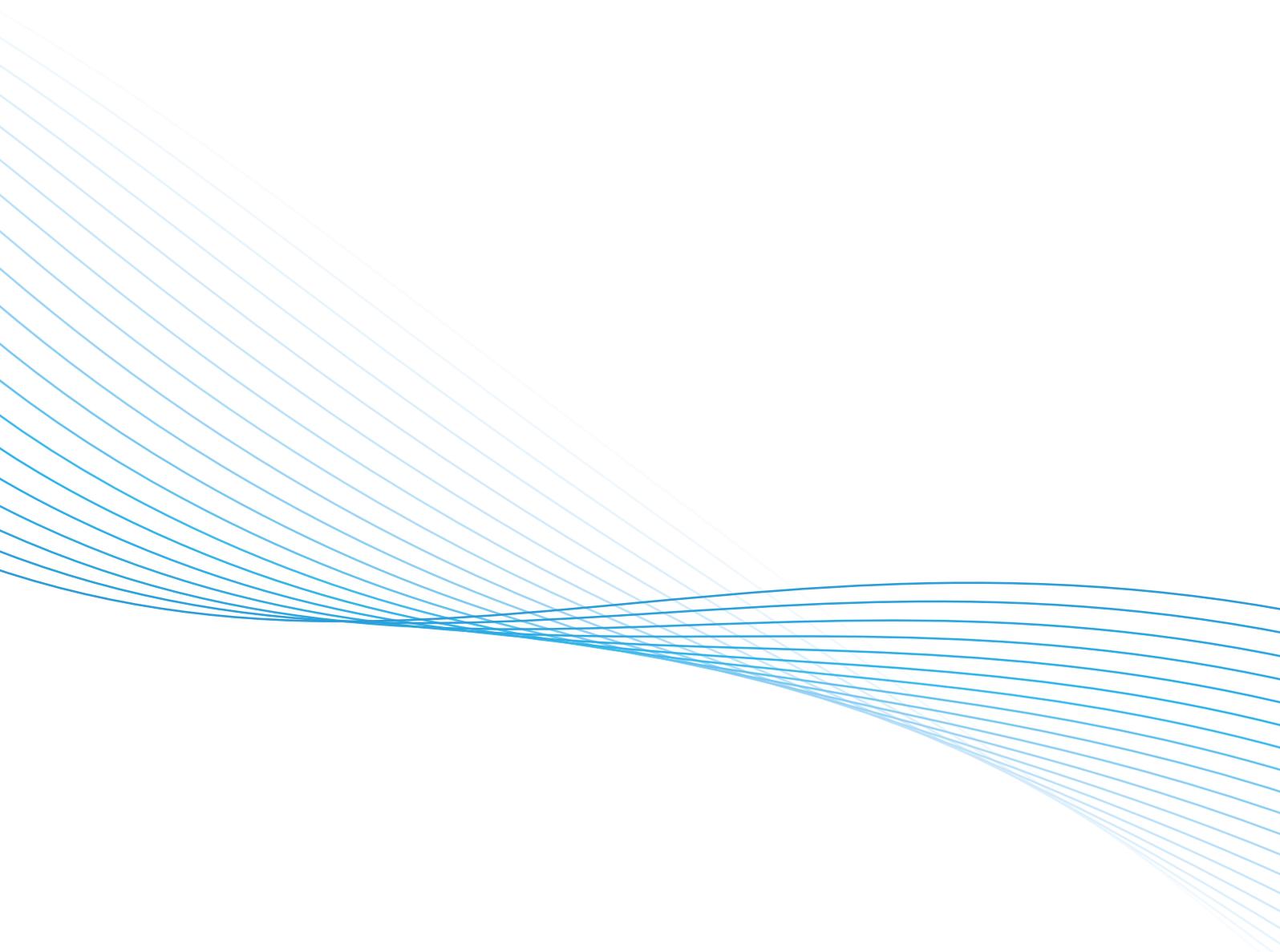


Fan Solutions For All Applications

The Program



The company

The Nicotra-Gebhardt group was created in 2005 joining two former Italian and German companies, which have been producing fans since the end of the fifties.

The group now employs about 1,000 people in 6 production sites (Italy, Germany, India, China, Malaysia and Thailand) and its sales organisation covers more than 30 countries in Europe, the Middle East, Africa, Asia, Australia and USA.

The manufacturing process is based on a concept of flexible industrial automation, enabling the company to offer either series-produced standard fans, or single-project special products.

The company's know-how is historically based on expertise in aerodynamics, acoustics, mechanics and assembly, but also includes drive and control technologies.

Nicotra-Gebhardt is ISO 9001 certified and its two R&D laboratories are both AMCA Accredited for air-performance measurement.

