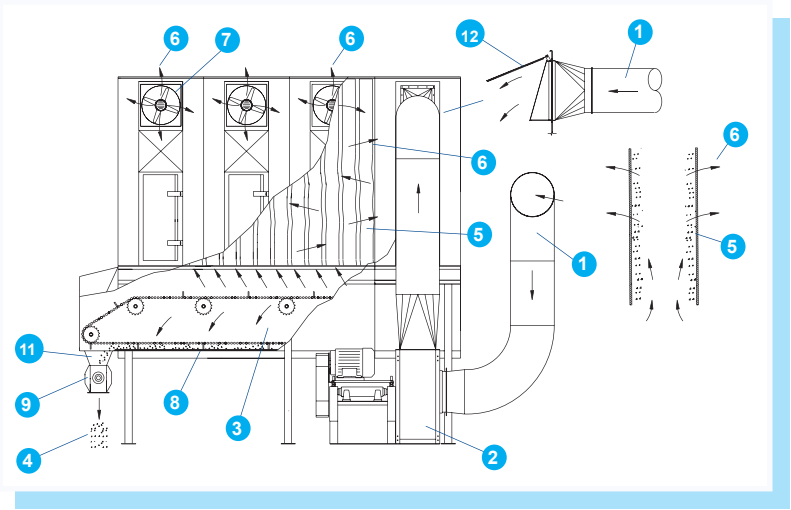
The NFP Filter is designed for smaller air volumes with limited material contamination. It is particularly suited for situations where the filtered material cannot be stored in a silo, and where the filtered air is not to be recycled into the building. The NFP Filter is normally used for outdoor installation on the ground.



How It Works

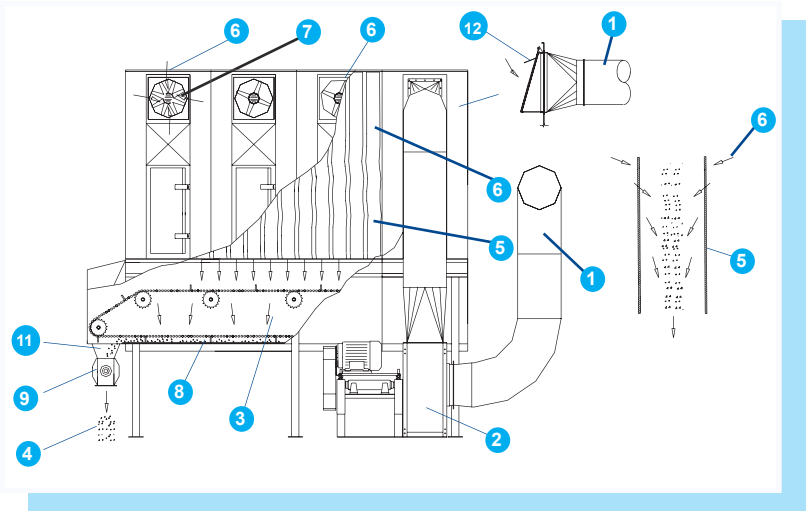
...during normal operation

1. During normal operation, the dust laden air from the plant travels down the supply duct 1
2. The dirty air then enters the COMBIFAB material handling fan and into the filter 2
3. As the dust-laden air enters the inlet section of the filter, the air decelerates and heavier dust and shavings settle on the hopper floor 3
4. The heavier dust and shavings collected on the hopper floor are conveyed to the discharge end 11 of the filter by the scrapers on the chain conveyor 8
5. At the discharge end of the filter, the dust is pushed into the rotary airlock 9 and out of the filter
6. The remaining dust then travels up into the inside of the filter bags 5
7. The air, which originated from the plant, is now clean 5 and passes through the filter bag and out the exhaust port 7



...while cleaning

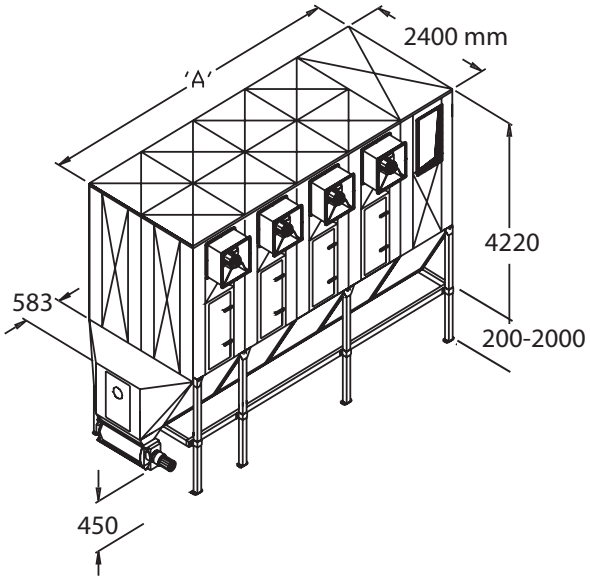
1. The NFK filter cleans the bag during operation (On-line cleaning) and when the unit is shut down (Off-line cleaning). The Off-line cleaning period starts after the COMBIFAB fan 2 has stopped rotating
2. A PLC control in the electrical panel regulates the cycle of the reverse air regeneration fan. 7 The regeneration fan shakes the filter bags 5 causing the dust cake, which hangs on the inside of the filter bag, to fall into the hopper section 3
3. Any dust that remains on the inside of the filter bag after the initial "shake" is removed by the airflow generated by the regeneration fan.
4. The dust that is removed during the cleaning cycle falls on to the floor of the hopper 3, and then gets transported to the discharge section of the filter 11 by the chain conveyor 8



