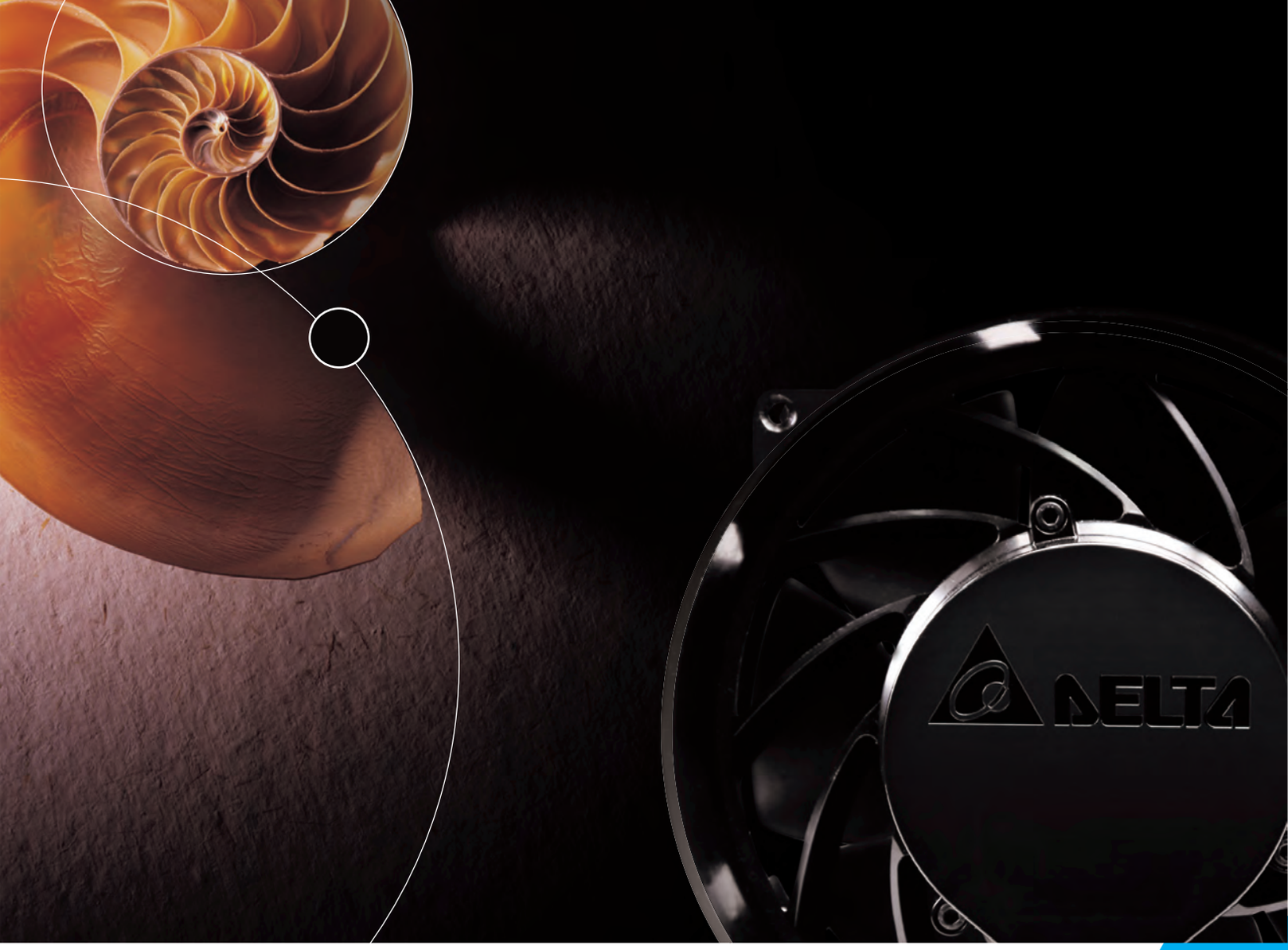


Delta Electronically Commutated (EC) Fan Series

DELTA

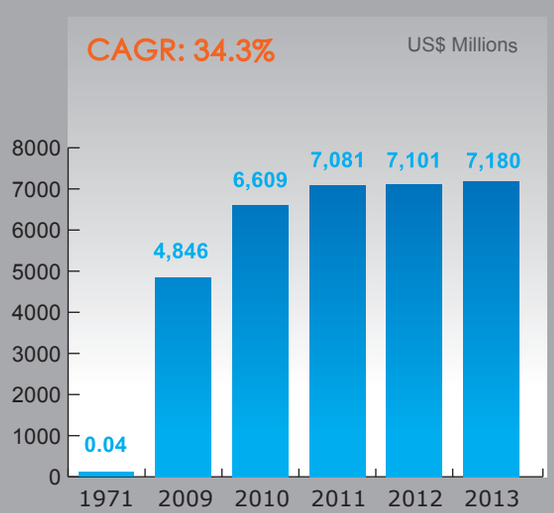
Smarter. Greener. Together.