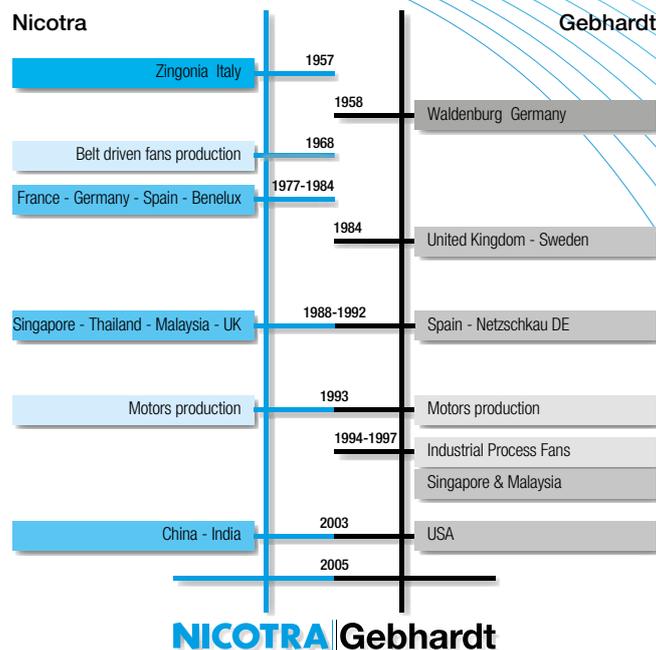


Headquarter in Italy, **Nicotra Gebhardt S.p.A**



Headquarter in Germany, **Nicotra Gebhardt GmbH**

Nicotra started the production of centrifugal fans in the early sixties. The strong request from the market, the compliance of the fans to the technical specifications and the quality of the product quickly made of Nicotra the leading company in the Italian market of light duty ventilation. In 2005 Nicotra bought the German company GebhardtVentilatoren.



Gebhardt, founded in the year 1958, started the production of a fan concept that was new at those times – direct driven centrifugal fans propelled by a newly developed external rotor motor. This concept of a compact fan was quickly accepted by the market thus giving the young company the opportunity to develop successfully.

A long term strategy

From the beginning of their industrial adventure, Nicotra and Gebhardt understood that any high-performance fan had to be properly integrated with an efficient drive system, to deliver fully satisfactory levels of performance and reliability.

While developing fan designs, like AT, RZR, RDH and RLM, which are considered industry benchmarks for their aerodynamic performance, Nicotra Gebhardt also invested great effort in advancing the technology of the motors for its direct driven fans.

Permanent magnet motors (EC), combined with advanced smart controllers, now represent the frontier of the fan driving technology for direct driven fans, and are now available throughout the wide variety of different centrifugal fan arrangements, in the Nicotra Gebhardt product range, offering the customer an unprecedented freedom of choice, without having to compromise on efficiency.

Fit for ErP 2020 and beyond: Fans must always achieve even higher system efficiencies. This means: more output with less energy. Binding requirements for this have been determined in the ErP Directive (Energy-related Products).

The new generation of Nicotra Gebhardt fan modules already now reaches motor efficiencies of up to IE5 – far beyond the specifications required in the future. Two progressive steps of the current regulation pushed the minimum allowed fan efficiency to challenging levels, which only a few years ago were considered to be unachievable. A proposal to further increase the minimum efficiency requirements is currently under discussion, to push the limit even higher, possibly in 2020 or afterwards.

With a combination of advanced aerodynamics and high-efficiency drive systems, Nicotra Gebhardt has been providing both high-end and low-cost ErP compliant solutions to its customers, up to the current requirements, and is ready to fulfil and exceed the next challenge being proposed for the future.

An appropriate solution for every requirement. Fan solutions for:

- Ventilation and air-conditioning
- Roof and smoke extraction
- Cleanroom applications
- Industrial and process applications
- Customised applications



RLM Evo
with internal rotor motor (PM/EC) and integrated electronics



PFP
with external rotor EC motor and integrated electronics



DDMP
Scroll casing with direct drive and forward curved blades - double inlet integrated electronics



RQM MultiEvo
with internal rotor motor (PM/EC) and integrated electronics



RDP
Scroll casing with direct drive and backward curved blades - double inlet integrated electronics

An appropriate solution...

Fans with or without scroll casing – the right solution for each application:

Centrifugal fans with backward curved impeller blades can run with or without a casing. Forward curved impellers generally require a casing to convert the dynamic pressure.

Fans with scroll housing generally have a higher efficiency potential, due to the additional conversion of dynamic into static pressure. Due to the parallel arrangement of two impellers in the Double Inlet fans, these fans can fit within a space having a lower height, compared to the single-inlet plug or plenum fans.

