



Movement by Perfection

## Axial Fans

Main Catalogue  
2012 Edition

The Royal League in ventilation, control and drive technology

**ZIEHL-ABEGG** 

## Air with IQ

Air is inert by nature. Influences in nature such as temperature gradients start moving the air – but unfortunately, in a rather uncontrolled way and not always to people's advantage. In order to make air movement useful, we recommend our intelligent ventilation and control engineering solutions. They are not only effective and reliable but are also aimed at a multitude of specific requirements. As the world's leading system supplier of fans with matching control engineering, you will certainly be able to find fans for your sector and application in our product range. Educated minds don't leave anything to chance. Instead, they trust ZIEHL-ABEGG's extensive expertise.

## FANselect

Reach your goal easily, quickly, and without any complications! The world's most precise program for fans and systems components. For more information log on to our website at [www.fanselect.info](http://www.fanselect.info)

The screenshot shows the FANselect software interface. At the top, there are tabs for "product catalog", "fan selection", "details", "system components", and "index". Below the tabs, there are input fields for "airflow volume" (4000 m³/h), "static pressure" (10 Pa), "max. supply" (21°C / 100% RH), and "max. temperature" (20°C). On the right, there is a "selection criteria" section with a fan icon and a "more" button. Further down, there is a "product table" with columns for "ID", "type", "airflow rate", "T<sub>1</sub>", "T<sub>2</sub>", "P<sub>1</sub>", "P<sub>2</sub>", "N<sub>1</sub>", "N<sub>2</sub>", "T<sub>3</sub>", "T<sub>4</sub>", "C<sub>1</sub>", "C<sub>2</sub>", "C<sub>3</sub>", "C<sub>4</sub>", "C<sub>5</sub>", "C<sub>6</sub>", "C<sub>7</sub>", "C<sub>8</sub>", "C<sub>9</sub>", "C<sub>10</sub>", "C<sub>11</sub>", "C<sub>12</sub>", "C<sub>13</sub>", "C<sub>14</sub>", "C<sub>15</sub>", "C<sub>16</sub>", "C<sub>17</sub>", "C<sub>18</sub>", "C<sub>19</sub>", "C<sub>20</sub>", "C<sub>21</sub>", "C<sub>22</sub>", "C<sub>23</sub>", "C<sub>24</sub>", "C<sub>25</sub>", "C<sub>26</sub>", "C<sub>27</sub>, and "C<sub>28</sub>". The table contains several rows of fan data, each starting with "PWA020-AE...". The ZIEHL-ABEGG logo and a TÜV logo are visible in the top right corner.

## Additional catalogues

Our extensive Axial Fan A01, Centrifugal Fan R01, Control Technology E01 and other catalogs are available on our [www.ziehl-abegg.com](http://www.ziehl-abegg.com) website in the „Download“ area. We would be glad to send printed catalogues on request.