www.delta-fan.com

Founder &
Honorary Chairman
Bruce Cheng

Chairman
Yancey Hai

Worldwide Revenues



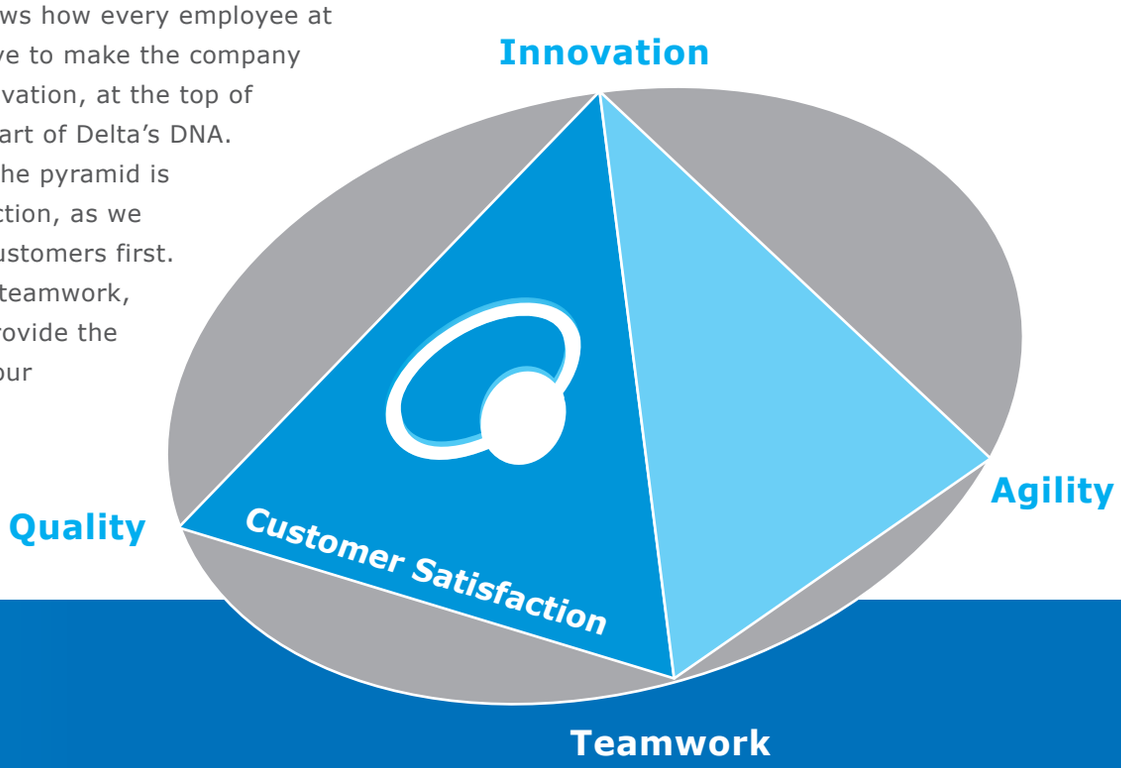
Overview

Delta Group was founded in 1971 and listed on the Taiwan stock exchange in 1988. Delta is one of the longest established electronics companies in Taiwan and is now the global leader in power and thermal management solutions. Taking the top spot globally for switching power supplies since 2002 and for DC brushless fans since 2006, Delta is also a leading heavyweight in several fields related to power supply management and energy efficiency. We are the number one telecom power solution provider in Brazil, India, Turkey and Indonesia, as well as a leading provider in Europe, the Americas, and the Asia-Pacific. Delta's industrial automation products have demonstrated robust competitiveness in the global marketplace especially in China. Our passive components, networking systems and high-end projectors also hold a leading position within their respective fields.

Under the leadership of founder Bruce Cheng and Chairman Yancey Hai, Delta has seen its revenues grow significantly over the years. In 2013, Delta's worldwide revenues reached 7.18 billion USD with a compounded annual growth rate (CAGR) of 33.4%. Our gradual transformation towards green solutions has not only boosted our revenue growth but also improved our gross profitability, which is currently above 25%. In the past one and a half years, our market capitalization has increased rapidly from about 7 billion USD to 13 billion USD.

Corporate Culture

"Strive for change, and pursue sustainability" is our corporate culture. This pyramid shows how every employee at Delta should strive to make the company sustainable. Innovation, at the top of the pyramid, is part of Delta's DNA. In the center of the pyramid is customer satisfaction, as we always put our customers first. Through quality, teamwork, and agility, we provide the best services to our customers.



Business Categories

Power Electronics

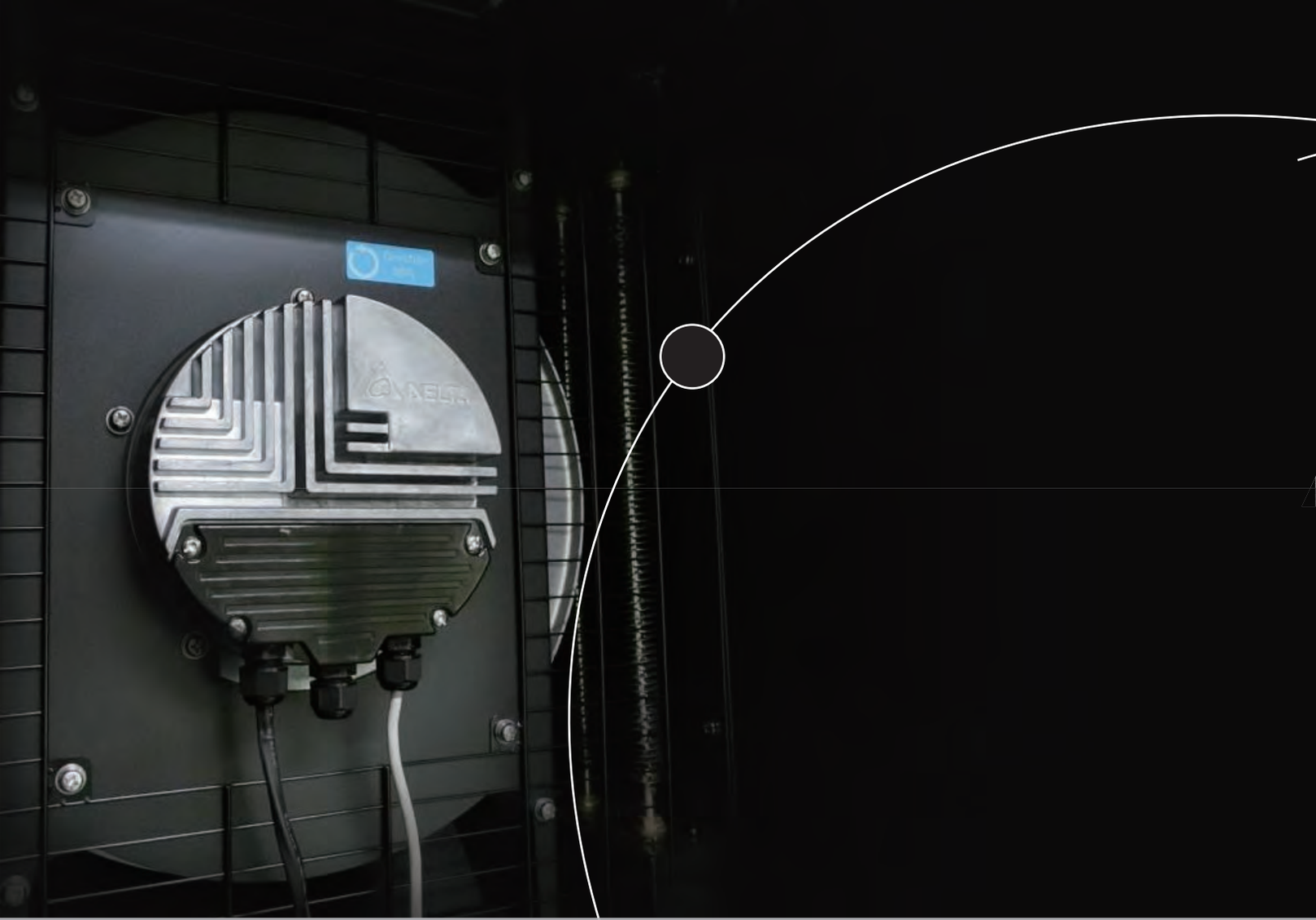
- Embedded Power Supplies
- Mobile Power Supplies
- Fans & Thermal Management
- Electronic Components for ICT Equipment

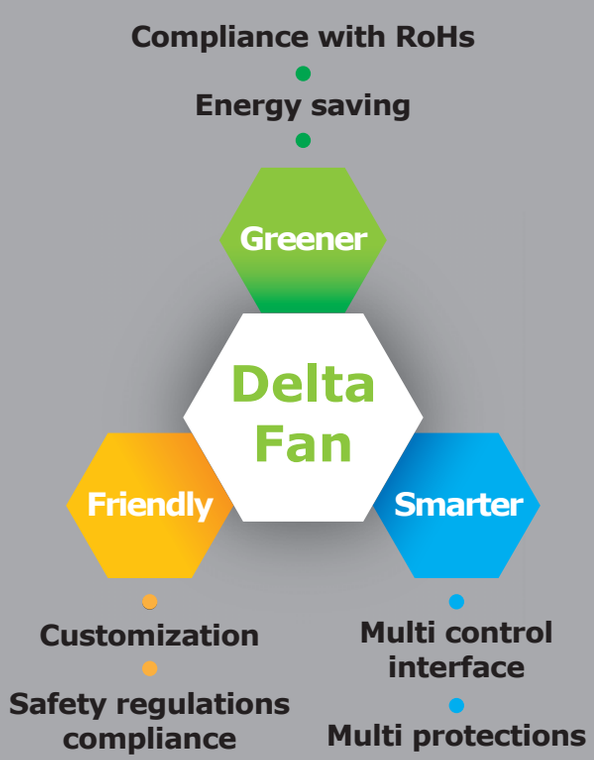
Energy Management

- Industrial Automation
- Telecom Power Systems
- UPS & Datacenter Infra-structure
- Renewable Energy
- Automotive Electronics & EV Charging