The physical dimensions of the fan may be important, as many fan installations imply some space restriction. The forced choice of a fan with a size smaller than the ideal one may be detrimental to the fan operating efficiency. Also the aerodynamic interference between the fan and the surrounding enclosure contributes to reduce the actual fan efficiency. The requirements of customers in the comfort-air market can be very different. Depending on the specific application, the most efficient choice may be to use a fan with or without scroll, a forward curved or a backward curved impeller, a direct driven or a belt driven fan.

Fans with a scroll offer better power consumption when the goal is to blow air into a delivery duct, where they can make an effective use of the kinetic energy, which every fan imparts to the airflow.

Backward-curved fans with scroll are often providing the best solution for HVAC&R applications with the fan directly connected with the supply duct, with an operating pressure in the range 600÷1200 Pa (direct-driven) or 1000÷2500 Pa (belt-driven, in high-power applications).

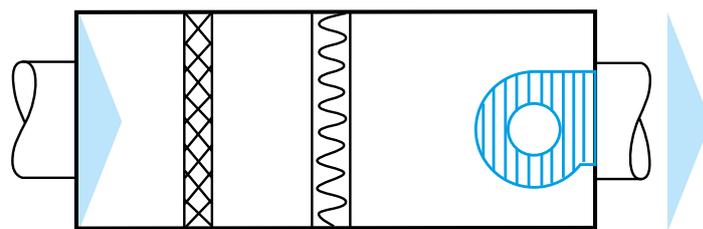
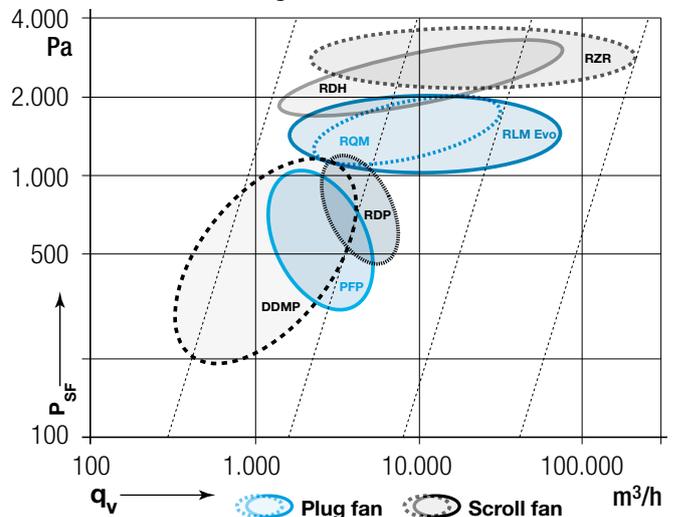
Plug fans / Plenum fans, direct driven and without a scroll case, are often preferred for medium pressure installations with a pressure requirement in the range of 600÷1200 Pa, especially when discharge into a plenum is needed, e.g. when the fan is fitted between filters and heat exchangers.

The new Hybrid fans offer an exciting alternative to the classic plug fans: they are suitable for use in similar pressure range and applications, but offer a considerable improvement in terms of efficiency.

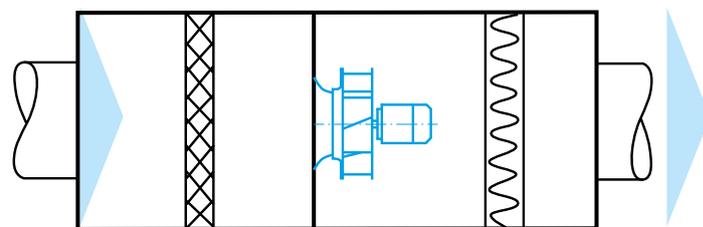
The forward-curved fan comes into its own when the fan has to be squeezed into the tight spaces allowed by many devices designed for indoor use, with a pressure requirement preferably below 500 Pa, and with the outlet directly connected to a duct.

Nicotra-Gebhardt with its many fan series always offers the perfect solution for every specification and application: no need to adapt the machine to the fan: simply use the best solution. With Nicotra Gebhardt, a customer can always be sure of choosing the fan type which best suits the installation, knowing that customers are never offered second-choice or outdated solutions.

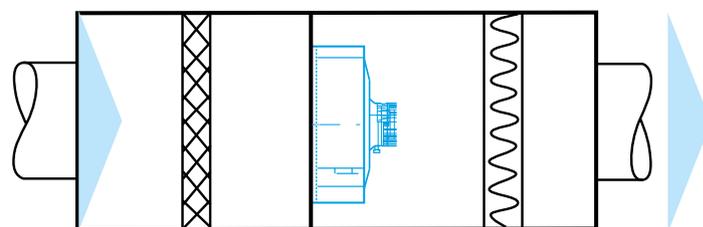
Performance range of selected fan series