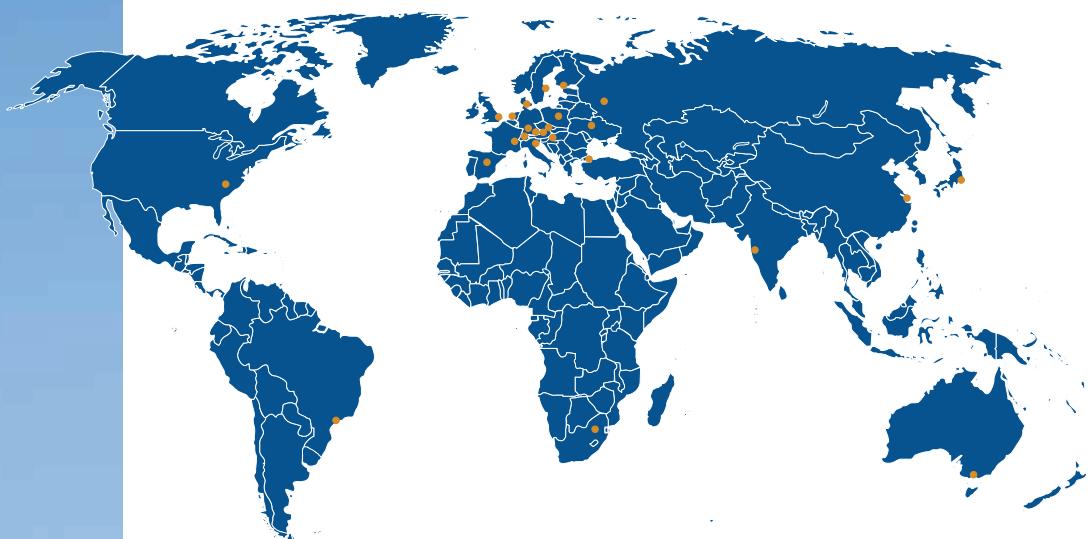


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# No one can get past the Royal League



ZIEHL-ABEGG has stood for movement by perfection in the ventilation technology, control technology and drive technology sectors for more than 100 years. What started with the invention of the first external rotor motor by Emil Ziehl is now being carried on at the company's sites around the world. We are the pioneers, masterminds and developers of technologies for the future who more than satisfy all demands to preserve an environment worth living in and to meet all our customers' requirements and wishes.

## Think in the future - discover ZIEHL-ABEGG

We look forward to seeing you in ventilation, control and drive technology. There, where ideas are the daily challenge and where the latest, outstanding technologies are developed.

Welcome to the best.

Welcome to the Royal League

# From fans and motors to matching control technology

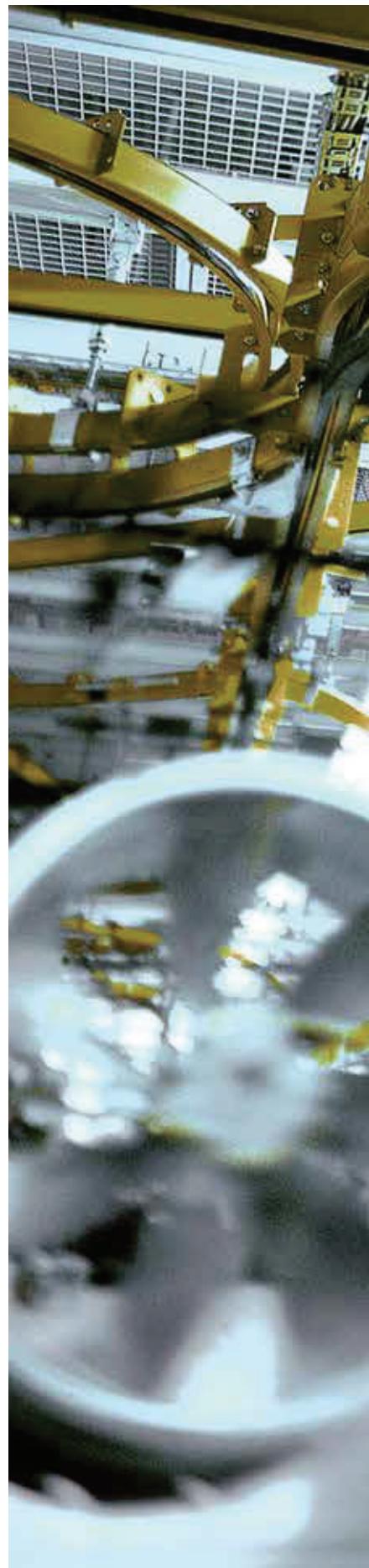
## Our unique selling point – your advantage

