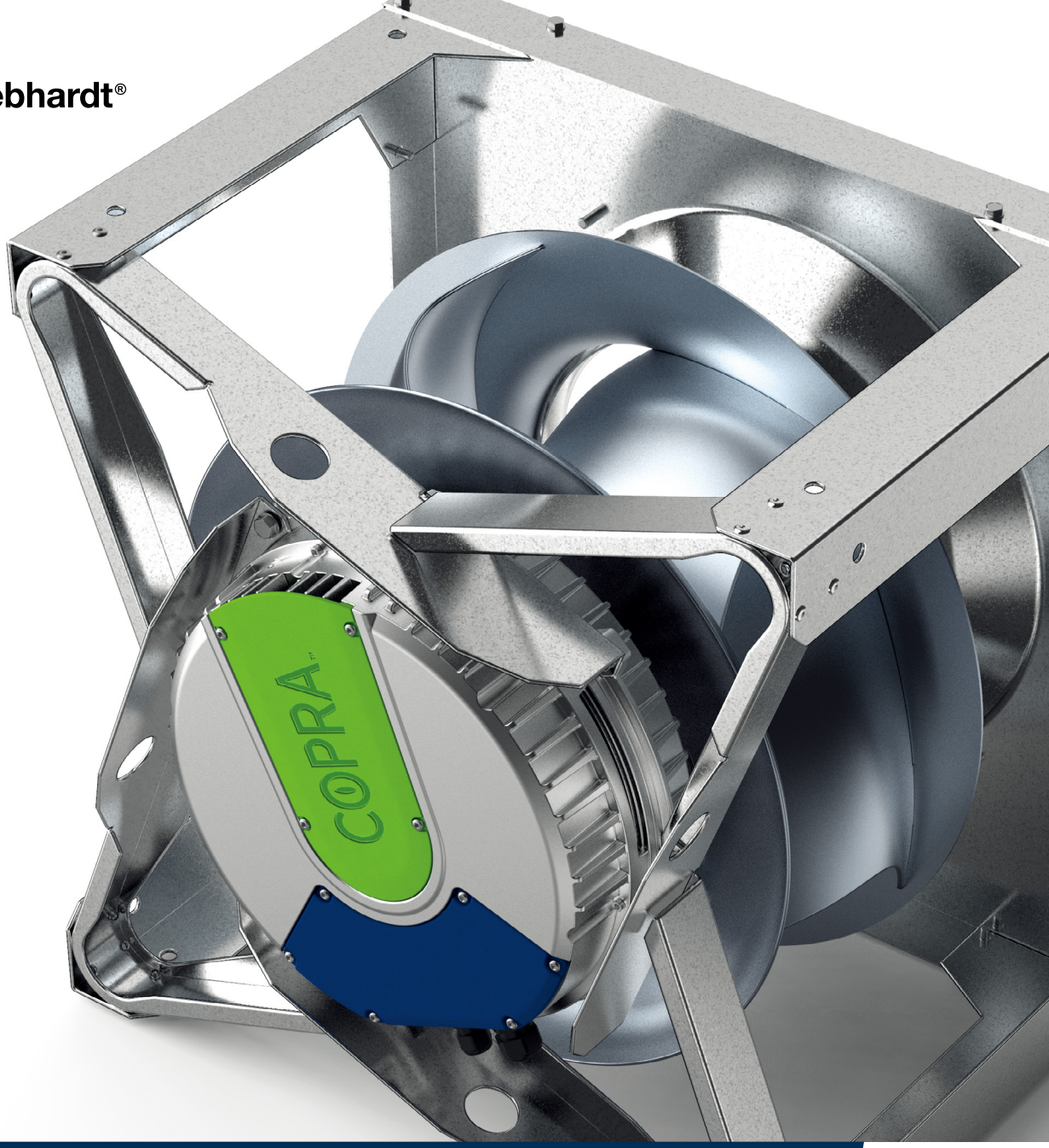
NICOTRA Gebhardt®

A REGAL REXNORD BRAND



COPRA™ PLUG FANS

COMPACT AND EFFICIENT. THE PERFECT MATCH.

THE SPACE-SAVING CENTRIFUGAL FAN SYSTEM.

MOONMYUNG

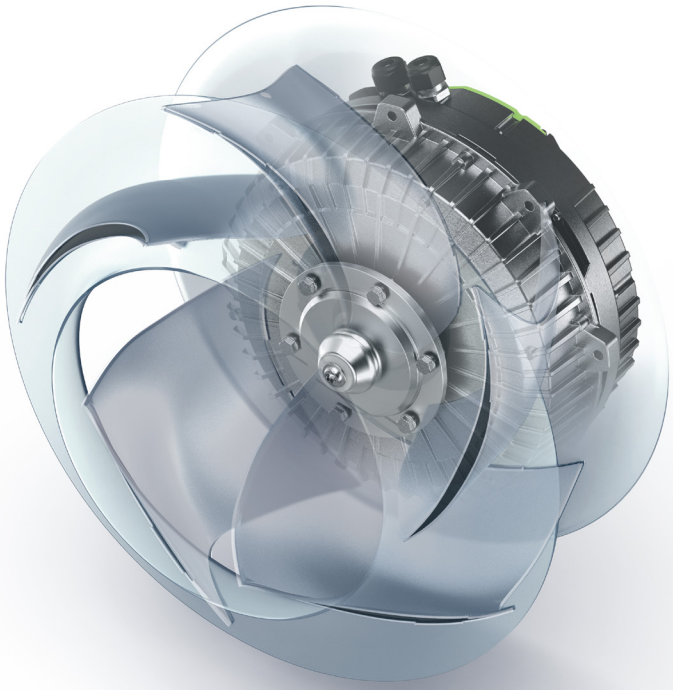
RegalRexnord™

PUTTING AN END TO COMPROMISE

COPRA™ fans combine high system efficiency, decisive compactness and high power density for the best overall performance.

The new space-saving COPRA system is comprised of a motor, impeller and integrated controller. It combines three properties in a way that previously seemed almost impossible: exceptional compactness, outstanding system efficiency and high power density. Its short motor does not restrict airflow while minimizing the space needed for the system. This, with the newly developed aerodynamic impeller design, delivers maximum efficiency – especially at reduced operating speeds.