NOTE: The back-blast damper 12 is open during normal operation of the filter but closes when the fan is shut down and the filter starts in an Off-line cleaning cycle. During the Off-line cleaning period, the back-blast damper 12 acts as a barrier to prevent the air generated from the regeneration fan to travel back down the supply duct 1

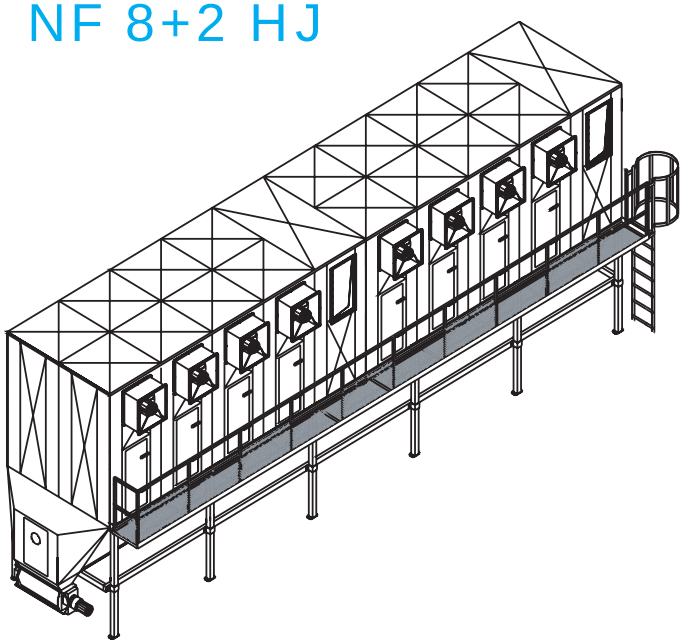
NF Ground Mounted Units

NF 4+1 HJ



* NFK filter with single blank inlet modules

NF 8+2 HJ



* NFK filter with two blank inlet modules and single side access platform with ladder

Model Number	No. of bags	Filter Media (m^2)	Air Volume (m^3/h)	"A" (mm)	No. of Cleaning Fans	No. of Blank inlet Modules	Weight (Kg) Filter Unit	
							(Unplugged)	(Plugged)
NFK2+1 HJ	100	170	17000	3600	2	1	1820	2995
NFK3+1 HJ	150	255	25500	4800	3	1	2260	3995
NFK4+1 HJ	200	340	34000	6000	4	1	2725	4990
NFK5+1 HJ	250	425	42500	7200	5	1	3195	5990
NFK6+1 HJ	300	510	51000	8400	6	1	3665	6990
NFK7+2 HJ	350	595	59500	10800	7	2	4495	9485
NFK8+2 HJ	400	680	68000	12000	8	2	4890	9980
NFK9+2 HJ	450	765	76500	13200	9	2	5630	10980
NFK10+2 HJ	500	850	85000	14400	10	2	5830	11975

* = Weight includes filter, airlock, cleaning fans and access platform."Unplugged" weight should be used for transportation purposes only.

Marking:

The NFKZ3000 filter body for dust style St1 for Installation in non-zone are marked: **CE 1180 Ex II D St1**

For dust type St1 and St2, the filter body is marked: **CE 1180 Ex II D St2**

The marking is based on product certificate Baseefa 06 ATEX 0068. The explosion relief doors are marked:

CE 1180 Ex II D :

Nederman

Compared to compressed air cleaned filters

Pressure Drop Of The Collector:

NF 3000:	Average pressure drop 35 to 50 mmWg
Compressed air filter	Average pressure drop 100 to 150 mmWg
What this means to you:	An electrical motor driving a system fan will have to use more electricity to pull or push the same amount of air through the compressed air cleaned filter.

Maintenance Concerns Of Cleaning Mechanism:

NF 3000:	Regeneration fans are fixed and are directly driven at the electric motor speed. Only a 1.1 kW operated at one time.
Compressed collector:	Reverse air fan is turned by an elaborate gearbox mechanism. Electrical motor controls must be stopped “directly” over each row of filter bags before being started. Reverse air may be a 7.5 or 25 kW fan or compressed air.
What this means to you:	Many maintenance problems can occur with this mechanism, such as misalignment of nozzles in respect to the center of the bags and premature wear in the gearbox as the mechanism starts and stops over each row. Also high mechanical failure potential.

Filter Media Replacement Interval:

NF 3000:	Average Life of 5 - 7 years
Compressed air filter	Average Life of less than 6 - 12 months
Note:	The reasons for the difference in the life of the filter bags in the compressed air cleaned collector versus the our unit are listed below: Cleaning action causes abrasion of the filter bags against the internal cages used to hold them open. The our unit utilizes cageless filter bags.
What this means to you:	The cost of operation for the our unit will be less because of the way the material and dust enters our unit into an inlet module. This will result in less wear and tear on the filter bags. The compressed air cleaned collector exposes the bags directly. The shock effect when cleaning with compressed air also reduces life time.