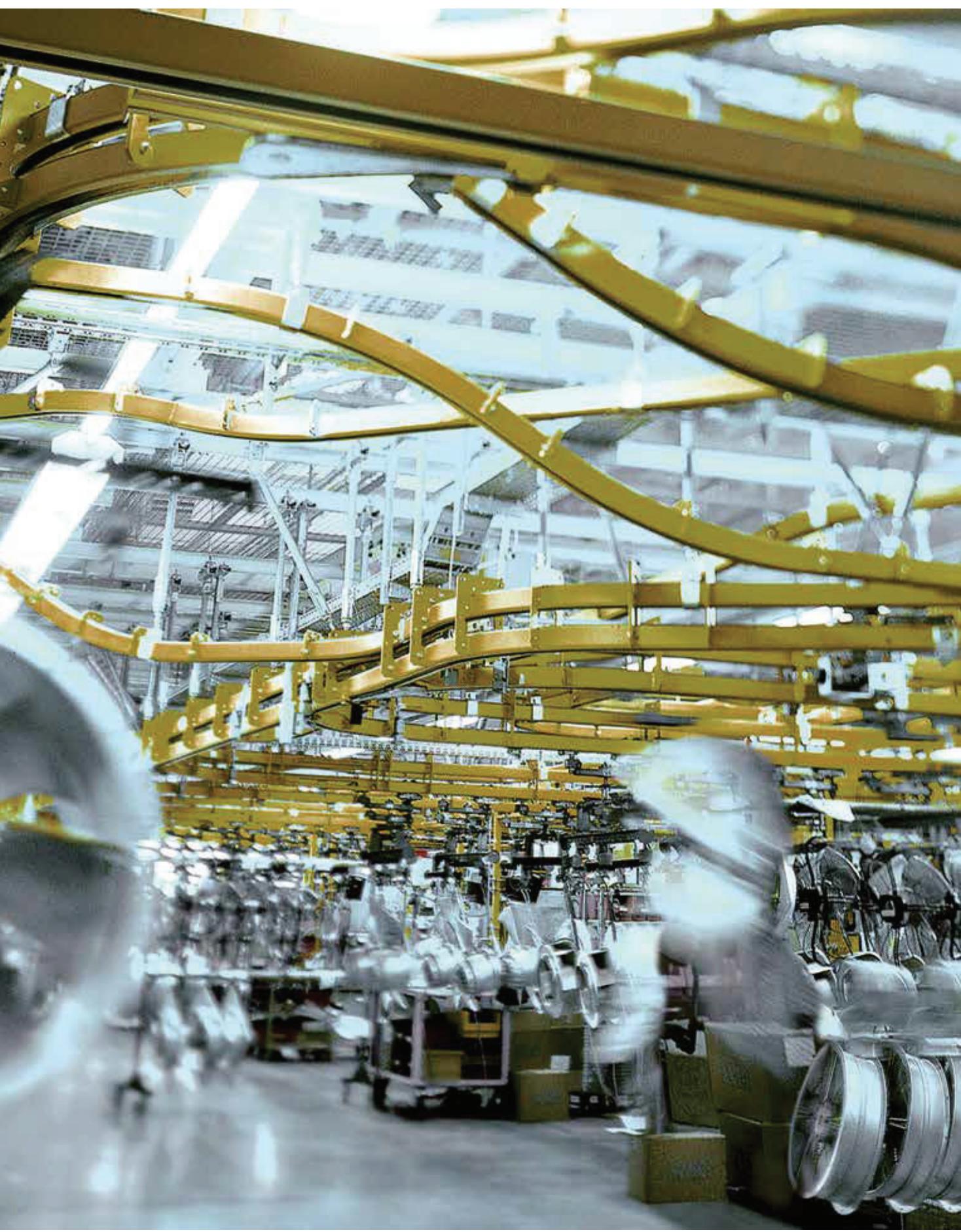
What is important to us is to correctly match our systems to your specific needs. Whether refrigeration, air conditioning, for use in your manufacturing processes or anywhere else - we reliably move air wherever it is required and at the right time. At the main Künzelsau location more than 100 engineers and technicians work in one of the most modern technology centers of this kind.

We supply the highest quality standards with **the world's largest air and noise test-bench for fans** which can completely mask vibrations and external noises. This guarantees fan measurements of the highest class according to ISO and DIN. This is the reason ZIEHL-ABEGG products with the **Premium Quality** and **Premium Efficiency** are certified - that is the reason our products and services are in the Royal League.