Compared to conventional plug fans, COPRA™ fans offer maximum airflow with the greatest possible efficiency and significantly reduce footprint for all sizes. With its low installation losses, the new aluminum impeller demonstrates its advantages to the fullest, even in confined installation conditions. This makes COPRA fans the ideal solution in HVAC systems, data centers, and many other areas.



Why only improve, when you can reinvent?

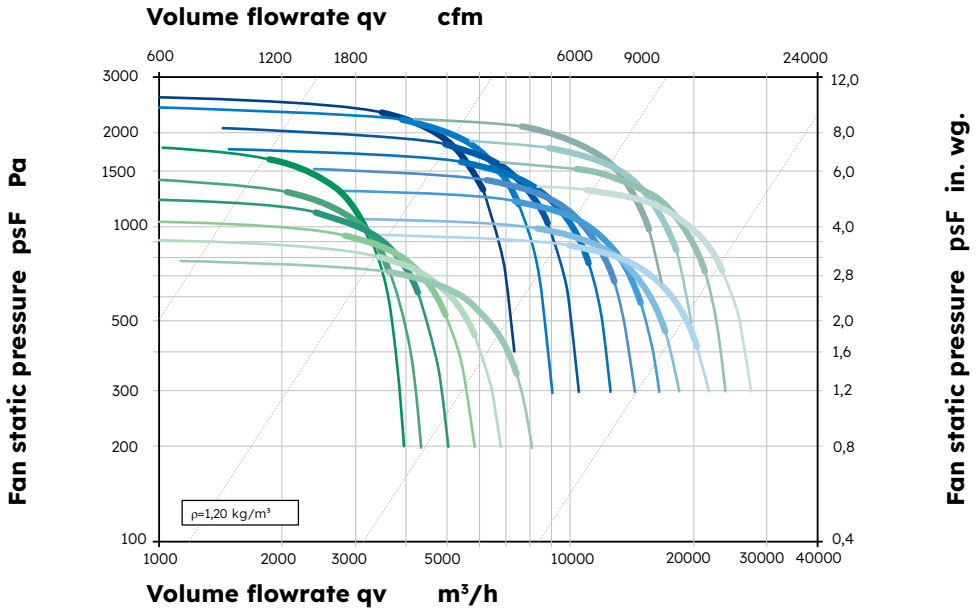
For good reasons, plug or hybrid radial fans have largely replaced fans with scroll housings in air-conditioning applications. Even though the latter have some positive physical characteristics, plug fans take up less space, and drive losses due to belts, bearings or couplings are not an issue. Planners are particularly focused on lower pressures.

In addition, the European Ecodesign Directive prescribes variable-speed drives. This favors directdrive solutions. In terms of physics, plug impellers can only achieve a pressure increase or energy conversion via two factors: a swirl added to the flow and a maximum delay in the relative flow in the impeller's blade channel.

A swirl in the flow at the exit from the impeller is unavoidable and necessary for energy conversion. However, this swirl also represents a loss in air-conditioning applications. As a result, fan concepts of this kind can achieve maximum aerodynamic system efficiencies of around 70%. We have achieved these maximum plug static efficiencies with COPRA™ fans.

The only way to gain more static efficiency from the energy of the flow swirl at the impeller exit is to use guide vanes, specifically a direct-driven hybrid fan with multiple discharge scrolls. However, this is typically less compact in design. Taking the above aspects into account, we have achieved greater aerodynamic efficiency levels with a reduced footprint in the development of the COPRA system.

Consolidated characteristics: overview of sizes.

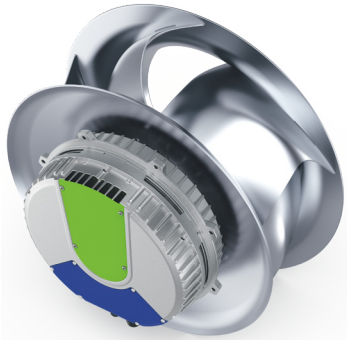


The chart shows an overview of sizes 280 mm to 710 mm with up to 8 kW motor power at the maximum speed of the respective size. The ranges with the best overall static fan efficiencies (operating range with best efficiency) are highlighted.

COPRA™

COPRA CORE 1.3 – 8 kW COPRA PLUG 1.3 – 8 kW

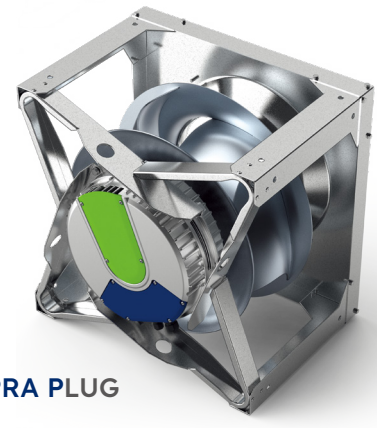
- Internal-rotor motor PM/EC technology with efficiency up to IE6
- Integrated electronics
- Air volume up to 28,000 m³/h / 16,480 CFM
- Static pressures up to 2,000 Pa / ~6.8” wg
- Installation made simple with frame system
- UL/CE certified



COPRA CORE
(upon request)

Impeller

- Aluminum, welded; 3-dimensional backward curved blade design
- Impeller diameters: 280, 315, 355, 400, 450, 500, 560, 630, 710 mm
- Maximum static pressure 2,000 Pa / ~6.8” wg
- Maximum circumferential speed at impeller outer diameter: ~70 m/s
- Conical backplate



COPRA PLUG

Motor

- 1.3 kW, 4.5 kW, 8 kW
- 200-240 V 50/60 Hz 3~
- 380-480 V 50/60 Hz 3~
- No use of rare earth magnets
- Operating temperature range: -20 to +40 °C