Filter Speeds Or Air To Cloth Ratio:

NF 3000:	Average 80-110 m^3/m^2 /h
Compressed air filter	Average 100-250 m^3/m^2/h
What this means to you:	Nederman has with more than 35,000 installtions world wide experience in how much air a filter should loaded with. This means that the high filter load of up to 250 m^3/m^2/h is trying to push the fine dust laden air through the filter media at a higher ratio than that of the our unit. Thus, you achieve a higher efficiency at a lower energy consumption level. Needless to say, Nederman can give a longer filter media life.

Use Of Multiple Fans At Lower Horsepower Consumption:

NF 3000:	Utilizes multiple smaller kW fans
Compressed air filter	Limited to one large kW fan
What this means to you:	The our unit allows a company to conform to today’s “cell manufacturing practices”. By zoning or grouping manufacturing processes onto their own fan system, this allows more flexibility in the equipment operations. These zones can be ran in smaller groups allow lesser kW consumption. Also, this style of filter is expandable as dust collection requirements grow. Along with this expansion the cost of rearranging existing ducting are diminished because of supplying a new fan and extra filter modules for the new requirements. The use of the compressed air cleaned collector means that every time a need for operating a cell or zone in a partial manufacturing process, a large kW fan (150 kW) must be started up, when realistically the kW need is only around 30 or 50 kW. Thus there is an inefficient operation of the large fans and Kilowatts = money spent.

NF

Cleaning System

All filters in the NF series utilize a regeneration fan for filter cleaning. The regeneration fan reverses the flow of air back into the filter section causing the bags to shake. In most cases, cleaning is done while the filter is shut down. The NF chain filter may be set up with continuous cleaning which allows the filter to clean during normal operation.

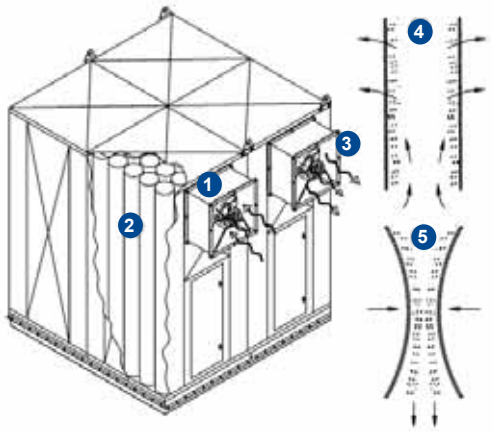
1. If continuous cleaning is selected as an option (available on the NFK only), a regeneration fan is placed on every filter module. Otherwise, one is located on every other module.

2. The filter bags shake during the cleaning cycle causing the dust cake on the inside of the bag to break free and fall into the hopper section and out of the filter.

3. Only one regeneration fan operates at any given time, so the clean air may exhaust through the blades of the other fans during normal operation.

4. During normal operation, the materials collects on the inside of the filter bag causing a dust cake. The clean air is blown through the bag from the inside out.

5. During the cleaning cycle the air is reversed back through the filter bag from the outside in. The reverse flow, along with the shaking action generated by the cleaning fan, cause the dust cake to fall off the filter bag and into the hopper section.



Filter bag

Quality	Circular knitted with two integrated layers filter	
Material	100% polyester	
Weight	420	g/m^2
Max. operating temperature	143	^{O}C
Intermittent peak temperature	160	^{O}C
Melting point	250-260	^{O}C
BIA classification	U	95.5% filtration of 200 mg/m^3 Test dust (90% 0.2-2.0 µ)
Electrostatic behavior	Surface resistance 2.6 x 10^7 Ohm Charging towards PA - 0.7 kV	DIN 54 345 TEIL 1 TEFO Method 40-77
Applications	Filtration of: shavings, saw dust, sanding dust, lacquering dust from woodworking industry as well as other fibrous materials such as mineral wool, paper strips and dust	

SUPERBAG

A filter is only as good as the filter bags it uses. This is the component that provides the filtering while allowing clean air to pass through with the least possible resistance and, therefore, the lowest possible consumption of energy-even after several thousand hours of operation.

SUPERBAG
our patented filter bag, is fitted as the standard in all NF filters.

Efficiency and low energy consumption

SUPERBAG is Nederman' s own polyester filter bag. A patented weaving technique in tubular format give the filter bag a surface which can cope with varying dust loads and with virtually any type of dust. Better filtering efficiency is achieved with this unique filter media which provides low pressure drop and low energy consumption.

Strength and durability

The special shape of the SUPERBAG helps to ensure that the high efficiency and effectiveness of the NF filter system is maintained even after long periods of operation. The durability is the result of the patented construction , strong polyester fiber and seamless body.

These features also help make cleaning of the filter bag very easy.

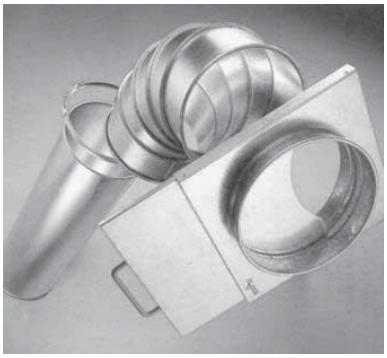
Antistatic

SUPERBAG's interwoven carbon fiber wire provides higher anti-static properties - both on the surface and inside - than traditional filter bags. This reduces the risk of fire and explosion as fine particles are removed.