The world's most modern and largest test-bench for fans at the main location in Künzelsau

Right picture:  
Most modern production lines  
for fans  
with the highest demands  
in the world





# The Royal League of EC fans

## So quiet, so efficient, so ECblue

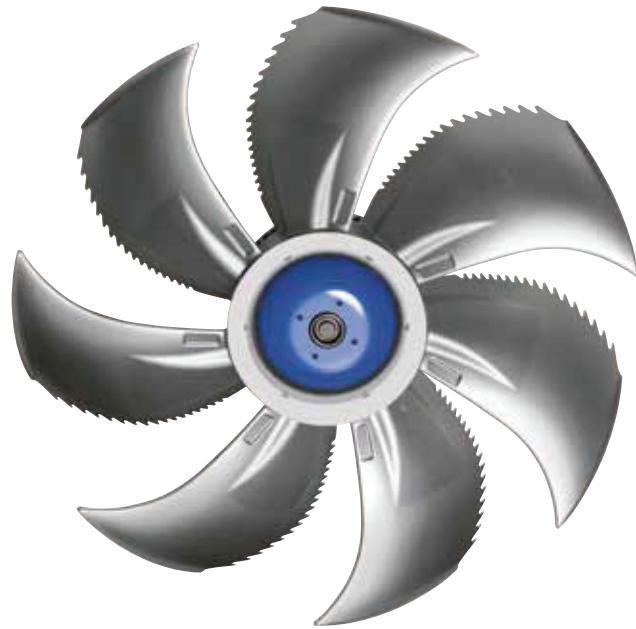
Unifying the latest motor technology and innovative aerodynamics provides unbeatable efficiency and definitely saves energy costs. The latest generation of axial fans with ECblue technology, such as the FE2owlet, is a genuine revolution. The toothed bionic profile of the rotor used here makes this fan almost completely silent. We provide pure innovation with fans such as the Cpro centrifugal fan in new **ZAmid® Technology**. The high-performance composite material we developed is as hard as steel and guarantees, along with longer service lives, the reliable production of fans with newly developed blade geometry of the highest level. The unique rotor blades combined with ECblue motors achieve unsurpassed air dynamics, putting them into the top-class of environmental friendliness with the highest energy-savings potential. Used in any application, including process fans up to 600°C, the highest volume flow rates provide extraordinary efficiency at extremely low noise levels.