Smart Green Life

- Networking Systems
- Display & Visualization
- LED Lighting
- Healthcare Devices





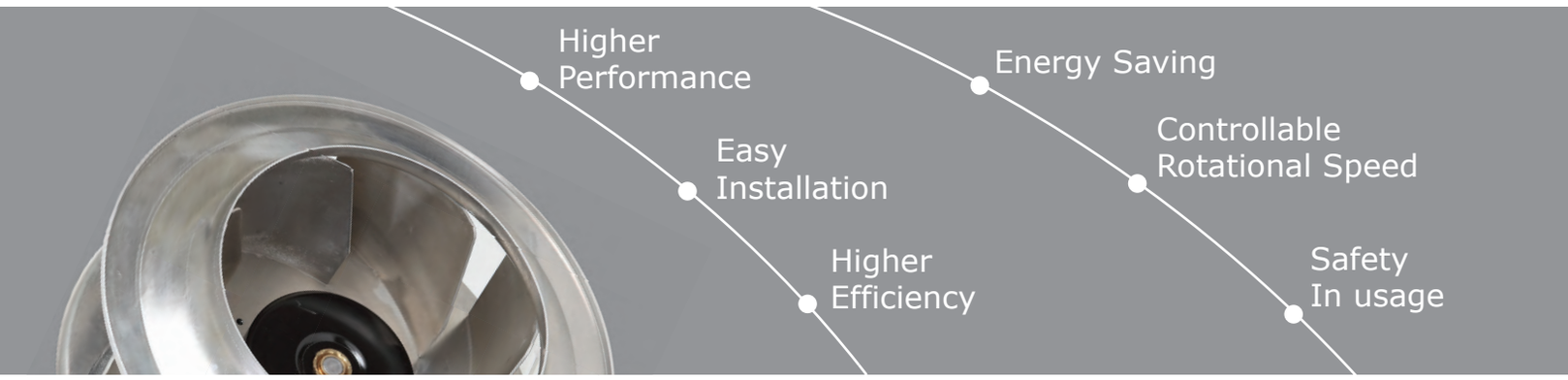
Delta Electronically Commutated (EC) Fan Introduction

Delta Electronics, Inc., is widely recognized as the global leader in switching power supply and brushless DC fan.

Depending on the profound experience and knowledge, Delta combined the advanced technology in power electronics and brushless DC fan, and developed Electronically Commutated (EC) fan series.

In recent years, Delta fan development groups have dedicated in improving energy efficiency and control technology, and use the optimized configuration design and control technology to improve the product performances, solve noise and vibration problems, and provide intelligent control interface.

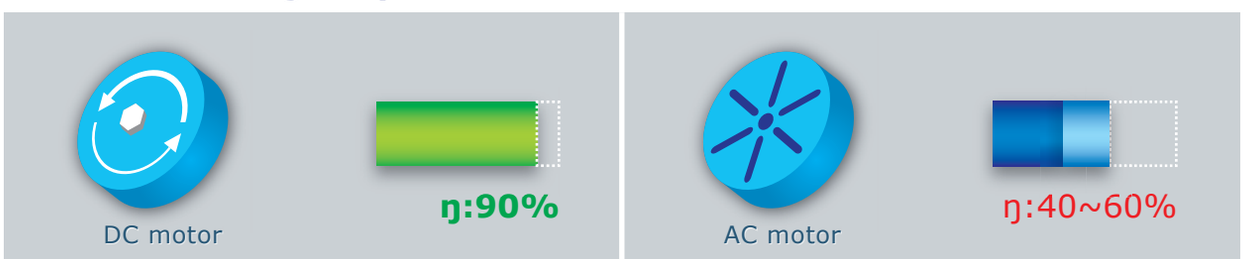
With the high efficiency requirements in industrial and commercial applications, compared with traditional AC fan, Delta's Electronically Commutated (EC) fan series provide a better solution to ventilation and thermal management.