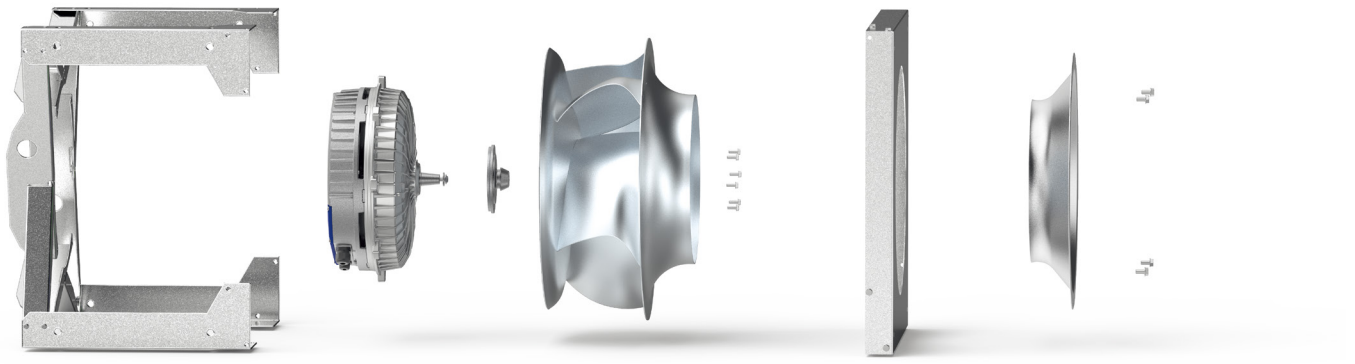
A PERFECT COMBINATION

**Maximum airflow, maximum efficiency together on one unit;
with COPRA™ fans, the motor and impeller are optimally matched.**

In the new COPRA™ fans, a perfect combination of impeller and motor across all sizes ensures maximum airflow with the highest possible efficiency and no mutual aerodynamic interference. Every application benefits from the perfect fit of COPRA™ fans' motor and impeller. Aerodynamically, the new impeller is one of the best currently available. It also enables a perfect symbiosis with the new motor form factor. Since the new internal-rotor motor is very short and its motor hub does not recede into the impeller it does not obstruct the impeller airflow. And at the same time, the overall system is highly compact and has a small footprint.

Standout features: maximum aerodynamic efficiency levels with ultra small footprint.

Conventional plug fans with external-rotor motors are hard to improve in terms of system efficiency and compactness. The greatest optimization potential for fan systems lies in adapting the characteristics of the drive required for the application in terms of the geometry and specifications – without aerodynamic disturbance or the need for additional cooling. It is precisely this goal – the perfect motor/impeller combination – that we have pursued and achieved in the development of COPRA™ fans. We have perfectly matched the motor and impeller geometrically and with regard to the necessary power, speed and speed range, aerodynamics, pressure increase, and corresponding torque. We have eliminated any mutual aerodynamic interference.



The Impeller

The new aluminum impeller with its advanced geometry can compete aerodynamically with the best impellers. Its threedimensional backward curved blade design provides the necessary width to achieve a physical balance of forces between the flow lines and flow surfaces. It avoids an unfavorable crossflow within the impeller. The profiled design (hollow profile) achieves the best aerodynamic properties at the respective flow surfaces for the pressure increase in the blade region. The profile cross-sections are designed as airfoils, in order to optimize the flow on the suction and pressure sides of the blades at every position within the impeller.

The Motor

The COPRA™ fans' motor sets the benchmark with its maximum efficiency and high effectiveness. At the same time, it has to be as compact as possible in combination with the impeller – and without negatively affecting the aerodynamics. For centrifugal fans with an impeller within a plug arrangement, this means the motor must be as short as possible. We have achieved all this with the PM/EC motor in COPRA™ fans. It achieves an efficiency class of up to IE6. Moreover, the COPRA™ fans' motor does not require direct cooling by air circulation or a separate cooling system. The integrated cooling of the motor electronics is sufficient. In any case, the motor's high efficiency means it requires less cooling. This makes the motor and system extremely reliable in operation.

Compact and efficient without impeller obstruction: COPRA™ fans make the impossible possible.

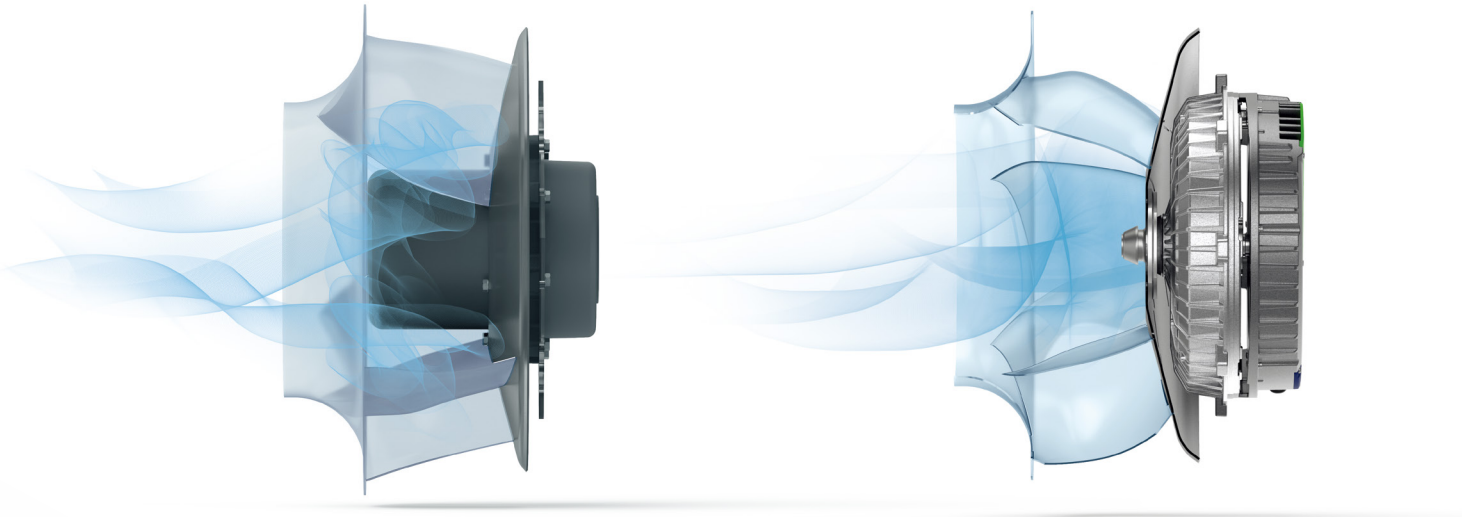
The size and shape of an external-rotor motor have an immense impact on the aerodynamic efficiency of a fan. The problem here is obstruction of the impeller airflow. With COPRA™ fans, it has been possible to avoid impeller obstruction and still achieve an extremely compact, highly efficient centrifugal fan system with an internal rotor. Solutions that are compact but compromise on efficiency are now a thing of the past. COPRA™ fans therefore unlock completely new potential for saving energy and costs.