ECblue motor technology

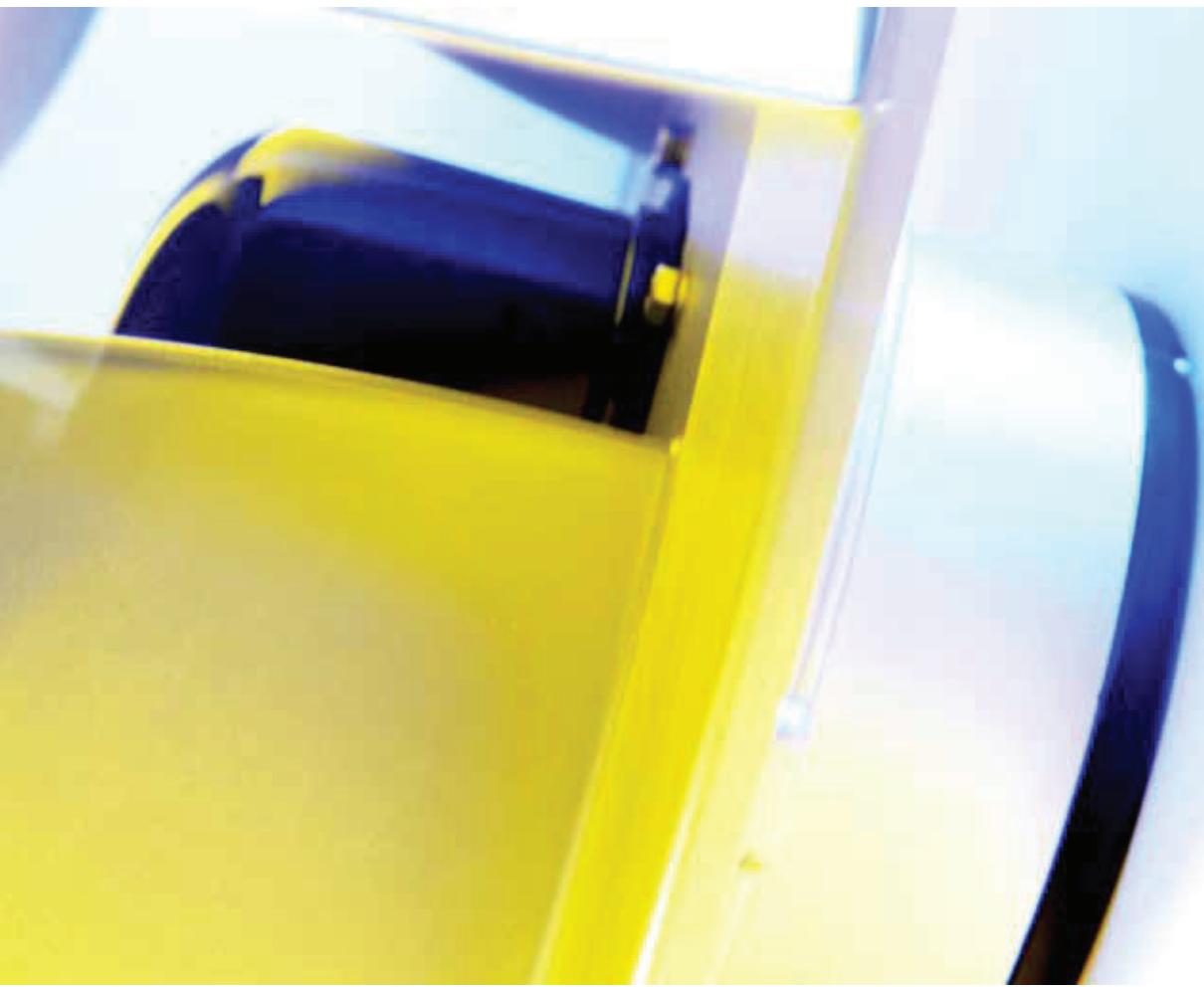




Maximum efficiency and minimum consumption  
ECblue with the latest **ZAmid® Technology**  
Radial fans sector



Unique bionic profile FE2owlet,  
combined with ECblue technology



## The Royal League of AC fans



### So powerful, so insusceptible, so AC technology

In the AC motor technology sector, our development efforts are completely dedicated to the future. We now supply our modern fans combined with AC technology wherever unusual temperature ranges and materials are needed for demanding applications. The simple and yet sturdily constructed, high-quality motor technology remains consistent even during exceptional demands. AC fans are used in many industrial sectors and in agriculture whenever absolute insensitivity and stability are the top priority. Intelligent used components such as the ZIEHL-ABEGG F control frequency inverters turn the combination of fans and AC motors into a modern, ecologically sound and efficient top-class performer. Our modern AC motors are maintenance-free and promise a secure investment in the future.

AC motor technology, robust in operation





# Expertise in ventilation

## ErP Directive

By adopting the Kyoto Protocol, the European Union committed itself to reducing CO<sub>2</sub> emissions by at least 20% by 2020. One of the measures taken to help achieve this was the EuP (Energy using Products) Directive adopted by the EU in 2005, which was renamed ErP (Energy related Products) Directive in 2009, and is also known as the „Eco-design Directive“.

The ErP implementation measure for fans defines minimum efficiency levels for fans in the power range from 125 Watt to 500 kW, which will prevent „energy guzzlers“ from being brought into circulation in Europe in the future. The ErP Directive is being implemented in two stages: Stage 1 in 2013 and Stage 2 in 2015. This gives energy efficiency the same standing as compliance with the Low Voltage or EMC Directive. The system efficiency requirement is a prerequisite for CE certification and is thus essential for a product to be used in EU member states. Labelling like that used on refrigerators and washing machines will not be required for fans, as fan manufacturers generally have no influence on the installation conditions.