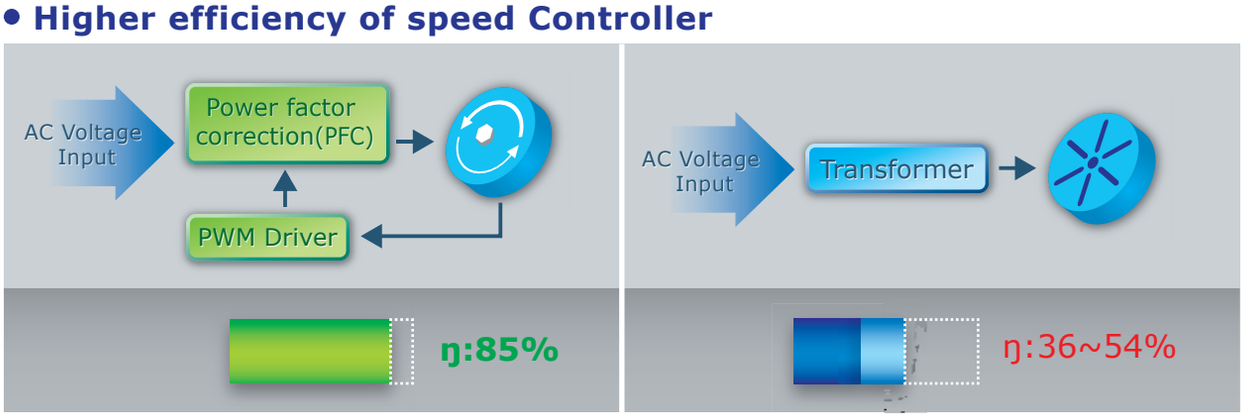
Delta Fan vs. Traditional AC Fan

Electronically Commutated (EC) Fan	Traditional AC Fan

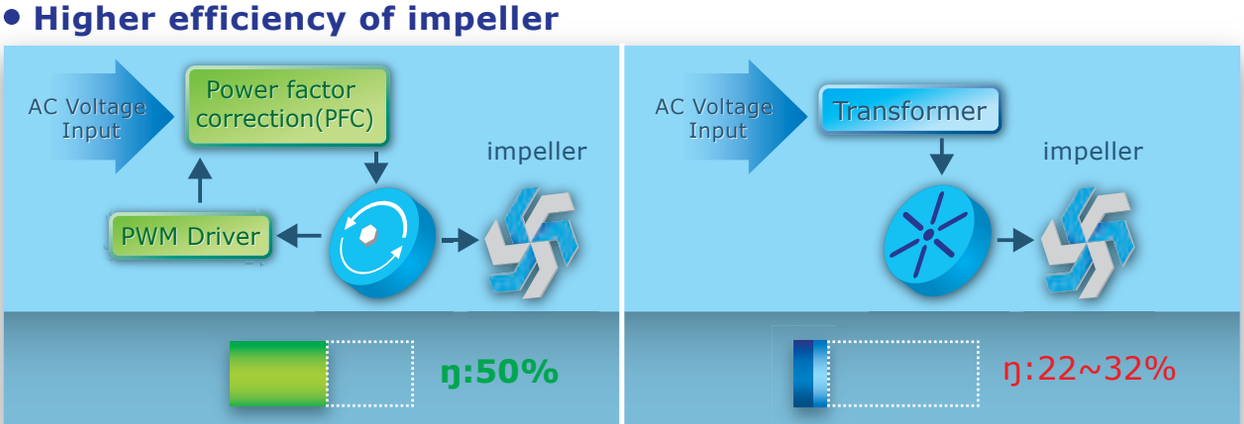
- **Motor with higher performance**

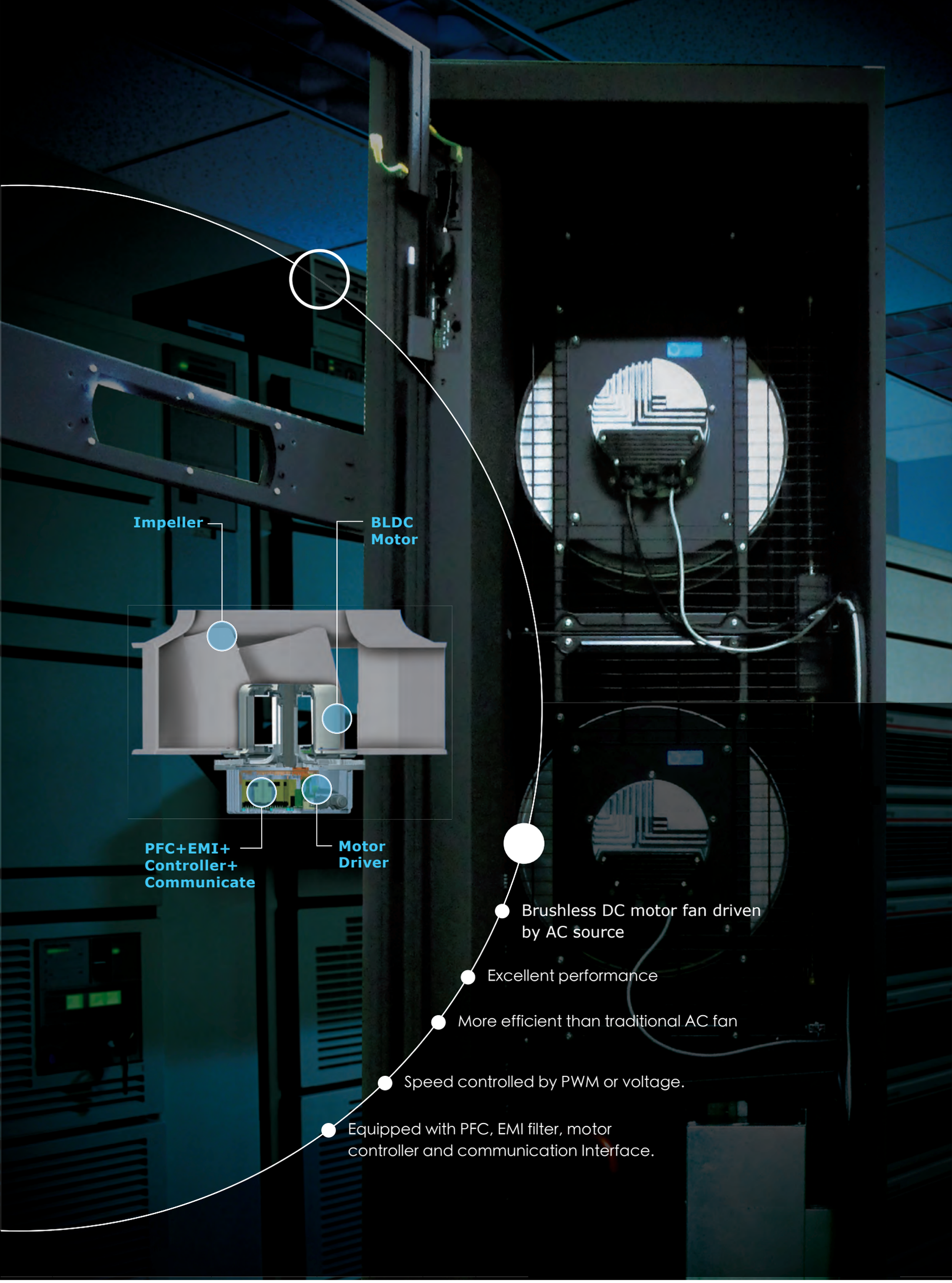


- **Higher efficiency of speed Controller**



- **Higher efficiency of impeller**





- Brushless DC motor fan driven by AC source
- Excellent performance
- More efficient than traditional AC fan
- Speed controlled by PWM or voltage.
- Equipped with PFC, EMI filter, motor controller and communication Interface.

Applications

Precision Cabinet Air Conditioner

Data center room

Telecommunication room/base station

High end laboratory

Communication System

High end server

Heat exchanger equipment

Renewable Energy Equipment

Wind power converter

Photovoltaic inverter

Air Conditioning System

Fan coil unit

Cleanroom

Refrigeration and air conditioning

Air handling unit

Outdoor unit for heat dissipating

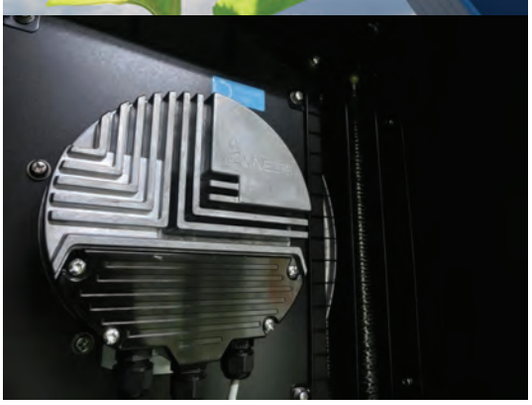
Facility ventilation

Public Infrastructure

Basement ventilation

Parking space ventilation

Tunnel ventilation



Product Features

AC source input

Use the common AC voltage range in industry and Commercial

Wide operating voltage range

Single phase AC power system: 200VAC ~ 277VAC

Three phases AC power system: 380VAC ~ 480VAC

Stable speed

More stable rotation speed than traditional AC fan

Electronic protections

Provide over-voltage, over-current, over-temperature and impeller-locking protection With EMC and PFC solutions

Easy speed controlling and condition monitoring

Through the MODBUS RS485 standard communication interfaces, users are able to use system instructions to control and monitor the fan.

Low vibration and Low noise

Delta's unique motor control technology, can effectively reduce the mechanical vibration and electrical noise

High efficiency

Compliance with ERP2015

Reliability test

In order to provide the best quality products and highest satisfactions to customers,Delta has executed several laboratory accreditation tests to exam the products' performances,endurances under tough conditions, and adopted robust construction to ensure the high reliabilities of products.