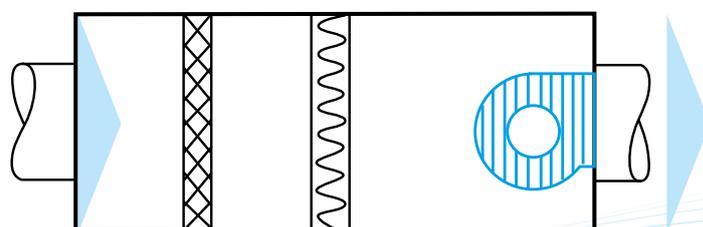
Air handling unit with Backward-curved fan with scroll



Air handling unit with plug fan



Air handling unit with hybrid fan



Air handling unit with Forward-curved fan with scroll

...for every requirement



Scroll fans (Backward-curved)

- Extremely high output range for air volumes and maximum pressure
- More cost-effective operations with PM/EC motors
- High system efficiency above all with higher pressures.



Plug fans

- Very low maintenance required
- Compact solution: Easy installation and maintenance
- Very high system efficiency in the medium pressure range
- Low noise level
- With internal or external control electronics
- Low space requirement



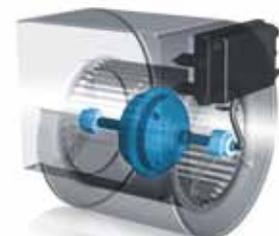
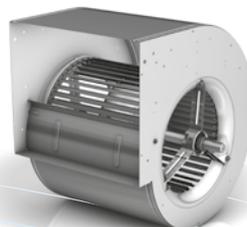
Hybrid fan

- Very low maintenance required
- Compact solution: Easy installation and maintenance
- Outstanding efficiency levels
- High pressure level
- Low noise
- Low space requirement



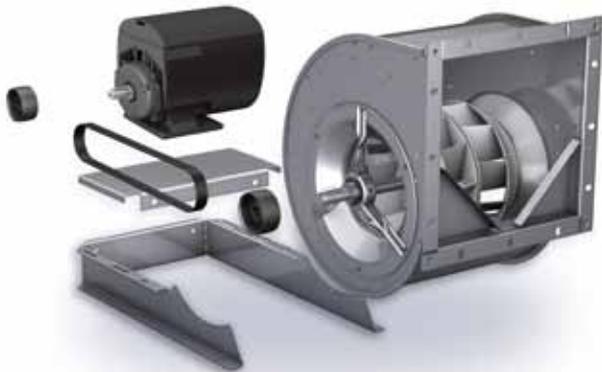
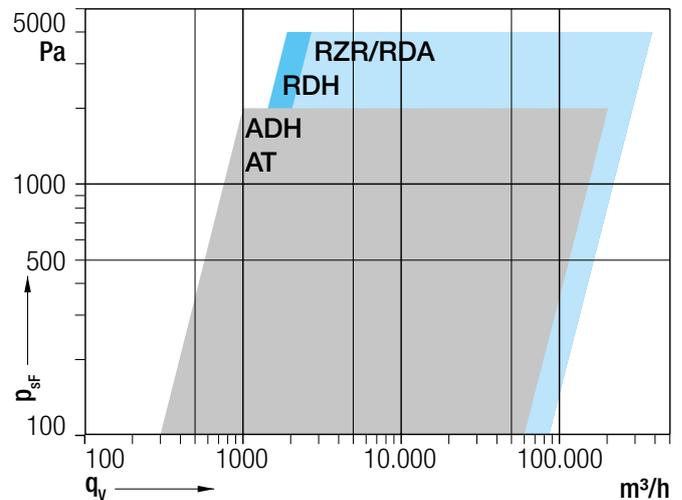
Scroll fans (Forward-curved)

- Compact design with minimum space requirement for a given duty
- Optimised for operation with low pressure and high volume flow-rate
- Extremely low noise level and low-frequency content
- Best energy efficiency when driven with integrated EC motor and driver



Belt driven centrifugal fans

Nowadays there is a great choice of different fan ranges available for everybody who has to select fans for a ventilating and air-conditioning system. Every execution has been optimised to its strengths. The extensive product range of Nicotra Gebhardt offers the opportunity to find just the right fan for every application. Furthermore, we provide appropriate documentation and a fan selection program. Our fan selection programme proSELECTA II allows you to configure your own individually designed fan. What's more, you will get a complete documentation package with prices, technical data, dimensions, specifications and accessories.



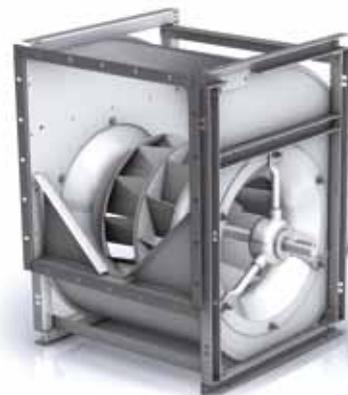
The efficient fan technology with scroll casing and airfoil blades

It's not difficult to make a centrifugal fan for an air conditioning unit a few euros cheaper. But to design it in a way that it saves valuable energy during operation is a real technological challenge. In this respect, the rotavent from Nicotra Gebhardt continues to provide the technology with the highest level of system performance and, as a consequence, the best solution where energy efficiency counts.