Partly because of how they were historically developed, the design of external-rotor motors is better suited to axial flow fans than centrifugal fans. Nevertheless, despite the aerodynamic disadvantage of obstructing the airflow in the impeller, they have also become widely used for centrifugal fans. However, especially with compact EC motors, the motor protruding into the impeller significantly reduces system efficiency.

Pulling the motor out of the impeller – withdrawing it into a cone-shaped impeller or backplate – does reduce impeller obstruction, because the fan hub no longer protrudes into the impeller. However, this sacrifices the system‘s footprint.

Yet compactness is a crucial requirement in many applications. This is because, particularly where space is limited, fan solutions with pulled-out motors cannot be implemented in some applications due to their length.

Using an EC external-rotor motor in a plug fan is always a compromise between efficiency and overall length. This is why COPRA™ fans, with a very short internal-rotor motor, consistently prove to be the ideal, compromise-free, and therefore highly economical, system solution.



Fan solution with external-rotor motor and obstruction of the airflow in the impeller.

Fan solution with COPRA™ technology, without obstructing the airflow in the impeller.

CREATING SPACE WHERE THERE IS NONE

In short, COPRA™ fans are the ideal system for tight installation spaces.

In the new COPRA™ fans, it has been possible to make the internal rotor motor so short that it does not obstruct the impeller's airflow as is the case in conventional fan solutions. This creates ideal conditions for particularly economical operation even in tight installation spaces; the shortest axial length with maximum efficiency.

At the same time, the new motor/impeller concept ensures very low installation losses. There are hardly any unexpected, disadvantageous interactions between fan and application. A major reason for this is the modified overall geometry of the impeller.

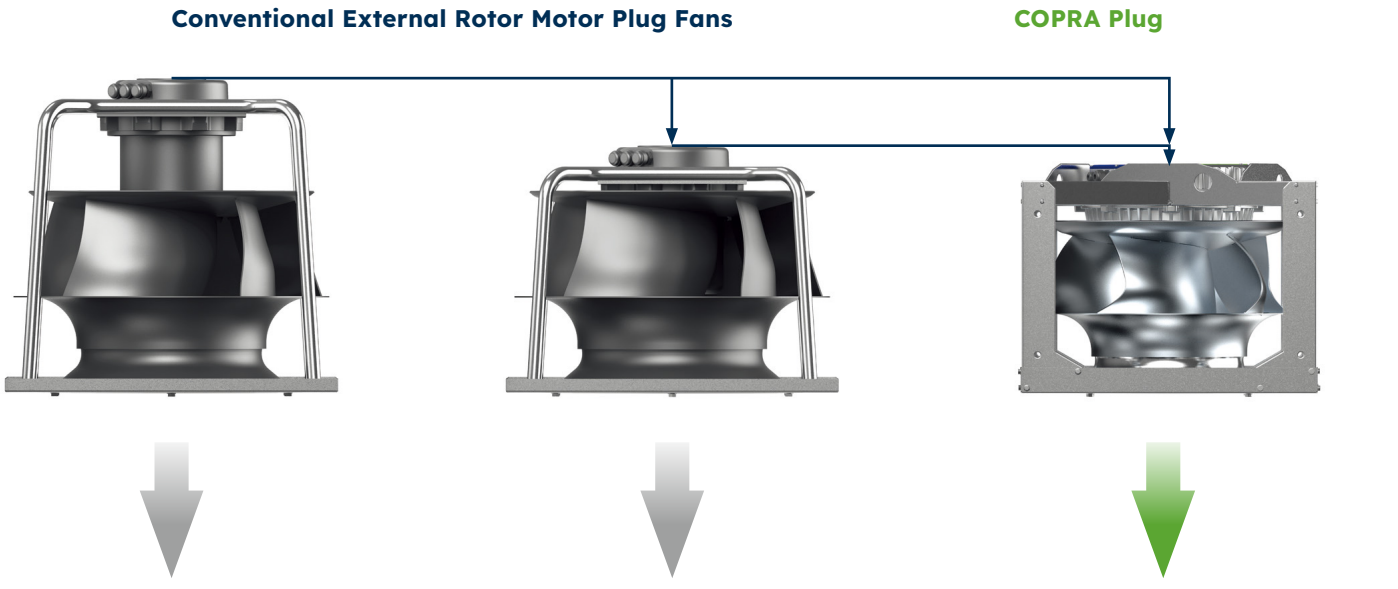
No more compromise: short axial length plus high efficiency.

Typical competitive fans use external rotor motors while COPRA™ fans use a compact internal rotor motor. For fans with external rotor motors (left), pulling the motor out of the impeller provides high efficiency, but makes the system longer. In addition, cooling is required for the external rotor motor due to the lack of air stream around the rotor in the impeller.

For systems with an external rotor located inside the impeller (center), the opposite is true. The system is compact and the motor is cooled in the airstream, but unavoidable turbulence in the impeller considerably reduces the aerodynamic efficiency.

COPRA™ fans (right) utilize the best features from both configurations without the compromises. The exclusivelydesigned short motor does not protrude into the impeller, making the system extremely compact and does not generate any turbulence. It also has integrated cooling for the electronics. The result is the best efficiency with maximum compactness of the system.

With its outstanding compactness, COPRA™ fans are ideal for use in specific applications in data centers, or in ventilation and air-conditioning system fan arrays, where installations can often be made a crucial few centimeters shorter. This results in valuable material cost savings.



