

# 3nine

3nine is a Swedish company that develops solutions to purify process air. This revolutionary technology is based on centrifugal separation, making it possible to achieve an extremely high degree of purification in a compact format. Unlike traditional technologies, 3nine machines require a minimum of maintenance.

**For more information, visit [3nine.com](http://3nine.com)**

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**Oil smoke and  
Oil mist separators  
with high performance**



# Lina™

The oil smoke and oil mist separator for small machines



Cabins up to 5m<sup>3</sup>/176 CF

## Technical Data

Type designation .....Lina  
 Application .....Cleaning oil smoke and oil mist  
 Mounting .....Directly on the machine, wall or pillar stand

	EU-standard	NA-standard
Suitable for cabin sizes.....	< 5m <sup>3</sup>	<176 CF
Air flow.....	500 m <sup>3</sup> /h	300 CFM
Operating condition.....	5-50° C	<122°F
Electric power supply.....	16 A/400 V/3/50 Hz/30/15 A,	230/460 V/3/60 Hz
Motor rating.....	0.55 kW	0.66 kW
Rated current.....	1,35 A	2.6 A (230V), 1.7 A (460V)
Weight.....	30 kg	66 lbs
Height (with HEPA filter).....	840 mm	33"
Diameter.....	Ø 480 mm	Ø 18.9"
Inlet pipe dimension.....	Ø 125,5 mm	Ø 4.9"
Sound level.....	< 65 db (A)	< 65 db (A)

**“With 3nine oil mist separators we’re sure to minimize our maintenance costs”**

Åke Falk, Production Manager,  
Sandvik Coromant AB, Sweden

## About Lina™ :

Lina is one of the smallest oil mist separators on the market but can still handle cabin sizes up to at least 5m<sup>3</sup>/176CF. The size makes it easy to install - even on small machine tools.

## Benefits Lina™ :

- Specially designed for small enclosed machines
- Lightweight and mounted on top of the machine
- Only a diameter of 480 mm/19" and a height of 840 mm/ 33"
- Minimum filter and filter disposal costs
- Outstanding operating economy
- Minimal maintenance

## Separating instead of collecting!

3nine offers the only technology that separates oil from the air and returns it as a liquid. Our unique centrifugal separation technology effectively purifies air and separates particles in the oil mist, that can appear during manufacturing.

Our researchers have produced a substantial number of the world's patents on disc stack centrifugal separation of aerosols and gases, making 3nine the leader.

3nine operates worldwide.



# Clara™

Cabins up to  
10m<sup>3</sup>/353 CF



The oil smoke and oil mist separator  
that suits most users



## Technical Data

Type designation .....Clara  
Application .....Cleaning oil smoke and oil mist  
Mounting .....Directly on the machine, wall or pillar stand

	EU-standard	NA-standard
Suitable for cabin sizes .....	< 10m <sup>3</sup>	< 353 CF
Air flow .....	1000 m <sup>3</sup> /h	600 CFM
Operating condition .....	5-50 °C	<122°F
Electric power supply .....	16 A/400 V/3/50 Hz	30/15 A, 230/460 V/3/60 Hz
Motor rating .....	1,5 kW	1.5 kW
Rated current .....	3,2 A	5.6 A (230 V), 3.6 A (460 V)
Weight .....	70 kg	154 lbs
Height (with HEPA filter) .....	1 145 mm	45"
Diameter .....	Ø 640 mm	Ø 25.2"
Inlet pipe dimension .....	Ø 161 mm	Ø 6.3"
Sound level .....	< 65 db (A)	< 65 db (A)



## About Clara™:

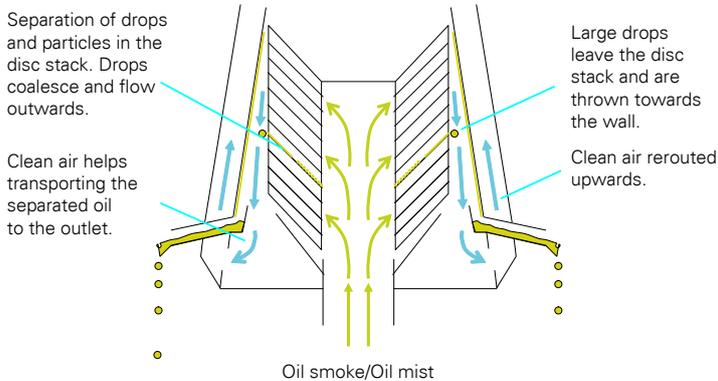
Clara is the oil mist separator that suits most users. Clara is light and compact enabling it to fit almost every make and type of machine tool on the market. The proven Clara technology provides the platform for 3nine's family of separators.