QF DUCT SYSTEM

Quick Fit duct components are made from weatherproof galvanized steel sheets and are equipped with a rolled collar at both ends that serves as a clamping edge for the QF clamp. This ensures tight joints and low transitional resistance, which makes the QF system wellsuited for pneumatic transport of material.

- Quick and simple installation
- Flexibility
- Individual adjustment
- Can be adapted to other kind of systems
- Galvanized throughout
- Smooth surface
- Stability
- Comprehensive product range



Diameters: 100, 125, 140, 160, 180, 200, 315, 350, 400, 450, 500 mm. Ducts over 500 mm are supplied with flange: 560, 630, 710, 800, 900, 1000 mm.

Ducts: Are made from long-seamed galvanized steel sheets and supplied in standard 1000 and 2000 mm lengths.

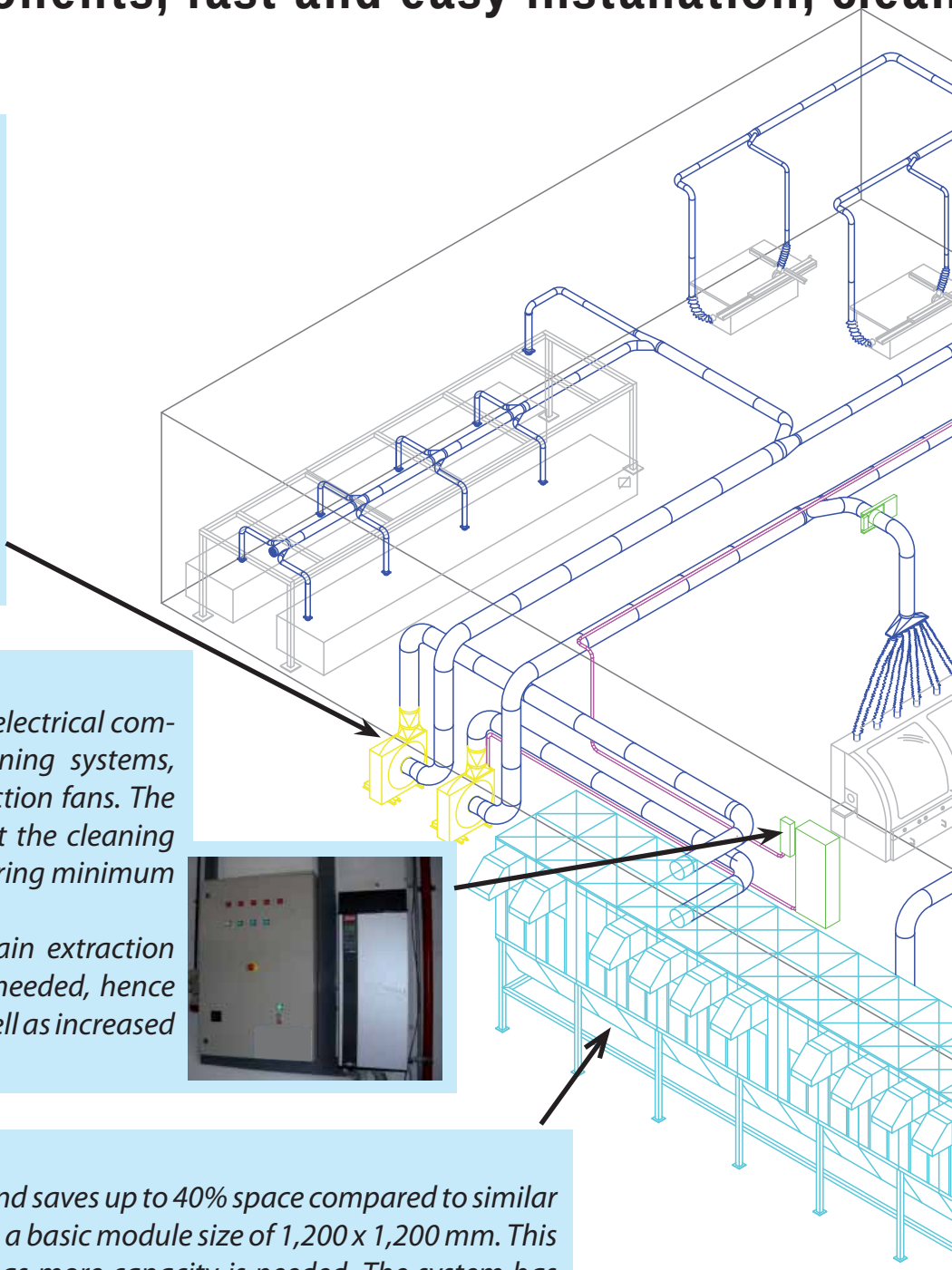
Plate gauge: Ø100 - Ø160 = 0.6 mm, Ø180 - Ø350 = 0.7 mm og Ø400 -Ø500 = 0.9 mm. With a few exceptions the QF-duct system can be delivered in stainless steel.