RZR / RDA

Belt driven centrifugal fan with double inlet. Wide range of applications even for high pressures. High degree of performance density at best efficiency.

- Low noise level thanks to the blade profile, blade positioning and the V-cut off
- Easy and reliable fan configuration using our fan selection programme
- Impeller sizes from 200 to 1600 mm
- Air volume up to 300,000 m^3/h
- Pressure up to 3,500 Pa





RDH

Belt driven centrifugal fan with double inlet. The ideal and cost effective fan for requirements in ventilating and air-conditioning systems. High flow rate, high pressure and high efficiency.

- Twin fan arrangement series RDH-G2
- Single inlet centrifugal fan series RSH
- Impeller sizes from 180 to 1000 mm
- Air volume up to 290,000 m³/h
- Pressure up to 3,500 Pa

ADH / AT

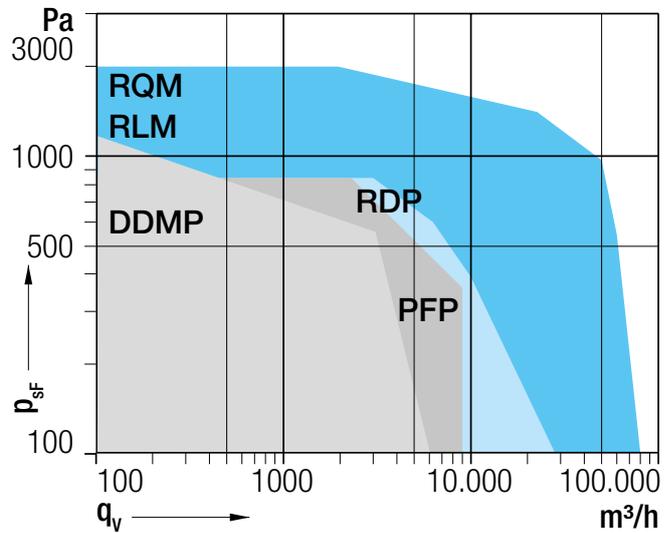
Belt driven centrifugal fan with double inlet. The ideal and versatile fan, tried and tested a thousand times over for many standard applications of ventilating and air-conditioning systems. Impeller with forward-curved blades. High flow rate, low pressure, low noise level. Galvanised shaft, various bearing solutions.

- Available as twin- and triple fan arrangement
- Impeller sizes from 160 to 1000 mm (series AT with inch dimensions from 7/7 to 30/28)
- Air volume up to 120,000 m³/h
- pressure up to 2,200 Pa



Direct driven centrifugal fans

Nicotra Gebhardt offers the most extensive product range of standardised direct driven centrifugal fans with and without scroll (plug fans). The range contains single and double inlet fans with different impeller types (backward and forward-curved blade geometries) and different drive technologies. The fans can be driven by IEC motors or external rotor motors using AC or brushless DC technology, built-in, add-on or coupled; with stepless or stepped speed control, or pole changeable. A product range of direct driven centrifugal fans to suit all requirements.



DDMP

The new DDMP is driven by a new and particularly energy efficient compact EC motor. These innovative motors achieve the highest efficiency and therefore cost less to operate than traditional AC motors in every application.

- Compact solution, Top rating efficiency, Low noise level, High reliability
- No configuration needed
- Motor input power from 1.1 kW up to 2.6 kW
- Air volume up to 6,000 m³/h



DD / DDM

The DD and DDM series of double-inlet forward-curved fans are driven, respectively, by conventional internal-rotor and by advanced external-rotor AC motors. They are the entry-level types of forward-curved fans for incorporation in HVAC&R equipment.

- Compact and quiet in operation.
- Extensive range of sizes and power levels
- Wide variety of AC motors, 1-Ph or 3-Ph, from 45W to 4 kW
- With open or closed frame motors
- Motors with multiple-speed windings, voltage-controllable or suitable for inverter drive.

RDP

The fifteen year success of our RDH belt driven fans is now combining with the more recent success of the high-efficiency drive system. DDMP products. A new lightweight aluminium impeller is the additional innovation of this project. RDP is a single drop-in unit, integrating fan, motor and power control unit.