High Efficienc
Long axial lengt

Low Effciency
Short axial length

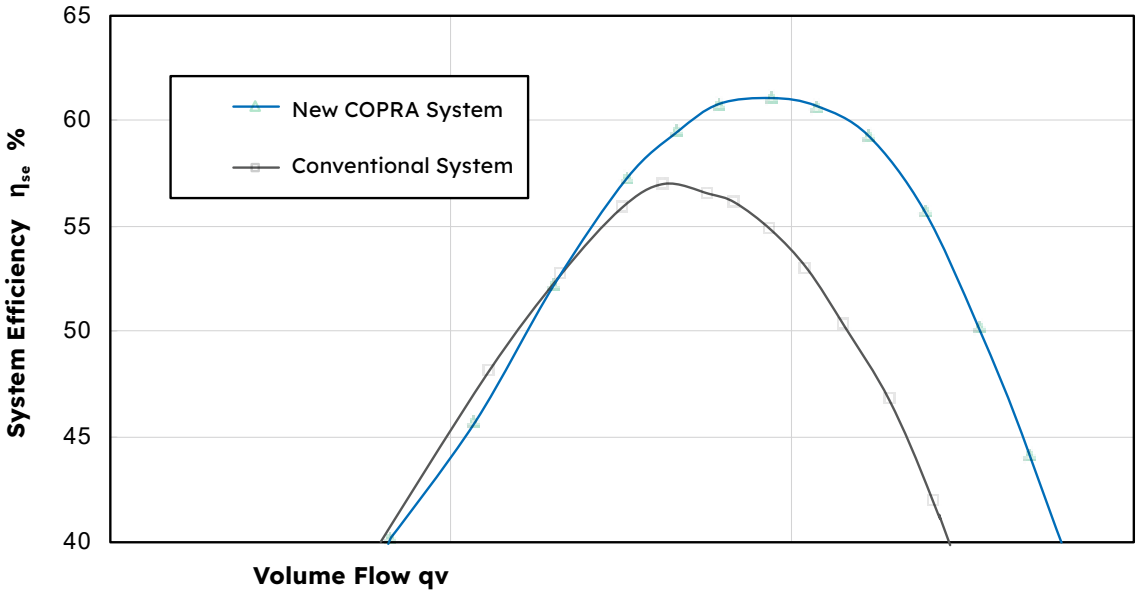
Combined highest efficiency
with shortest axial length

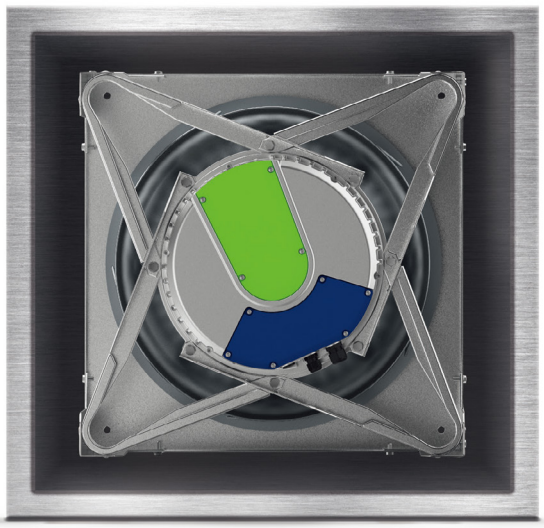
COPRA™ fans:
the perfect system for tight installation spaces.

Tight installation spaces cause many challenges for centrifugal fan systems. The usual problem here is that the fan is not running under ideal conditions, and efficiency drops due to the limited gap between the fan and the chamber walls. In this case, the actual values can differ significantly from the catalog data measured in the laboratory.

COPRA™ fans, by contrast, show their strengths particularly under such difficult installation conditions. The technical reasons for this are found in the modified overall geometry of the impeller. They include its three-dimensional properties with large flow surfaces resulting in relatively low flow velocities, as well as the conical backplate and different diameters on the backplate and cover plate.

Compared to conventional EC fans, for example, COPRA™ fans attain the maximum achievable aerodynamic static pressure increase and static efficiency. The specific performance, i.e. the relationship between the power consumption for given diameters and speeds, and the volume of air moved, has been optimized.





In this example, we compare VGreen Evo (TM) motor series fan with the COPRA system under otherwise identical conditions. With an installation ratio of factor 1.6 to the outer wall, in relation to the impeller diameter, COPRA™ fans achieve significantly better values, especially to the right of the optimum.

THE BEST PERFORMANCE FOR EVERYONE

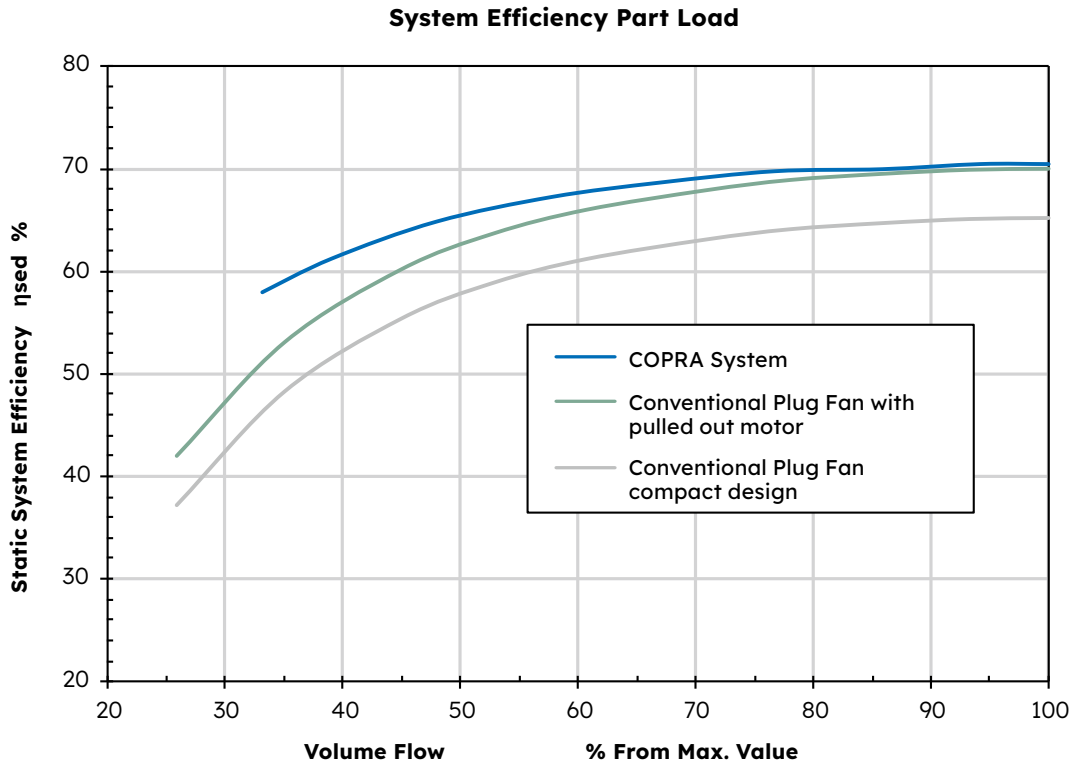
COPRA™ fans deliver excellent system efficiency andmaximum power density