With Nederman you get much more tha

The design of a Nederman systems focuses on energy co
long lasting components, fast and easy installation, clean

Combifab fans

Five models covering air volumes up to 100,000 m^3/h and pressures up to 10,000 Pa.



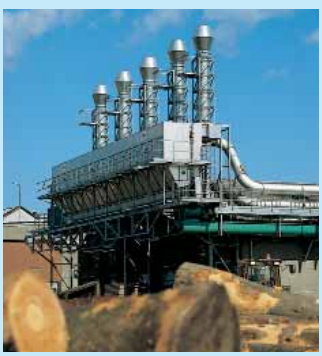
Control Panel & Inverter

The control panel manages all the electrical componets in the filter, such as cleaning systems, conveyors, rotary valves and extraction fans. The intelligent PLC control ensures that the cleaning cycles of the filter is optimized ensuring minimum energy saving.

Frequency inverters ensure the main extraction fans operate only at the capacity needed, hence huge energy savings are made as well as increased flexibility for future expansions.

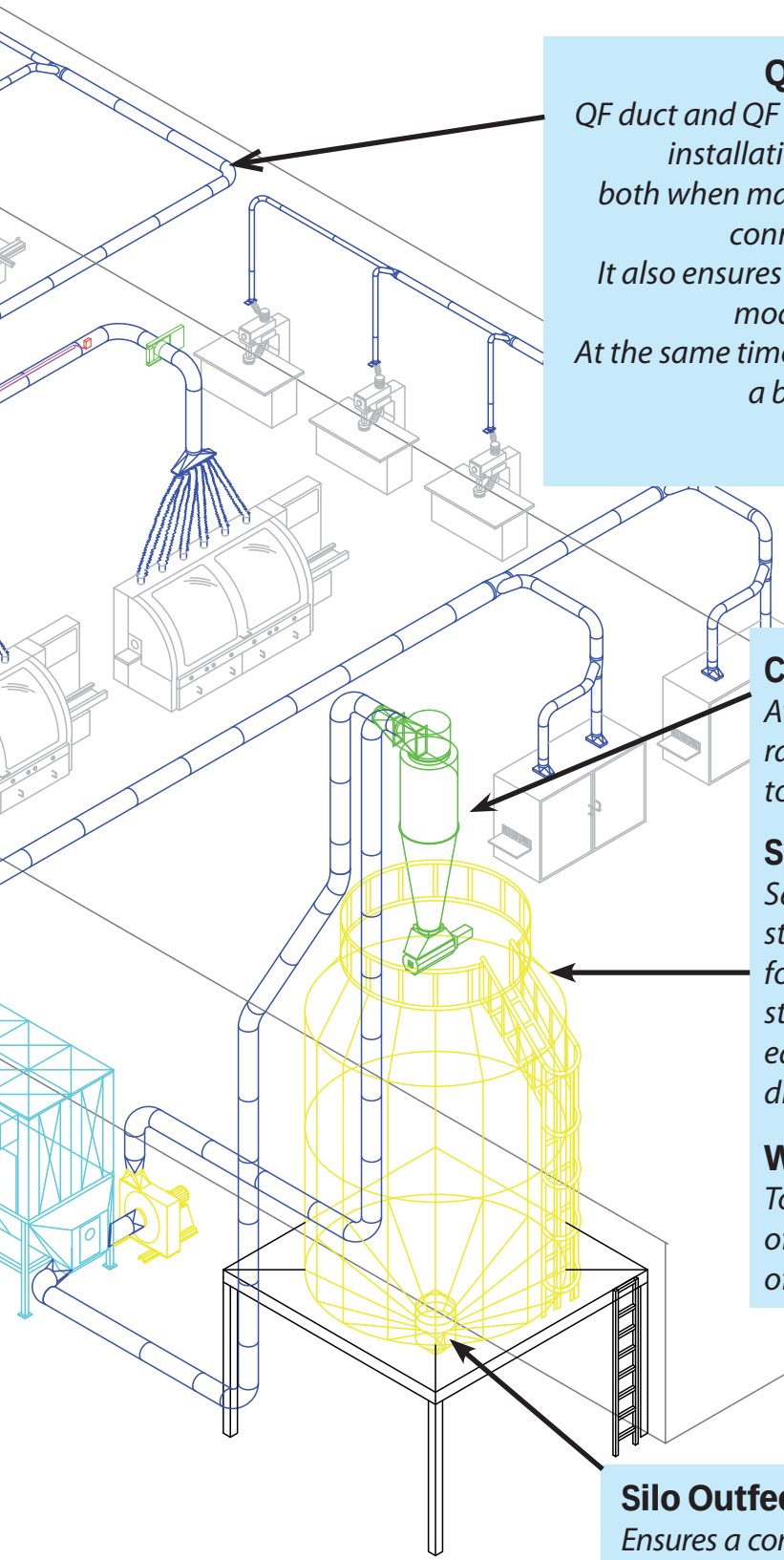
NF Filters

The filter system is highly efficient and saves up to 40% space compared to similar filters. The NF Filter is designed with a basic module size of 1,200 x 1,200 mm. This makes it possible to add modules as more capacity is needed. The system has been designed to reduce explosion/fire risk and energy consumption.



n a dust collector

nsumption, reliability, low maintenance cost, n environment and freedom of future expansion.