- Lower installation, operational and maintenance costs
- New high efficiency permanent magnet motor.
- New compact and streamlined motor design.
- High intensity neodymium magnets.
- Reduced aerodynamic losses.
- Max. motor power 4 kW
- Impeller sizes: up to 400 mm available, up to 630 mm under development

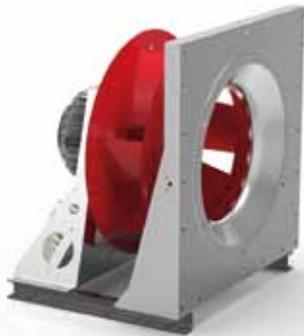




PFP (RLE)

The PFP with an outstanding combination of efficient drive system and aerodynamics is the ideal solution for medium-pressure applications. With lightweight aluminium impeller, optimised for medium pressure applications. Low interference loss with fan enclosure.

- External rotor motor (EC)
- Max. motor power 4 kW
- With integrated electronics
- Impeller sizes up to 630 mm



RLM Evo

The new generation of fan modules already now reaches motor efficiencies up to IE5. With integrated electronics or frequency inverter.

- Evo impeller technology
- IEC standard motor/
PM/EC motor technology up to IE5
- Max. motor power 18/45 KW
- Impeller sizes 280 to 900/1250 mm

RQM MultiEvo

The new RQM MultiEvo combines the compact design of plug fans with the benefits of traditional cased fans. In principle, it is a directly driven centrifugal fan with spiral shaped guide vanes. With integrated electronics.

- Permanent magnet motor (EC) up to IE5
- Impeller sizes from 315 to 900 mm
- Motor output from 1.4kW to 18kW
- Air volumes up to 40,000 m³/h
- Pressure up to 2,000 Pa

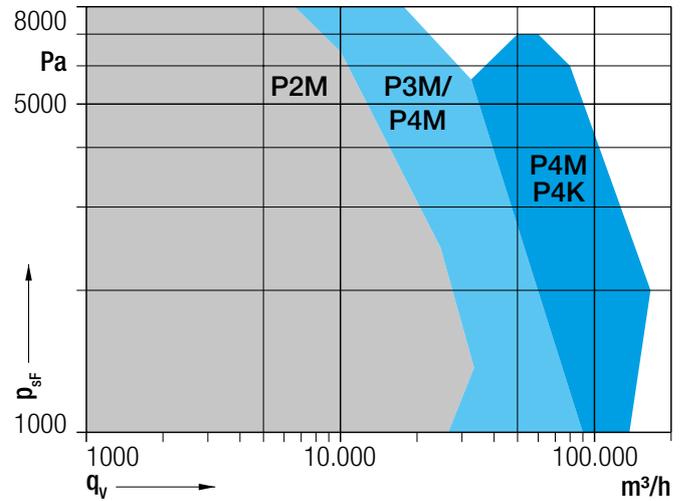


Industrial process fans

Process air fans are frequently an important component of machines and installations. In these applications they assure functions that would not be possible without a well defined air flow. Of these specially developed, robust fans, there are several standard ranges and a number of customer-specific solutions.

Some examples of process ventilation

- Cooling of generators
- Drying agricultural products
- Ventilation of composting plants
- Extracting contaminated air from paint systems
- Circulating hot air in industrial furnaces



P2M

Compact and universal – the ideal direct driven fan for many process air applications. The ideal direct drive fan for many process air applications.

- Robust welded design
- Up to 300°C operation
- ATEX category 2 and 3; gas and dust
- Impeller sizes up to 900 mm
- Air volume up to 45,000 m³/h
- Pressure up to 8,000 Pa.

P3M

Compact and universal – the ideal direct driven fan for many process air applications.

- Robust welded design
- Up to 300°C operation.
- Impeller sizes up to 1,000 mm
- Air volume up to 90,000 m³/h.
- Pressure up to 8,000 Pa.



P4M

Powerful and versatile – the logical extension of the P2M/P3M series.

- Up to 300°C operation
- Impeller sizes up to 1,600 mm
- Air volume up to 180,000 m³/h.
- Pressure up to 8,000 Pa





Q2M - without scroll

Built-in system

Flat mounting plate, mounting frame, *thermolock50* insulation, inlet cone loose or attached

Centrifugal impeller

Diameter 280 to 1,400 mm, backward-curved blades, welded, dust-repellent

Motor

Standard motor, B5 mounting to size 180, standard motor, B3 mounting from size 200, maximum motor size 315

Materials

Coated steel, hot-dip galvanised, stainless steel 1.4307, stainless steel 1.4571 on request