## Benefits Clara™ :

- Suitable for most machine tools in the industry
- Good for high loads of oil mist
- Minimum filter and filter disposal costs
- Outstanding operating economy
- Minimal maintenance

# An oil smoke and oil mist separator with high rate of purification

## Why 3nine?



Technology	3nine technology	Mechanical filtration
<b>Facts</b>		
<b>High purification</b>	■	■
<b>High contamination capacity</b>	■	
<b>High reliability</b>	■	
<b>Low space requirement</b>	■	
<b>Low maintenance</b>	■	

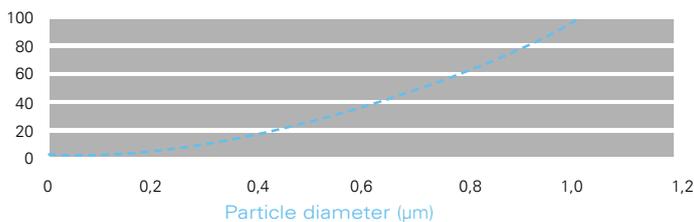
### Advantages compared to other technologies

3nine's technology can handle large amounts of particles including difficult superior to that of other competitor technologies

### Intelligent and revolutionary technology

The unique patented technology separates the oil mist and other coolants up to 99.9%\* with a particle size down to 1µm by using centrifugal forces. This process requires a minimum of maintenance. A rotating disc stack separates the oil mist more effectively than traditional centrifugal separation technologies like cyclones and rotating filters. The rotor also functions as a fan evacuating the mist making external fans unnecessary.

Separation (%)



The graph shows the separation efficiency, meaning the amount of particles of a certain size to be separated out in the rotor.

### Technology for tough applications

3nine machines handle difficult applications where other technologies develop problems or have high maintenance costs. A patented solution to handle tough

applications is the Cleaning-in-Place (CIP), a process that automatically and effectively cleans the machine of sticky and solid particles.

### Keeping operating cost low

The oil mist is separated and oil droplets from the cutting fluid are brought back to the machine tool. Recycling saves on cutting fluid, maintenance and cleaning costs as filter change and disposal are kept to a minimum.



All 3nine machines are designed for continuous operation as it is critical to keep production running.

### Flexible solutions without duct work

3nine machines can be installed on top of the machine tool as close as possible to the source. On top of that the air that comes out is so clean there is no need for expensive duct work. This minimizes duct maintenance, decreases the risk of fire and eliminates the risk of bacteria in the air caused by sediment in the ducts.

\*According to independent tests by VTT (an official testing body in Finland)

# tion, excellent flexibility and outstanding operating economy

Electrostatic filtration	Cyclones	Rotating Fil- ters
■		
	■	
	■	
	■	■
	■	

icult types with minimum maintenance. Filtration and Purification is

Compact and direct installation saves on valuable floor space and creates a flexible production environment. Installing the machines is quick and easy.

## Secure working environment

Oil mist exposure can cause severe health issues. The air coming out of the machines is so clean that it can be recycled back into the workshop. This guarantees the operator an optimal working environment.

The high efficiency of the rotor makes it possible to equip 3nine machines with the highest available HEPA filter class, H13, for a 99.995% particle free air. Pure air means you don't have any oily surfaces in the workshop which allows you to reduce cleaning.

If the application creates smoke, the 3nine machine equipped with a HEPA takes care of this.

A continuous flow of particles and oil eliminates the risk of pressure drop and diminished air flow.