Quick Fit Duct Systems

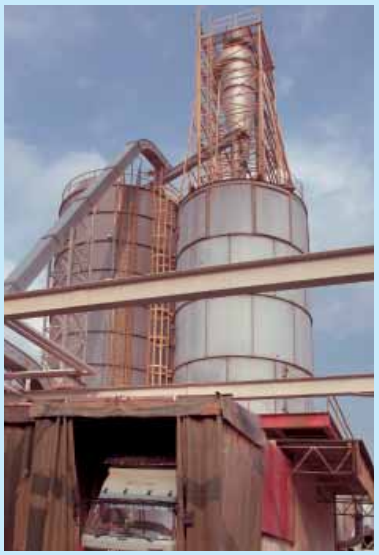
QF duct and QF clamp leads to savings on installation and modification time, both when making a new installation or connecting to existing system. It also ensures easy re-use of ducts when modifying the existing layout. At the same time the QF duct system gives a beautiful visual impression and a tight sealing.

Cyclone

Available in capacities ranging from 2,000 to 50,000 m^3/h.

Silo

Safe and efficient storage silos ranging form 80 to 1,130 m^3, strong, freestanding, easily assembled and dismantled.



Waste transportation

To transport the waste from the filter to the silo, we offer both cyclone systems and conveyer lines, both of them can be modified to suit specific needs.

Silo Outfeeder

Ensures a continuously and smooth unloading of the silo to either truck or boiler. The outfeeder is fitted by silo augers rotating inside the silo preventing possible accumulation of wood dust in the bottom of the silo.

NF Components

Combifab Fans

Suitable for use in positive or negative pressure applications handling clean air, light dust or heavy material loads.

3 different impeller types for various operating conditions. The geometry of these backward inclined impellers has been refined through the application of advanced computer programs, and the interaction with fan inlet design is one of the secrets behind the fine performance of COMBIFAB

Model	Arrangement	kW	m^3/h	S.P. Range mm Wg
S40-315	D1	4-5.5	3,600-7,000	245-190
S40-355	D2	7.5-11	5,100-10,000	300-230
S40-400	D2	10.5-18.5	7,200-15,800	390-260
S40-450	D2	18.5-37	10,000-22,000	490-330
S40-630	D2	55	20,000-35,000	440-350
S40-500	D2	22-55	14,500-31,800	620-410
S56-500	D2	11-18.5	14,500-16,300	220-200
S56-630	D2 / G5A	45-55	25,300-35,000	380-300
S56-710	D2 / G3	55	35,000-46,000	480-370
S56-800	D2 / G3	75	50,000-62,000	610-410

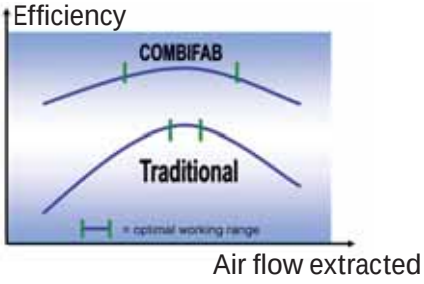
- **Air and material handling fans**
- **Belt or direct driven**
- **Available with 3 different type of impellers:**
  - Clean air wheel (R)
  - Backward inclined (S)
  - Heavy duty transports fan (T)
- **500 to 120,000 m^3/h**
- **High efficiency - up to 87%**

Direct Driven 2 (D2)

Gear 3 (G3)

Gear 5 (G5)

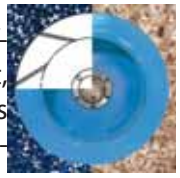
Fan Curve



Clean Air Impeller - Type R

The clean air impeller is a closed bladed impeller with backward curved blades. This impeller is used for transport of clean air and of air with a small quantity of fine dust, such as welding smoke, oil mists or exhaust gases. **Efficiency of up to 87%**

Clean Impeller - Type S



The chip impeller is a closed, party self-cleaning blades impeller with straight, backward oblique blades. This impeller is used for transport of grinding and polishing dust, dry sawdust and shaving, etc.

Efficiency of up to 81%

Transport Impeller - Type T

The transport impeller is an open, self-cleaning bladed impeller with straight, radial blades. This impeller is used for transport of shavings, chips, etc.