Medium

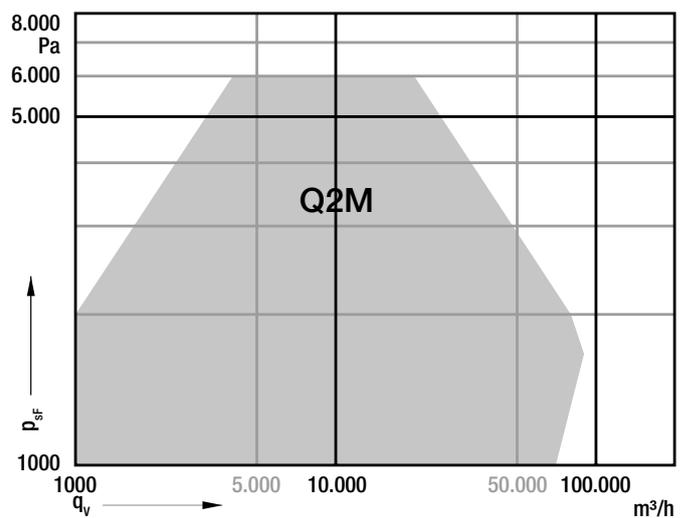
Media temperatures from -20°C up to $+500^{\circ}\text{C}$, highly efficient thermal insulation *thermolock50*

ATEX

Prepared for category 2 and 3; gas and dust

Extensive range of accessories

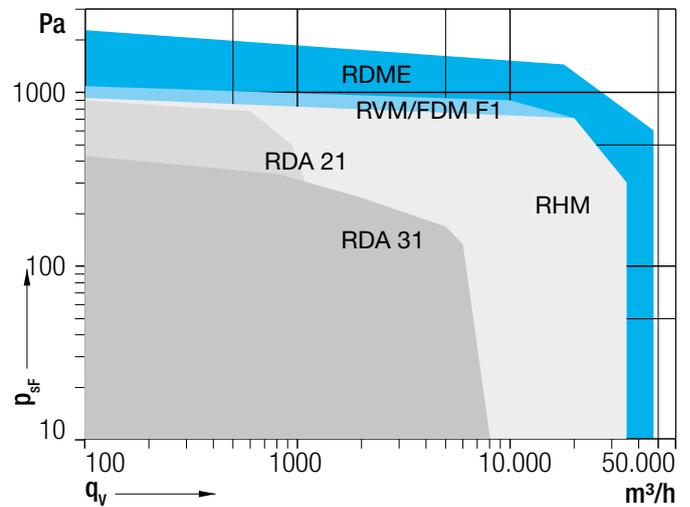
Direct driven plug fans for industrial applications



Q2M with highly efficient thermal insulation

Roof Extract Fans

Whilst the majority of the industry here is just looking to more cost-efficient motors, we at Nicotra Gebhardt are looking at the whole picture. The impeller and housing design are specifically included in our concept in all our models. During development, we now rely almost entirely on asynchronous internal rotor motors that are available worldwide. And for good reason: fans with internal rotor motors are systemically superior to systems with external rotor motors. Systems that use external rotor motors have the disadvantage of the air flow being cut off by the motor in the impeller. In addition, IE2 and IE3 standard motors exceed the traditional voltage controllable external rotor motors in terms of efficiency. The same applies to even higher motor efficiencies. Even an impeller driven by a PM internal rotor motor exceeds the energy efficiency of systems with EC external rotor motors. And even if a service is required, motors and frequency converters can be easily replaced in a few, simple steps.



RDA with external rotor motor

RDME/RDA

- Centrifugal roof extract fan
- Vertical discharge
- Integrated back draught dampers
- With silence lining (RDME 32)
- E2/3/4/PM standard motor placed out of airstream
- Frequency inverter operation
- Integrated electronic

RVM/FDM

- Centrifugal roof fan
- Low noise level
- Vertical discharge
- With IE2/IE3 standard motor
- Frequency inverter operation



low noise execution FDM



RHM

- Centrifugal roof extract fan
- Vertical discharge
- With IE2/IE3-standard motor
- Frequency inverter operation

Smoke Extract Fans

Perfect smoke extraction in the case of fire not only demands absolute understanding of the techniques used – it also calls for an understanding of the nature of fire and the flow of fumes. Nicotra Gebhardt sets standards in both aspects – by using CFD to simulate the flow of smoke, for example. We thereby ensure maximum safety throughout any building – from the underground car park to the roof – and comply with all the statutory standards for building fire protection. We will assist you in the detailed planning and dimensioning of car park ventilation equipment, by means of a smoke flow simulation using computational fluid dynamics (CFD). With the help of CFD, the ideal smoke extraction and ventilation system – including the number and positioning of jetfans required – can be determined for each construction project, based on the legal requirements (GarVO).



RDM

Ensuring a turbulence free discharge and suitable for smoke extraction in the case of fire up to **max. +600 °C - 120 minutes**, tested to DIN EN 12101-3, snow load class requirements SL 1000 assigned and CE certified. Assigned for mounting above heated and unheated rooms. Can be used as a standard ventilation fan up to max. +80 °C. Flow rate up to 58,000 m³/h. Pressure up to 2,000 Pa.