The catalogue contains the relevant ErP rating as part of the fan description.

If you have chosen ZIEHL-ABEGG, you can be confident about the future: ZIEHL-ABEGG is playing its usual pioneering role in ErP and supplies fans today that already surpass the requirements for tomorrow.



The European Ventilation Industry Association (EVIA) represents the European ventilation industry with national and European institutions.

The EVIA is the key platform for fan manufacturers and is their interface to politicians, decision-makers in the European Union, and other associations that use fans in their products. The EVIA supports the use of high efficiency fans in Europe to implement the EU targets for increased efficiency.

ZIEHL-ABEGG played a leading role in its foundation and supports the EVIA with active involvement in its working groups. ZIEHL-ABEGG also provides the chairman.



# Selection of fans step by step

## 1. Axial fans overview

Get an initial overview of our axial fans and navigate quickly to the section of the catalogue relevant for you.

The screenshot shows a search interface for axial fans. At the top, there are four categories: 'Frontblatt', 'Gummiblatt', 'FE', and 'Stahlblatt'. Below these are two search fields: 'Suchbegriff' and 'Blattdurchmesser'. A large search button labeled 'Suchen' is at the bottom right. To the left of the search fields, there is a grid of small fan images. On the right, there is a detailed technical description for a fan model, including a large image of the fan, its dimensions, and performance curves.

Information

## 2. Quick selection

Obtain product details quickly and easily, thanks to quick selection using the volume flow rate and the volume flow rate technical data.

This screenshot shows a search interface for axial fans. It includes a search bar, a dropdown menu for 'Blattdurchmesser', and a large search button. To the right, there is a performance curve graph showing pressure (hPa) versus air volume (m³/h). The graph has multiple curves for different fan models, with specific data points highlighted.

FB

## 3. Product details

The double product page contains all relevant product information for your selected fan.

This screenshot shows a detailed product page for a fan model. It features a large image of the fan, a performance curve graph, and a table of technical data. Below the graph, there are two assembly diagrams showing the fan's internal structure and how it is mounted.

System components

Control technology

Appendix

# Overview axial fans

	<b>die-cast</b>			<b>sheet blade</b>
Axial fan	<b>FE2owlet-ECblue</b>	<b>FE2owlet</b>	<b>FC</b>	<b>FB</b>
	► Page 20	► Page 120	► Page 402	► Page 258
				
Design of the blades				
Size	<b>Airflow direction</b>	<b>Airflow direction</b>	<b>Airflow direction</b>	<b>Airflow direction</b>
020		A⇒↔V		A⇒↔V
025	A⇒↔V	A⇒↔V	A⇒↔V	A⇒↔V
030	A⇒↔V	A⇒↔V	A⇒↔V	A⇒↔V
031		A⇒↔V	A⇒↔V	A⇒↔V
035	A⇒↔V	A⇒↔V	A⇒↔V	A⇒↔V
040	A⇒↔V	A⇒↔V	A⇒↔V	↔V
042	A⇒↔V	A⇒↔V		A⇒↔V
045	A⇒↔V	A⇒↔V	A⇒↔V	↔V
050	A⇒↔V	A⇒↔V	A⇒↔V	A⇒↔V
056	A⇒↔V	A⇒↔V	A⇒↔V	A⇒↔V
063	A⇒↔V	A⇒↔V	A⇒↔V	↔V
065			A⇒↔V	A⇒↔V
071	A⇒↔V	A⇒↔V	A⇒↔V	
080	A⇒↔V	↔V	A⇒↔V	
091	A⇒↔V	A⇒↔V	A⇒↔V	
100	A⇒↔V	A⇒↔V	A⇒↔V	
112			A⇒↔V	
125			A⇒↔V	
A⇒↔V	on request			