- **Waterproof test**
- **Package Drop / Bump test**
- **Vibration and Earthquake test**
- **Shock test**
- **Highly accelerated life test**
- **Gas corrosion test**
- **Sand and dust test**
- **Salty spray test**
- **Thermal shock test**
- **Temperature test**
- **High temperature test**
- **Life expectancy test**
- **Electromagnetic interference test**

Wind tunnel test
AMCA 210/85

Motor module test

HALT
IPC 9592

IP test
IEC 60529

Salt fog test
IEC 68-2-11

Gases corrosion
IEC 60068-2-42/43

Vibration test
IEC 60068-2-6

Mechanical shock
IEC 68-2-27

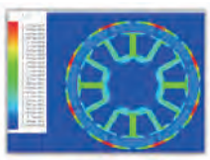
Bumping test
IEC 68-2-29

Thermal shock
IEC 60068-2-14

High / Low temperature test

Real time Monitor Life Test

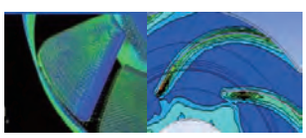
High Efficiency / Lightweight EC Motor



Brushless DC motor

High Efficiency FAN

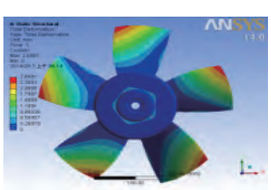
High efficiency / low noise Impeller



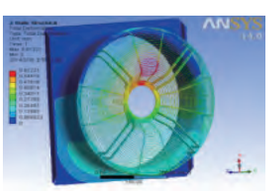
Multi-section design

Structure Design

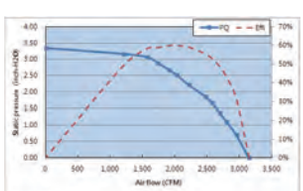
Stress / Fatigue / Harmonic simulation



Robust design



Fan Performance

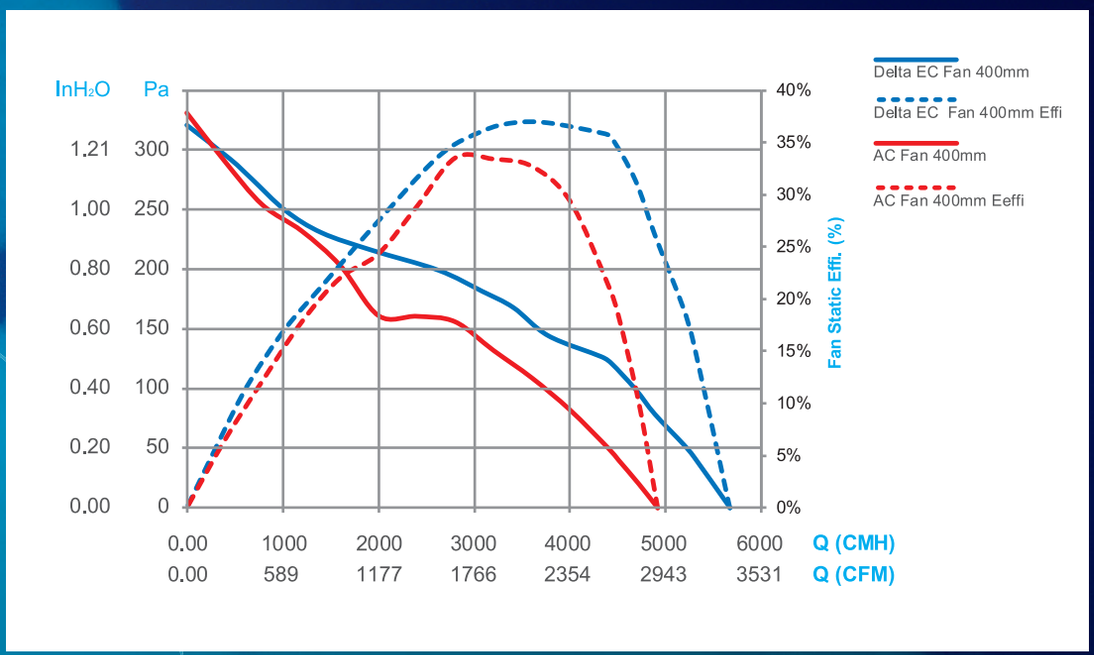


Blower fan efficiency >55%
Axial fan efficiency > 40%

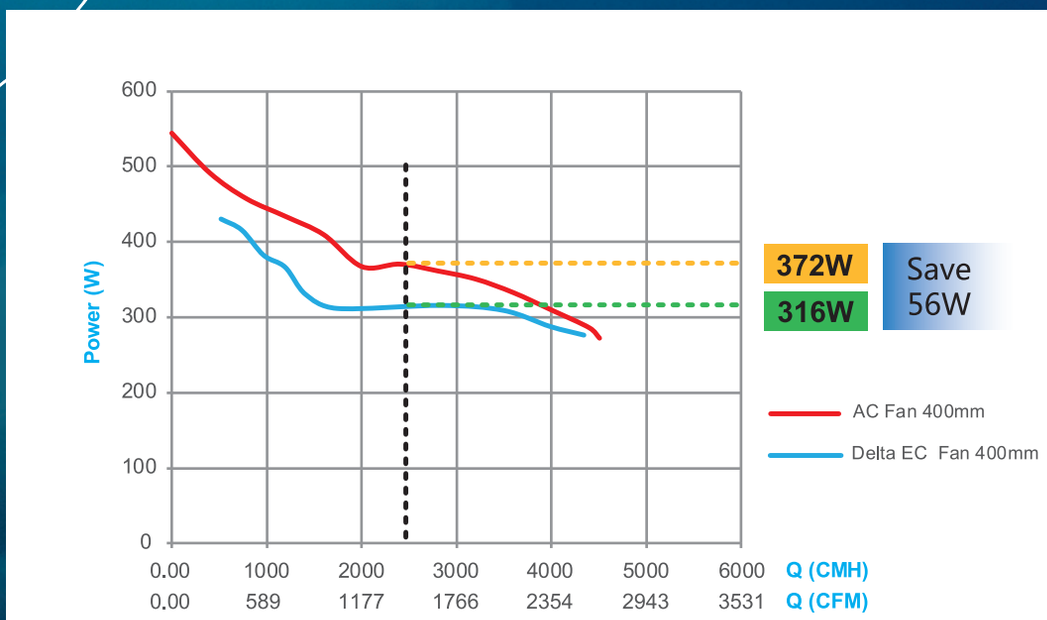
Control Module

High efficiency (>95%)
PFC design
SVPWM motor control
RS485 interface

Comparison to AC Fan - Greater efficiency, Higher air flow

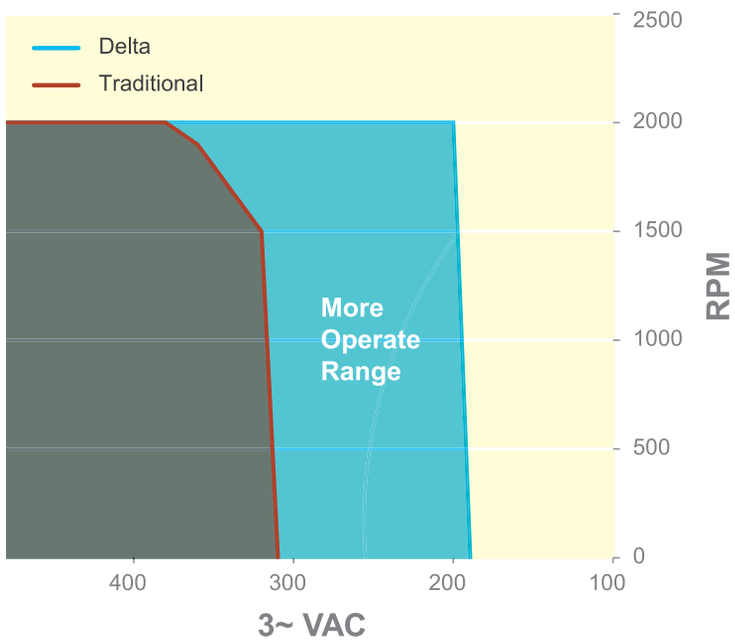