With COPRA™ fans, small dimensions equal big power. The new COPRA™ fans achieve static system efficiencies of around 70 percent and more with the greatest compactness. At the same time, they offer significantly higher power density than conventional plug fans. This ensures maximum airflow with the greatest possible efficiency for every size. In many cases, COPRA™ fans reach the operating point with the next smaller size or achieve higher efficiency with the same size. When operating under reduced speed, they offer the highest system efficiency compared to conventional EC fan technology. In summary, they provide outstanding system efficiency.

Highest aerodynamic efficiency levels with greatest compactness.

COPRA™ fans provide the best reduced speed performance.

In most applications, fans do not run under full speed. They run under reduced speed as required. COPRA™ fans shine whether used for specific applications in ventilation and air-conditioning - for example, use in redundant operation in fan arrays - or in data centers. The units provide outstanding efficiencies, not only at maximum speed, but also in the reduced speed range. This is true in comparison with both compact and efficiency-optimized fans. The difference becomes particularly evident where fans with a pulled-out motor cannot be used due to a lack of space in the axial direction.



A comparison of the new COPRA™ fans with the best conventional fans with external-rotor motor shows that COPRA™ fans achieve the highest system efficiency under reduced speed compared to conventional EC fan technology.

COPRA™ fans score twice with outstanding system efficiency and highest power density.

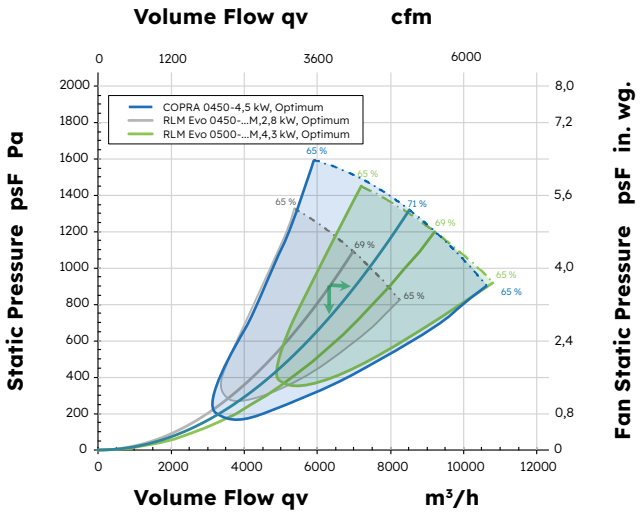
In a system efficiency comparison, COPRA™ fans' benefits are compelling. When comparing our impeller from the well-known V Green Evo (TM) motor series in size 500 with COPRA™ fans in size 450, COPRA™ fans are the clear front-runner.

Compared to the RLM EVO with IE5 PM motor technology, a smaller sized COPRA™ fan can be selected - and with at least the same efficiency.

In a comparison of plug fans, COPRA™ fans have to achieve the decisive advantage of high compactness with the highest efficiencies. Therefore, the development goal was to maximize their specific performance with the highest possible staticefficiencies. In other words, the aim was to achieve the highest possible airflow for the fan's size and speed at the highest efficiencies, i.e. maximum airflows at the respective pressure level.

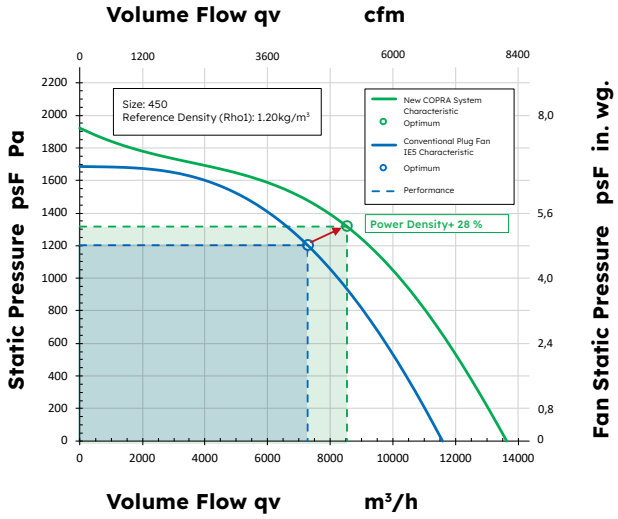
As a fan solution for specific tasks, COPRA™ fans can therefore be sized smaller than other solutions available on the market. Furthermore, the system runs at lower speeds than other solutions of the same size. And this is achieved with maximum efficiencies, lower power consumption, reduced space requirements, less noise, and also lower speeds.

Plug Fans
Comparison Optimum



In many cases, COPRA reaches the operating point with the next smaller size or achieves higher efficiency with the same size.

Plug Fans
New COPRA System with higher power density



With COPRA™ fans, specific performance has been be maximized with the highest possible static efficiencies.