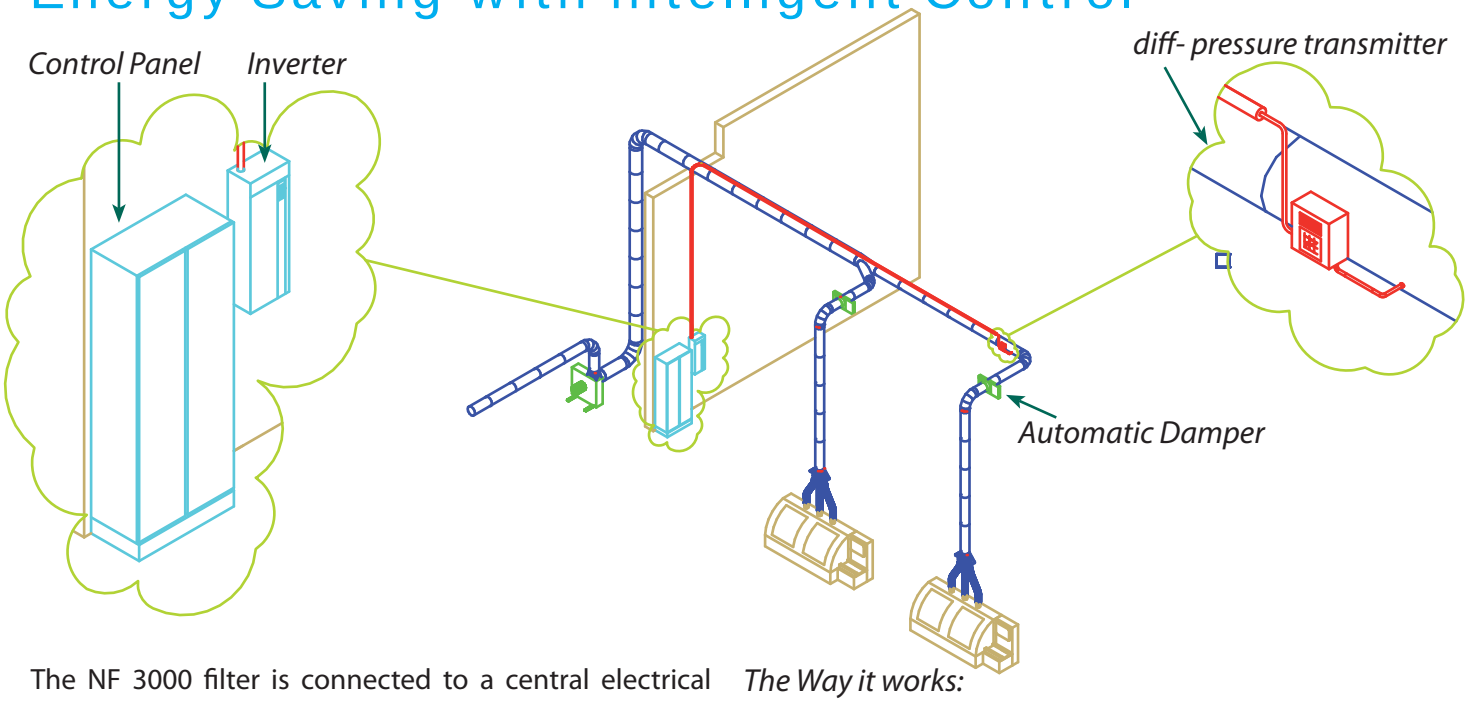
Efficiency of up to 61%

The Combifab is a low noise efficient range of fans. However further sound attenuation of typically 15 to 20 dB(A) may be achieved by installation in a Nederman Sound Box.

Designed for the Combifab fan range, they are acoustically lined weatherproof galvanized steel enclosures incorporating forced air cooling for the fan motor and large doors for maintenance access.

Electrical Control

Energy Saving with intelligent Control



The NF 3000 filter is connected to a central electrical control panel. The control panel includeds a programmable logic controller (PLC) where cleaning cycles can be modified and energy consumption minimized.
As the latest cutting edge technology Nederman equip most fan lines with frequency inverters for maximum energy saving. The benefits of the inverter are:

• When more machines are expected to be added in the future for a certain fan line more capacity can be installed. The period before the additional machines are installed the inverter will slow down the fan speed so only the air-flow need is delivered, hence less consumption.

• When one or more machines are working overtime and the remaining machines are not running, the inverter will speed down the fan and only the needed air in the duct line will be extracted, hence less consumption.

The Way it works:

1) Automatic damper is directly connected to individual machines control panel. When machines stops, damper closes

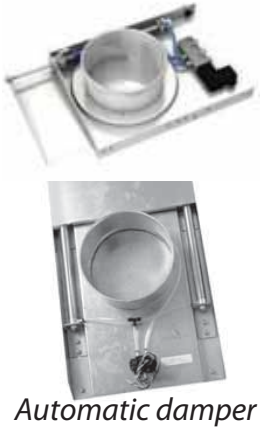
2) As damper have closed pressure inside pipe increases

3) Pressure increase is detected by pressure transmitter sending signal to inverter

4) Inverter reduces speed on fan; hence airflow and pressure decreases

5) When dampers are opened again pressure transmitter send signal to inverter to increase fan speed

Example: floor mounted panel



Automatic damper

Example: wall mounted panel

NF Components

Silo

Suitable for the woodworking industry, Use for storing continuous waste and dust discharge from dust collector.

Advantages

- Safe and efficient storage silos ranging from 80 to 950 m^3.
- Strong, free-standing, easily assembled and dismantled.
- Nederman Silos can withstand pressures of 1.94 to 2.83 bar.
- All Nederman Silos are fitted with explosion panels, certified under the new 'ATEX Directive'
- Fitted with 2000 x 1200 doors for easy access (with internal wooden crossbars to open the door without risk), and sloping roofs for water runoff. The silo roof has integral support steels for mounting cyclones or filters if necessary
- Nederman Standard silos are supplied ready to be assembled onto your steel frame or a concrete base

Optional

- For safety purposes, they are fitted with explosion vents in compliance with the standards, to prevent breaking during explosion.
- Fitted with doors for easy access and sloping roofs for water runoff. The silo roof has integral support steels for mounting silos or filters if necessary.