REM

Single inlet, with direct drive, suitable for smoke extraction in the case of fire up to **max. +600 °C - 120 minutes**, certified for installation outside of buildings, tested to DIN EN 12101-3, and CE certified.

Can be used as a standard ventilation fan up to max. +100 °C.

REM BI (not illustrated) with insulating enclosure, certified for installation inside of buildings – outside room with fire risk.

Flow rate up to 31,000 m³/h. Pressure up to 1,500 Pa.

RER

Single inlet belt drive, suitable for smoke extraction in the case of fire up to **max. +400 °C - 120 minutes**, certified for installation outside of buildings, tested to DIN EN 12101-3, and CE certified. Can be used as a standard ventilation fan up to max. +80 °C. Optionally with insulation housing for installation inside of buildings, outside room with fire risk. Flow rate up to 150,000 m³/h. Pressure up to 3,000 Pa.



RGM

Centrifugal induction jetfan. Suitable for smoke extraction in the case of fire up to **max. 300 °C - 120 minutes**, tested to DIN EN 12101-3 and CE certified. Thrust up to 75 N.



Fan Filter Units

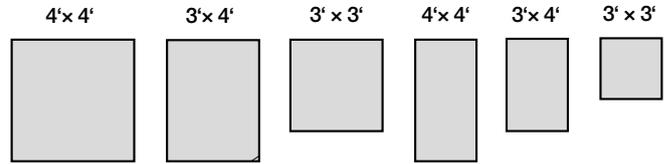
Clean room processes call for the most advanced ventilation technologies that match the specifications of the building infrastructure. Thereby the filter fan units are the key elements in clean room ventilation systems. Filter fan units (FFU) made by Nicotra Gebhardt with their perfectly matched components are designed for various kinds of industrial areas requiring clean room technology. Starting from standard FFU design, our team of experts implements the specification for your special project.

Simple handling: Controlling and monitoring of your FFU networks.

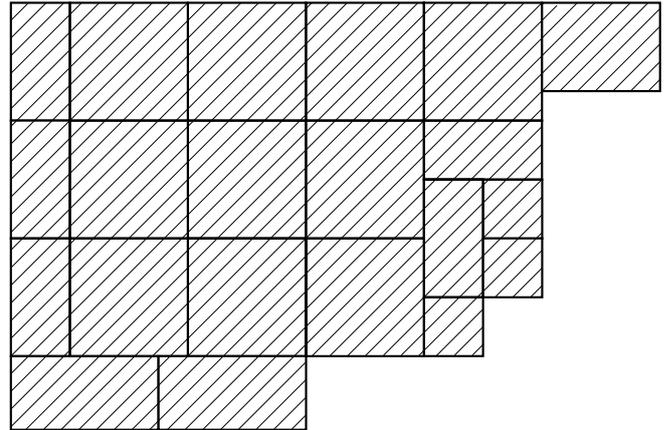
The core element of the system solutions we developed are the control centres for parameterisation and monitoring of your FFU networks on the basis of various RS485 interfaces (G-bus/Modbus RTU). We can optionally offer you three different components for actuation according to requirements:

- PC control centre for actuation of up to 500 FFUs per Ethernet RS485 Gateway.
- Handheld FANCommander 100 for actuation of up to 100 FFUs.
- Mini control centre FANCommander 200 for actuation of up to 200 FFUs. New software and hardware features suitable for assembly on the wall or installation in a switch cabinet.

Main dimensions of the standard sizes



Using standard sizes to adapt for special building requirements



Fan Filter Units (FFU)

Construction materials:

- galvanised steel
- Powder coated steel
- Aluminum
- Aluminum zinc coated
- Stainless steel

Network Topology:

- GBUS
- Modbus-RTU
- LONWORKS®
- Analogue 0-10V

Motor:

- Single phase
- Brushless DC technology
- UL listed

Accessories

- Pressure measurement connection Ø 6 mm
- Aerosol measurement/application connection Ø 8 mm
- Swirl diffuser
- Perforated guide plate
- Air cooler
- Pre filter
- Flexible connection round/square
- Connecting flange round/square
- hanger points





The new RHP MultiEvo

As simple as it is ingenious: The new RHP MultiEvo houses new, unique outlet guide systems with spiral geometries. Designed for perfect interaction, the impeller, motor and integrated electronic components of the RHP MultiEvo greatly exceed the energy savings of any other traditional EC filter fan unit.

The practical advantages

New technology:

Aerodynamic air guides optimise flow conditions

Excellent energy savings:

Over 60% efficiency thanks to the interaction of the best components

Optimised performance range:

Considerable increase in pressure for the same maximum speed and power requirements

Considerably quieter:

Noise levels up to 4 dB lower

Air distribution:

Maintained high level of uniformity

Reduced housing height:

Flatter for greater space savings



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