# Values

- Life Cycle Cost - Low
- 99.995\* % Purification
- Minimal Maintenance
- Minimal Filter Change
- Recycling of Cutting Fluids
- No Oily Surfaces in the Workshop
- Compact and Direct Installation
- No Fixed Duct Work
- Excellent Reliability
- No Hazardous Waste
- Flexible solution

\* with HEPA filter (H13)

*3nine's leading cost saving technology provides a healthier and safer working environment, allowing you to focus on your production.*

# Emma™

The oil smoke and oil mist separator for higher flow rates



Cabins up to 20m<sup>3</sup>/710 CF



## Technical Data

Type designation .....Emma  
 Application .....Cleaning oil smoke and oil mist  
 Mounting .....Directly on the machine, wall or pillar stand

	EU-standard	NA-standard
Suitable for cabin sizes.....	< 20m <sup>3</sup>	< 710 CF
Air flow.....	2500 m <sup>3</sup> /h	1500 CFM
Operating condition.....	5-50 °C	<113°F
Electric power supply.....	16 A/400 V/3/50 Hz	30/15 A, 230/460 V/3/60 Hz
Motor rating.....	5.5 kW	5.5 kW
Rated current.....	11,3 A	11.7 A
Weight.....	105 kg	231.5 lbs
Height (with HEPA filter).....	1 145 mm	45"
Diameter.....	Ø 670 mm	Ø 26.4"
Inlet pipe dimension.....	Ø 316 mm	Ø 12.44"
Sound level.....	< 70 db (A)	< 70 db (A)

**“Before installing the Emma we had to change filters every two weeks.”**

Jim Leach, Okuma Large Body Cell Machine Manager at MOOG Inc. Aircraft Group, New York, USA

## About Emma™:

Emma is the big sister in the 3nine product family. Emma is designed especially for large machines and can, thanks to the high airflow, also handle partly open machines. Multiple Emmas can be interconnected using the 3nine modular systems to create a solution for higher capacities.

## Benefits Emma™:

- Specially designed for high air flow, extremely compact for its capacity
- Less than 1/3 the size of an equivalent filter unit
- Only a diameter of 670 mm / 27" and a height of 45" / 1145 mm
- Minimum filter and filter disposal costs
- Outstanding operating economy
- Minimal maintenance



# Petra™

Cabins up to  
10m<sup>3</sup>/353 CF



The oil smoke and oil mist separator  
for tough applications

## Technical Data

Type designation ..... Petra  
Application ..... Cleaning oil smoke and oil mist  
Mounting ..... Directly on the machine, wall or pillar stand

	EU-standard	NA-standard
Suitable for cabin sizes.....	< 10m <sup>3</sup>	< 353 CF
Air flow .....	1000 m <sup>3</sup> /h	600 CFM
Operating condition .....	5-50° C	<122°F
Electric power supply .....	16 A/400 V/3/50 Hz	30/15 A, 230/460 V/3/60 Hz
Motor rating.....	1,5 kW	2.2 kW
Rated current.....	3,2 A	8 A (230 V), 5.2 A (460 V)
Weight.....	74 kg	166 lbs
Height (with HEPA filter) .....	1 145 mm	51"
Diameter.....	Ø 500 mm	Ø 19.7"
Inlet pipe dimension .....	Ø 160 mm	Ø 6"
Sound level.....	< 70 dB (A)	< 70 db (A)



## Did you know?

Investing in 3nine's technology means a healthy and better working environment.

3nine technology provides the highest possible purification rate on the market, 99.995% \*.

Installing an oil mist separator gives flexibility and low maintenance costs.

Eliminating duct work lowers the risk of fire and bacterial infections in the workshop.

The largest installation to date has eight interconnected Emmas installed on one Portal Machining Centre.

\* with HEPA filter (H13)

## About Petra™:

Petra is ideal for harsh environments such as grinding and polishing, machining of cast iron and heat treatment. It is designed to cope with production processes where there are high levels of solid particles needing removal.

## Benefits Petra™:

- Suitable for applications with high degree of solid particles
- Capable of handling large quantities of oil mist
- Minimal filter and filter disposal costs
- Outstanding operating economy
- Minimal maintenance