LOW NOISE MEETS LIGHTWEIGHT, WORLDWIDE

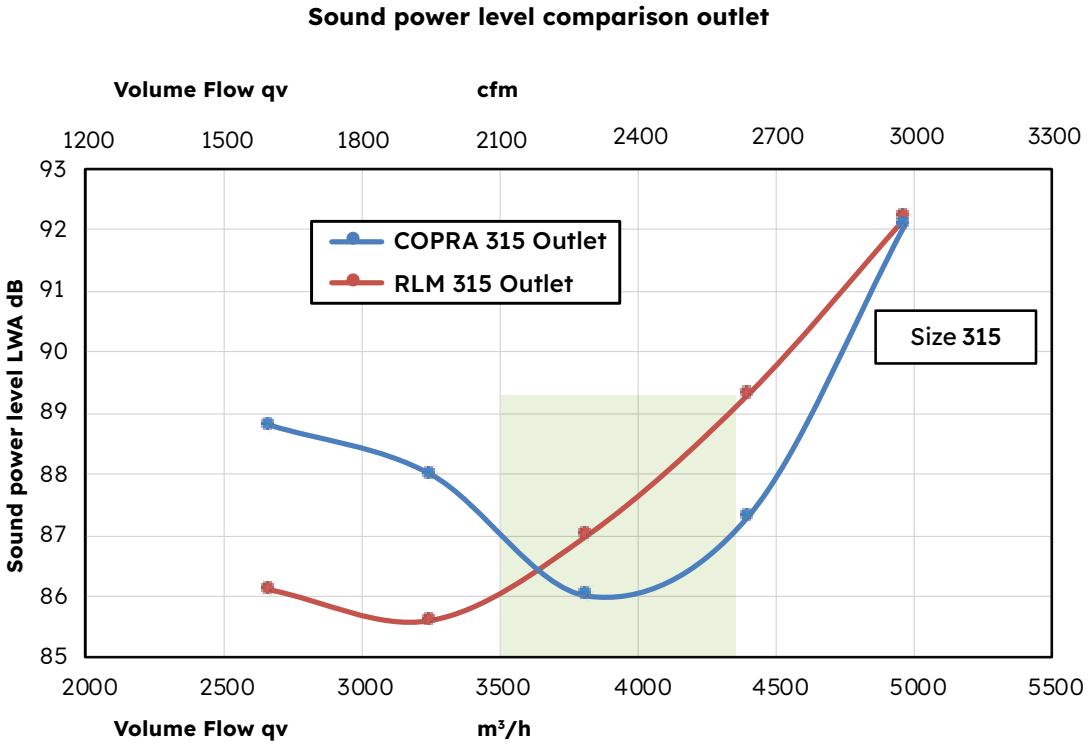
The compelling advantages of geometry and material, realized.

Whether data centers or HVAC systems, wind power or retrofit, COPRA™ fans offer decisive advantages in many applications. Planners, plant engineers and operators will appreciate their compactness, efficiency, power density and high cost-effectiveness. The system's low noise level, the material, and worldwide availability are further reasons to choose COPRA™ fans.

Low noise.

With its special blade and impeller geometry, COPRA™ fans generate less noise thanks to better flow conditions. Their psychoacoustically more comfortable frequency range is also an important advantage, especially for HVAC applications in residential and office buildings. COPRA™ fans' PM internal-rotor motors generate significantly less noise compared to external-rotor motor concepts. This, too, has a positive effect on the overall system's sound power level.

In particular, the profiled blade sections (hollow profiles) implemented with three-dimensional geometry make a significant contribution to these excellent characteristics.



For many years, our customers have appreciated the VGreen Evo (TM) motor impeller's low noise issions. But it gets even quieter: Typically, the higher noise values on the pressure side are often the most decisive facto Compared to the Evo impeller, we have achieved further improvements with COPRA in applications with pre high airflows

Enjoy all the advantages of aluminum.

COPRA's impeller is made of high-quality aluminum. The material enables hollow-profile blades and hence optimal aerodynamic geometries, while also maximizing stability. The low system inertia of the impeller allows more dynamic adjustment of the speed. At the same time, the impeller is particularly lightweight, easy to handle and also corrosion-resistant. Plus, compared to the use of plastic throughout, the wall thicknesses are thinner. Imbalances also have less of an effect. As a result, both the center of gravity and the vibration characteristics are better in challenging installation situations. This has a positive impact on the service life of the motor and fan. Another factor that is becoming increasingly important is aluminum, unlike plastic, is virtually 100 percent recyclable - ensuring a good environmental footprint.

Well positioned worldwide: one series for all requirements.

As a company, we are established worldwide and manufacture wherever our customers are. COPRA meets all requisite conditions for global use. Where you would otherwise have to configure two different series, this one series can cover all requirements worldwide - and each features unique compactness and efficiency. As a plant engineer, you no longer need additional series that could have an impact on efficiency or axial length; your stock-keeping is much simpler.

Furthermore, COPRA is equally suitable for all regions of the world, and is available globally with a uniform quality standard. A local technical presence is assured worldwide. In addition, oficial certifications have been obtained worldwide.

VERSATILITY IS ITS STRENGTH

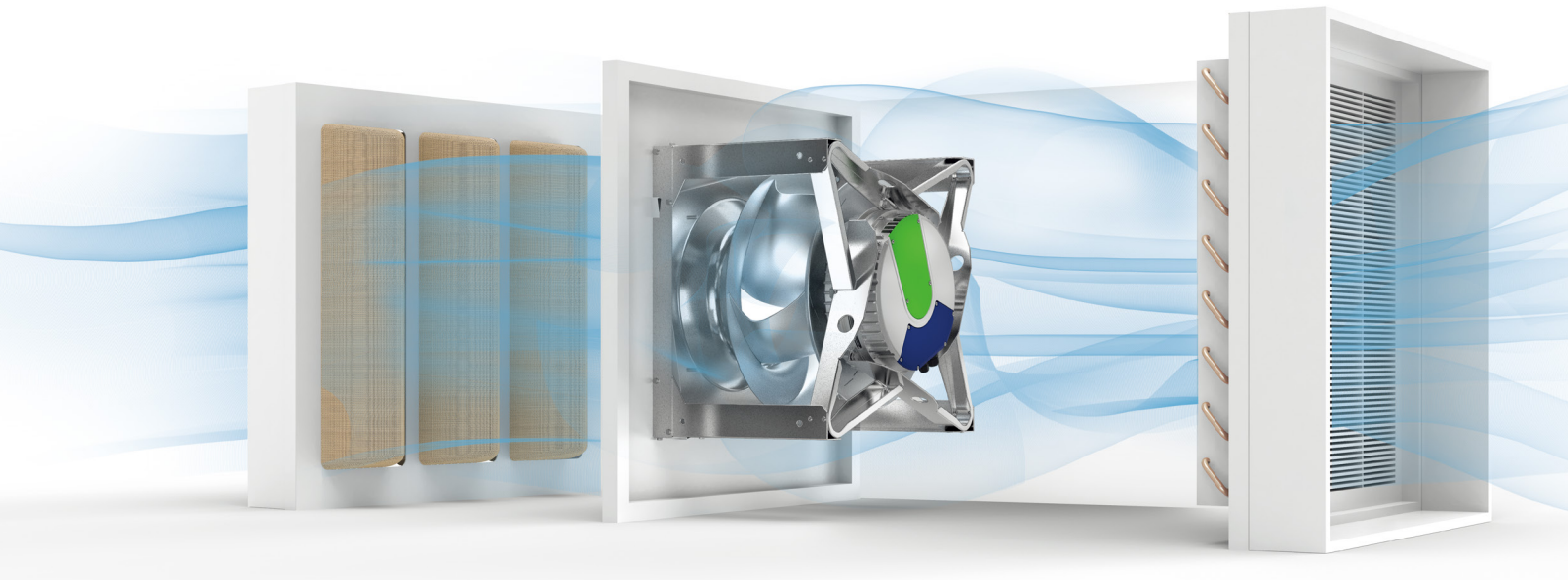
COPRA™ fans are the ideal fan for any HVAC system.