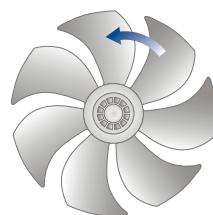
Airflow direction A →

Sucking over stator



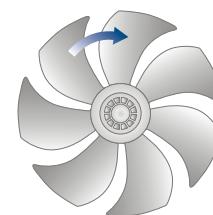
← Airflow direction V

Blowing over stator



KL2065

Direction of rotation counter clockwise  
looking at the rotor



KL2064

Direction of rotation clockwise  
looking at the rotor



# Technical description

## FE2owlet-ECblue

### Description

Profiled, sickle-shaped blades based on bionic findings, with high efficiency ECblue drives  
 $\varnothing$  250 ... 1000 mm  
Optimised for full nozzle  
100 % speed control due to unique ECblue technology

### Application

Air conditioning and refrigeration, heat pumps, transformer cooling ...

### Advantages

The FN series of FE2owlet fans deliver excellent efficiency but feature an exceptionally low sound level. The ECblue technology results in a unique, highly innovative fan.

Standard ZIEHL-ABEGG ECblue fans can be used with active temperature management up to 70°C. Designs for an ambient temperature of 80°C are available on request.



## FE2owlet

### Description

Profiled, sickle-shaped blades based on bionic findings with conventional AC motors  
 $\varnothing$  250 ... 1000 mm  
Optimised for full nozzle  
100 % speed control

### Application

Air conditioning and refrigeration, heat pumps, transformer cooling ...

### Advantages

The FN series of FE2owlet fans deliver excellent efficiency but feature an exceptionally low sound level.



## FB

### Description

Aluminium panel blades  
 $\varnothing$  200 ....650 mm  
Optimised for short nozzle applications  
Two airflow directions possible  
Three blade angles  
100 % speed control



### Application

Primarily refrigeration / heating, in short nozzle

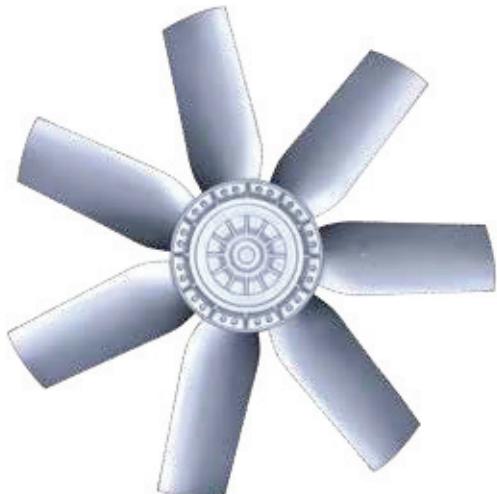
### Advantages

FB fans are primarily used in equipment with short nozzles, see Installation examples section.

## FC

### Description

Profiled die cast aluminium blades  
 $\varnothing$  315 ... 1250 mm  
Optimised for full nozzle  
100 % speed control



### Application

Air conditioning and refrigeration, agriculture, transformer and rolling stock cooling, wood drying, industry, engineering

### Advantages

The FC series of fans with die cast aluminium blades deliver exceptionally high efficiency and therefore should only be operated in ventilation duct systems with excellent aerodynamics, see Installation information section.



# Type key



Necessary ordering information  
Type and Art. no.