Comparison to AC Fan – Lower energy consumption



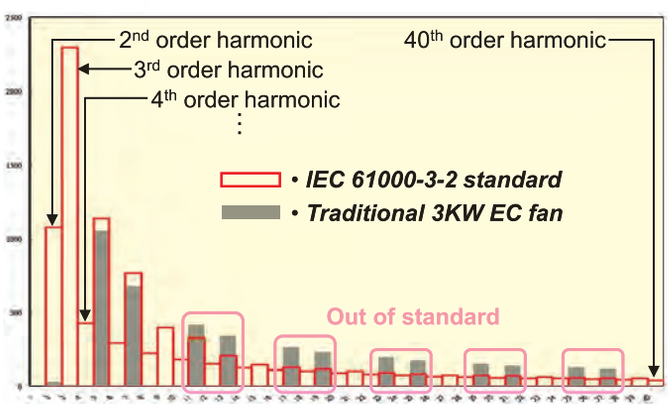
Innovative Customized Solutions

Wide range/ 3 phase

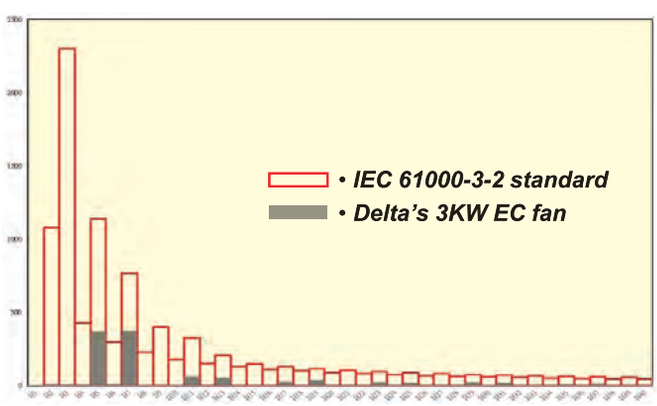


Harmonic Improvement for 3ψ APFC

Traditional Three Phase EC fan



Delta's Three Phase EC fan



	Traditional three phase EC Fan	Delta's three phase EC Fan
Input voltage range	3 ϕ 380V~480V	3 ϕ 380V~480V
Power factor correction (PFC)	**Passive**	**Active**
Total harmonic distortion (THD)	33%	13%
Harmonic standard (IEC 61000-3-2)	Out of	Pass
Power factor (PF)	0.9 @ full load	0.9 @ 1/5 load 0.98 @ full load

Model Number Structure

GT	W	020	E	U	B	12	--
Series	Fan type	Fan Diameter	AC voltage type	Safety	Motor Diameter	Height	Other

GT series

W Axial fan with Wall Ring
B Centrifugal Fan

020 = 200mm

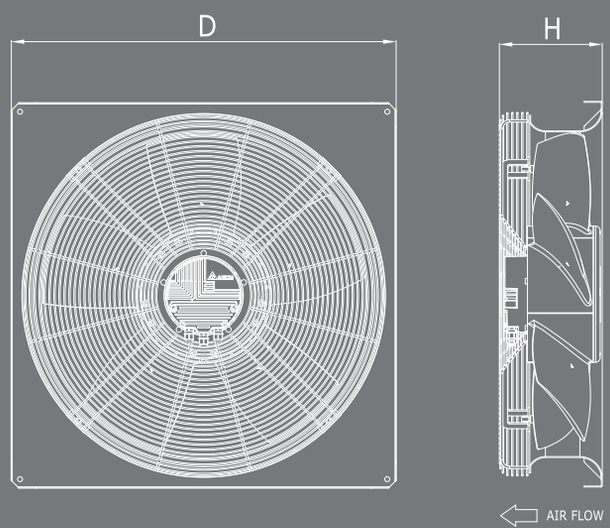
E 1-PHASE 220VAC with APFC
F 1-PHASE 220VAC with PPFC
N 3-PHASE 380VAC with APFC
P 3-PHASE 380VAC with PPFC

U UL, cUL, TUV
H CCC

12 = 120mm

B OD 74mm 0.2KW
C OD 84mm 0.5KW
D OD 116mm 1.0KW
J OD 84mm 1.0KW
N OD 112mm 2.0KW
T OD 150mm 3.1KW
U OD 150mm 4.0KW

Product specifications



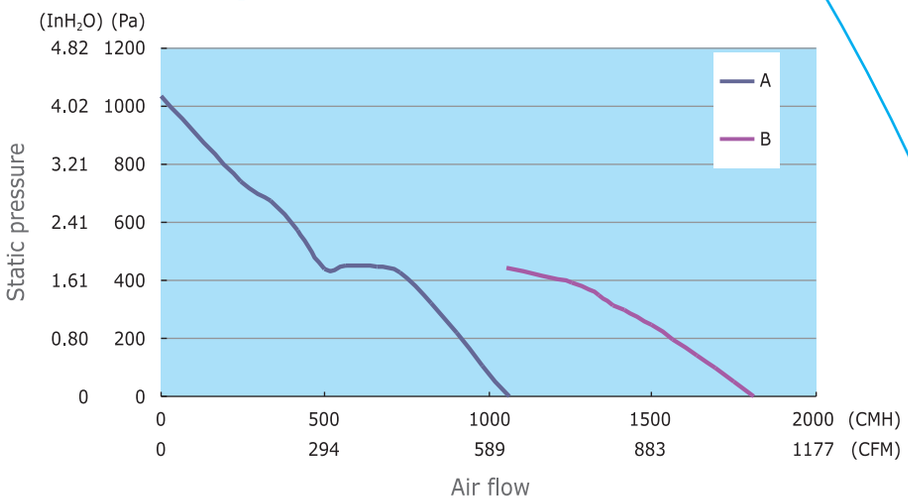
Dimension "D" is defined as axial fan Max. Length and Width.
Dimension "H" is defined as axial fan Max. thickness.

Axial Fan

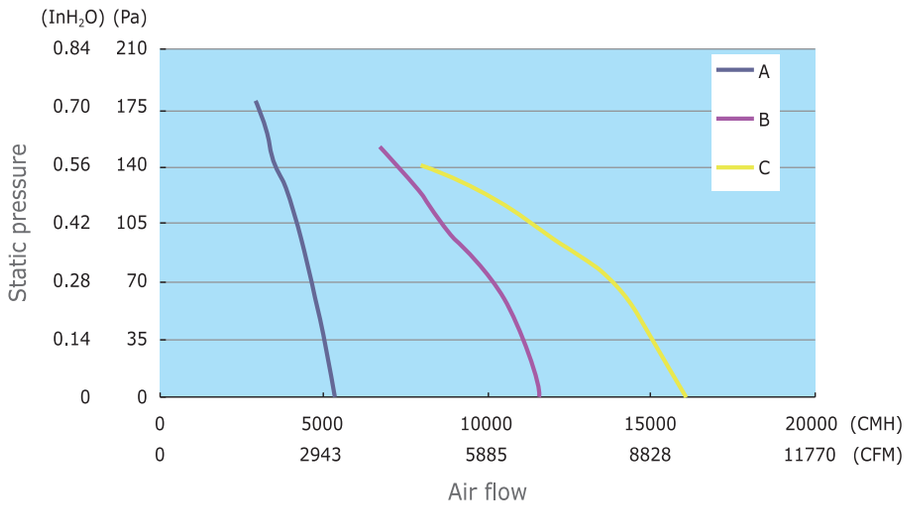
BEARING SYSTEM	BALL BEARINGS
MOTOR PROTECTION	OVER TEMPERATURE
PROTECTION CLASS	I
IP LEVEL	IP54
OPERATING TEMPERATURE	-25 ~ +60 °C