Capacity (m^3)	Weight (kg) incl. accessories	Diameter (m)	Height (m)
80	3100	4.2	6
120	4300	4.2	9
160	4500	5.8	6
240	6100	5.8	9
320	8000	5.8	12
410	9000	6.6	12
510	10800	6.6	15
480	10200	8.2	9

Silo Outfeeder

Designed for outfeeding from round or square silos made of concrete or steel.

Can fitted with one silo auger or two silo augers, run by forced operation using an instantaneous motor. The rotational direction of the silo auger is the reverse of the direction of motion inside the silo. This prevents possible accumulation of fuel at the bottom of the silo.

To avoid the accumulation of fuel, the silo roller is fitted with a PCU control. The power consumption of the roller motor is measured continuously. This value is sent electrically to a limiting value switch which automatically stops/starts the rotor motor and the instantaneous motor as the need arises.

For the further transportation of material, It is fitted with one or two transport augers with gear motors. It is also possible, by using a suction branch, to empty the silo into a truck while at the same time operating the transport auger(s).

Nederman

Spark Detection

Nederman is marketing the leading spark detection systems for woodworking industries

A spark detector can contain an explosion to the area of origin and therefore prevent a spark from travelling thru the duct system and an eventual explosion will therefore be contained in the area of origin.

The spark detection system is a safety system for protection of pneumatic and mechanical transport systems in woodworking industries, in chipboard and fibreboard factories and in all processing plants where organic dust or chips are produced.

Overheating and mechanical damage are often the reasons for transportation of dangerous sparks and burning embers through the extraction system. This may result in dust fires or explosions. The spark detection systems detect ignition sources in the exhaust ducts and extinguish them automatically in a split second. In this way the risk of fires and explosions in production areas is considerably reduced.

- **Considerable reduction of explosion risk**
- **Does not impede material flow**
- **Simple and user-friendly operation of the system**
- **ATEX-approved components**
- **One complete solution**

Control and Supervision
A modern control console with a big display records all occurrences. This ensures simple and efficient control and supervision of the system. The console stores all information in its memory and being modular in construction, the console can be expanded at any time.

Service

Nederman Service has gathered a wide number of fixed inspection and measuring procedures in ready - made package solutions which cover the main part of the requirements for service and maintenance of industrial extraction systems.
If you have special requirements we would be pleased to make up a package which exactly suits your requirements.

- Test of exhaust alarm on all systems which are part of the service agreement
- Visual examination including inspection of all physical and vital parts in order to prevent fatal defects
- Functional test including inspection of electrical control in order to ensure correct panel indication and safety
- Pressure difference measurement: prevents unnecessary energy waste and ensures correct filter control
- Power measurement of all components for supervision of the energy consumption of all equipment covered by the service agreement
- Air measurements giving a documented airflow
- Measurement of surface temperature of electrical main motors
- Ampere measurement on electrical main motors
- Inspection of components on the safety equipment
- Inspection of safety clearances in the fans
- Documentation for all inspections and measurements taken will be submitted

NF Component

Inside NFK Filter View

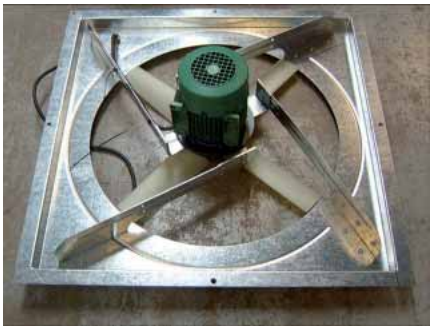
NFK Chain Drive Station

Picture Of Chain in NFK

NFK Chain Security Switch

NFK Drive Station End

Summer/Winter Gate



Reverse Air Cleaning Fan

Door Security Switch

NRS10 Rotary Air-Lock

NF installations

NFK Typical Ground Mounted

NFK located on roof, extracting from 2 factory

NFK Expanded Filter

NFK blow into silo via transport fan

NFK with conveyor dumping to bin

NFK unloads in 1 of 2 connected containers via chain conveyer

NFK On Structure / Dumping into bin

Chain conveyer from filter to silo

Conveying System for solid wood

NFS On structure/ Dumping into bin

NFS dumping into building

NFP Filter with end inlet and bins for collection

FACTS ABOUT NEDERMAN

The Nederman Group is one of the world's leading suppliers of products and solutions within the environmental technology sector, focusing on industrial air filtration and recycling.

Nederman products and solutions contribute to reducing environmental impacts from industrial production and to creating safe and clean working environments whilst boosting production efficiency.

The group's offering covers everything from the design stage through to installation, commissioning and servicing. Nederman has subsidiaries in 29 countries and agents and distributors in over 30 countries.

Nederman is ISO 9001 and 14001 certified. The group develops and produces in its own manufacturing and assembly units in Europe, North America and Asia.

In 2010 Nederman acquired Dantherm Filtration, thereby froming the world's leading group within industrial air filtration.

Nederman

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