## Example

Type: FN050-4EQ.4I.A7P1  
Art. no.: 140084

## Example

**FN 050 - 4 EQ . 4I . A 7 P 1**

### Axial fan

**FB**

**FC**

**FN**

### Fan size

Impeller diameter 450 mm **045**

Impeller diameter 500 mm **050**

and so on

### Number of poles

2-pole **2**

4 pole **4**

4-4 pole **V**

6 pole **6**

6-6 pole **S**

8 pole **8**

8-8 pole **A**

10 pole **Z**

10-10 pole **M**

12-12 pole **N**

### Type of current

three phase alternating current **D**

single phase alternating current **E**

External rotor EC motor with controller **I**

### Fan design

without mounting parts **A**

#### Full bell mouth

rectangular **Q**

round **L**

#### pipe socket

with one flange **H**

flange ring

with two flanges **F**

#### Axial screwed suspension

for full bell mouth Q and L / conveying direction **A**

for short bell mouth E / conveying direction **W**

A

for short bell mouth E / conveying direction **K**

V

On nozzle flange for pipe fitting H for full nozzle Q or L / airflow direction V

#### Centrifugal screwed suspension

On outer diameter for full nozzle Q or L / airflow direction V

### Motor

### Airflow direction

Sucking over stator **A**

Blowing over stator **V**

### Number of blades

**7**

### Blade angle

**P**

### Blade index

**1**

Information

FE2owlet  
ECblue

FE2owlet

FB

FC

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Appendix

# Selection programme FANselect

The world's best selection program for fans

watch list (7) options help logout

# FANselect

product range fan selection details system components output

airflow volume	4000 m³/h	static pressure	10 Pa	<input checked="" type="checkbox"/> design influence
max. supply	37°/400V / 50Hz	search tolerance	- 10 %	
ambient temperature	20 °C			

additional selection criteria

range design search

selection criteria

range

airflow rate	4000 m³/h
static pressure	50 Pa
mains supply	37°/400V / 50Hz
ambient temperature	20 °C

fan selection

42 fans

add to watch list	type	article no.	A <sub>2</sub>	P <sub>2</sub>	D <sub>2</sub>	gpm	P <sub>2</sub> [W]	P <sub>2</sub> [W]	T <sub>2</sub> [°C]	P <sub>2</sub> [%]	P <sub>2</sub> [%]	n	L <sub>2</sub> [m]	L <sub>2</sub> [m]	U <sub>2</sub> [Pa]	T <sub>2</sub> [°C]	U <sub>2</sub> [Pa]	mains supply
performance curve	FH040-Z11-DC-V/P2	154483	4000	50	66	158	175	175	37.0	-	860	66	65	50	50	0.46	37°/400V / 50Hz	
Life-Cycle-Costs	FH030-Z10-DC-A/P2	154509	4000	50	66	159	175	175	37.0	-	666	66	65	50	50	0.46	37°/400V / 50Hz	
drawing	FH016-Z14-DC-V/P1	152852	4000	50	63	147	166	163	43.5	-	725	63	62	50	50	0.48	37°/400V / 50Hz	
product information	FH016-Z14-DC-A/P1	152828	4000	50	63	147	166	163	43.5	-	725	63	62	50	50	0.48	37°/400V / 50Hz	
specification sheet	FH063-Z11-DC-V/P2	152761	4000	50	57	158	147	147	43.4	-	582							

At [www.fanselect.info](http://www.fanselect.info), we are offering you FANselect, a selection program for axial and centrifugal fans with the matching system components.

With FANselect, you can, for instance, select and calculate the fans FE2owllet-ECblue and FE2owllet listed in this catalogue. FANselect provides you with an option to calculate the efficiency, the acoustics, the SFP and much more. In addition, you can also select the matching systems components. You can conveniently save your configuration in a file or print it out.

The FANselect selection program, including the customer DLL, is available for you to download at any time at [www.fanselect.info](http://www.fanselect.info).

The screenshot shows the ZIEHL-ABEGG FANselect software interface. At the top, there are navigation links: 'watch list (76)', 'options', 'help', and 'logout'. The main title 'FANselect' is displayed prominently. Below the title, there are tabs for 'product range', 'fan selector', 'details' (which is selected), 'system components', and 'output'. A detailed table of fan parameters is shown, followed by a graph of air performance vs. flow rate. On the right, three performance curves (P100, P200, P300) are plotted against flow rate ( $\dot{m}$  [kg/h]). Below the graph, a legend defines symbols for 'performance curves', 'Life-Cycle-Costs', 'drawing', 'nominal values', and 'BEP class'. To the right of the graph, three additional graphs show power input, efficiency, and acoustic levels as functions of flow rate.

Information

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