Model Name	Dimension (D x H)	Working Voltage	Max. Power	Speed	Max. Flow	Max. Pressure	PQ
	mm x mm	VAC	W	RPM	CMH / CFM	Pa / InH_2O	
GTW020EUB12	200 x 122	1ψ 200~240	240	6000	1082 / 637	1037 / 4.16	A
GTW025FUC16	253 x 158	1ψ 200~277	360	3800	1843 / 1084	445 / 1.79	B
GTW040FUC15	528 x 154	1ψ 200~277	420	1650	5299 / 3119	179 / 0.72	A
GTW063EUD19	805 x 215	1ψ 200~277	800	1060	11590 / 6821	151 / 0.61	B
GTW071PUD22	850 x 227	3ψ 380~480	1000	850	15898 / 9356	140 / 0.56	C
GTW080NUT24	970 x 244	3ψ 380~480	2200	1020	26499 / 15597	229 / 0.92	A
GTW091NUT24	1070 x 242	3ψ 380~480	2200	885	30849 / 18157	162 / 0.65	B

GTW020/025



GTW040/063/071



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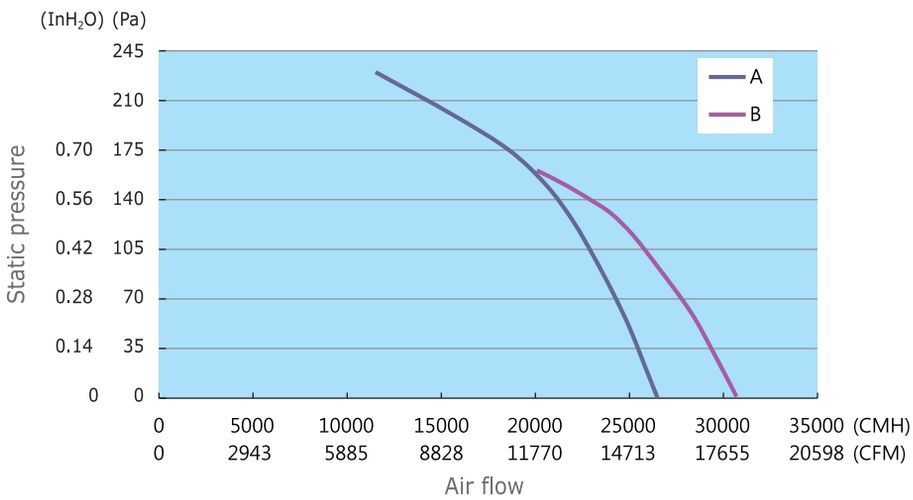
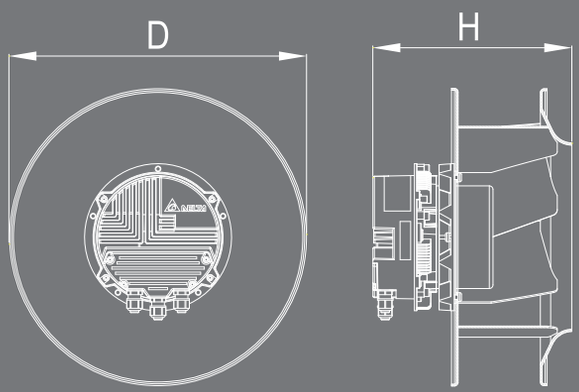


Product specifications

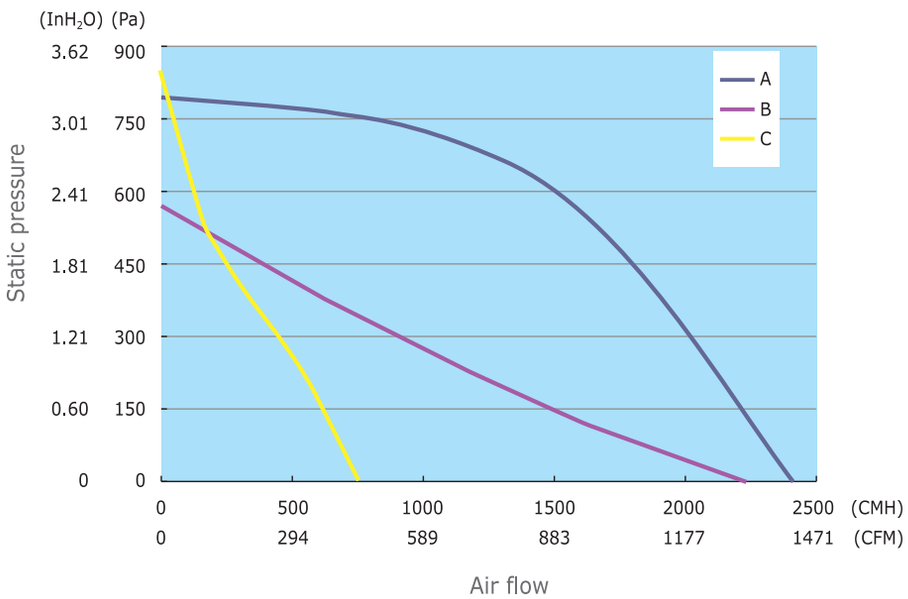


Centrifugal Fan

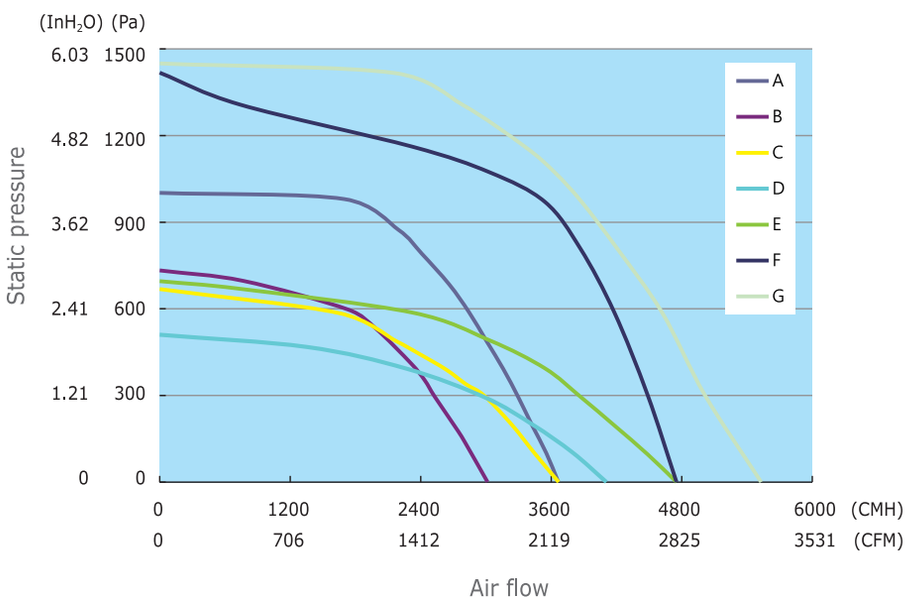
BEARING SYSTEM	BALL BEARINGS
MOTOR PROTECTION	OVER TEMPERATURE
PROTECTION CLASS	I
IP LEVEL	IP54
OPERATING TEMPERATURE	-25 ~ +60 °C

Model Name	Dimension (D x H)	Working Voltage	Max. Power	Speed	Max. Flow	Max. Pressure	PQ
	mm x mm	VAC	W	RPM	CMH / CFM	Pa / InH_2O	
GTB025FUC19	254 x 194	1ψ 200~277	530	3050	2416 / 1422	792 / 3.18	A
GTB028EUB16	280 x 160	1ψ 200~277	180	2020	2223 / 1308	569 / 2.3	B
GTB019FUA07	190 x 70	1ψ 200~277	88	3200	757 / 446	855 / 3.4	C
GTB031PUJ22	319 x 220	3ψ 380~480	1000	3060	3014 / 1774	1002 / 4.02	A
GTB031FUC20	319 x 198	1ψ 200~277	530	2500	3666 / 2156	733 / 2.94	B
GTB036FUC21	360 x 210	1ψ 200~277	510	2100	3669 / 2159	668 / 2.69	C
GTB036FUC23	360 x 230	1ψ 200~277	500	1730	4108 / 2417	510 / 2.05	D
GTB036EUD25	360 x 250	1ψ 200~277	800	2030	4752 / 2797	696 / 2.80	E
GTB036PUD25	360 x 250	3ψ 380~480	1000	2200	5190 / 3054	829 / 3.33	F
GTB036NUN29	360 x 288	3ψ 380~480	1800	3150	5530 / 3255	1450 / 5.8	G

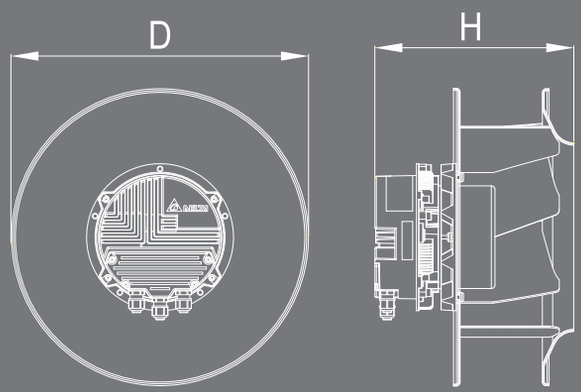
GTB019/025/028



GTB031/036



Product specifications

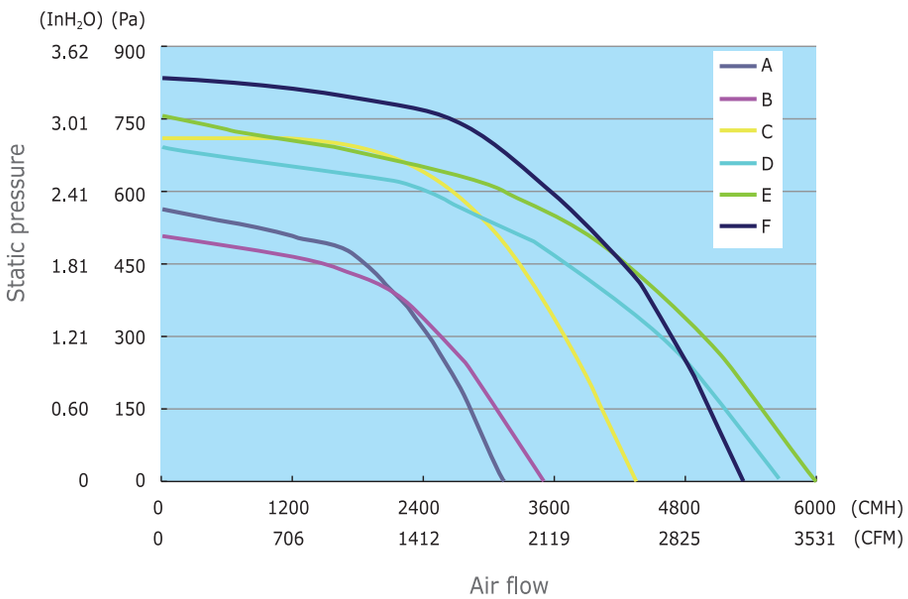


Centrifugal Fan

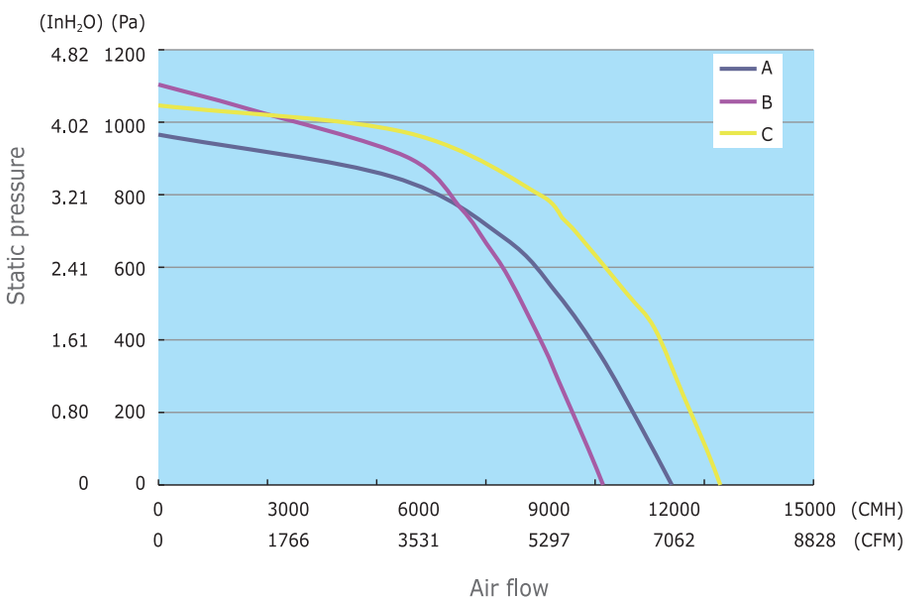
BEARING SYSTEM	BALL BEARINGS
MOTOR PROTECTION	OVER TEMPERATURE
PROTECTION CLASS	I
IP LEVEL	IP54
OPERATING TEMPERATURE	-25 ~ +60 °C

Model Name	Dimension (D x H)	Working Voltage	Max. Power	Speed	Max. Flow	Max. Pressure	PQ
	mm x mm	VAC	W	RPM	CMH / CFM	Pa / InH_2O	
GTB040FUC20	404 x 202	1ψ 200~277	430	1600	3153 / 1857	563 / 2.26	A
GTB040FUC23	404 x 227	1ψ 200~277	430	1500	3512 / 2068	510 / 2.05	B
GTB040EUD24	404 x 245	1ψ 200~277	800	1845	4374 / 2574	707 / 2.84	C
GTB040EUD26	404 x 256	1ψ 200~277	800	1750	5693 / 3350	689 / 2.77	D
GTB040PUD26	404 x 256	3ψ 380~480	1000	1850	6000 / 3531	755 / 3.03	E
GTB040PUD27	404 x 270	3ψ 380~480	1000	2140	5352 / 3150	831 / 3.34	F
GTB056NUT37	567 x 366	3ψ 380~480	3100	1500	14109 / 8299	966 / 3.88	A
GTB050NUT34	505 x 337	3ψ 380~480	3100	1820	12221 / 7193	1104 / 4.43	B
GTB063NUU44	637 x 436	3ψ 380~480	3600	1480	15442 / 9089	1046 / 4.2	C

GTB040



GTB050/056/063



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Dealer