The new COPRA™ fans maximize efficiency while minimizing required space in your system. Their short motor do not obstruct airflow, while the newly developed aerodynamic impeller design maximizes efficiency at both full and reduced speeds. Perfect for simple plug-&-play installation in new HVAC systems as well as for the modernization of existing systems, COPRA™ fans can deliver significant cost savings.

The ideal plug fan for fan arrays.

COPRA™ fans are ideally suited to multiple wall configurations in the form of several fans arranged next to and above each other. Although in principle plug fans also need sufficient installation space to achieve high system efficiencies, this is often neglected in the design of fan arrays. Unwanted air turbulence causes further installation losses. COPRA™ fans are the best it for multiple wall configurations not only because of their compactness in axial length, but also because of their smallest possible diameters with high airflows.

Fan arrays are operated at reduced power to ensure a capacity reserve for redundancy operation. This is where COPRA™ fans' excellent reduced speed performance is a benefit. With a COPRA™ fan, its compactness in combination with high system efficiency and high power density ensures you get the maximum performance out of your system, whether as a single fan or as part of an array.



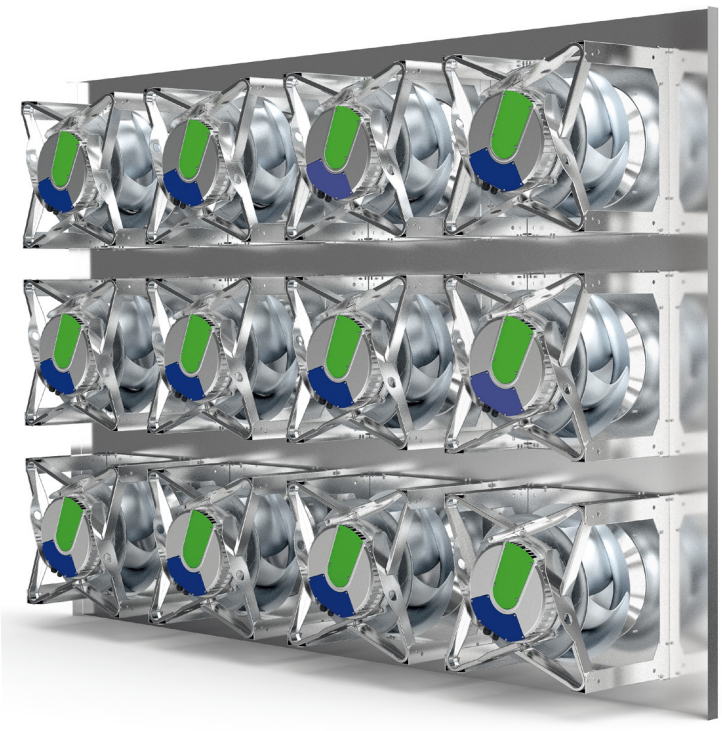
Retrofit: Replacing fans with COPRA™ fans pays off.

Replacing old, power-hungry and maintenance-intensive fans with economical devices featuring a flow-optimized design brings many advantages. From lower operating costs and CO2 emission savings to higher operational reliability and short payback times. Fans account for up to 70% of the operating costs in an overall ventilation and air-conditioning system. Take advantage of the resulting savings potential - with the new COPRA™ fans.

The question of the "best" and most economical solution when choosing fans depends on individual factors and can only be answered based on a professional system analysis. In retrofit projects, contractors will appreciate the minimal installation and maintenance work required, as well as the ease of fitting COPRA™ fans into often confined spaces. Often the preferred choice is COPRA-style units; plug fans or hybrid fans with multi-spiral baffle plate technology.

The advantages of COPRA™ fans for ventilation and air-conditioning systems, at a glance:

- High system efficiency
- Small installation depth
- High power density
- Excellent reduced speed performance
- Almost no installation losses
- Low noise
- Less installation effort



COPRA BACKWARD-INCLINED CENTRIFUGAL FAN

Ideal solution for the new generation of combined air conditioning, ventilation systems, data centers, and other fields.

The COPRA backward-inclined centrifugal fan is a new generation of efficient centrifugal fan series introduced by Regal Rexnord. COPRA combines three characteristics in a scientific manner: compact size, high system efficiency, and high power density. The ultra-thin inner rotor motor does not impede airflow and, coupled with the newly developed aerodynamic impeller design, can provide high efficiency even at full load or partial load conditions. COPRA is equipped with commonly used signal input and output interfaces in the industry, enabling intelligent control through Modbus communication. The COPRA power range is from 1.3 kW to 8 kW, offering high power density and low operational noise levels. COPRA has an IP54 protection rating and is certified by UL, CE, and CCC.

EFFICIENT

- Efficient impeller design for fluid simulation.
- Clever combination of motor and impeller, ensuring unobstructed airflow for the impeller and high transmission efficiency with direct drive from the motor shaft.
- Highly efficient motor surpassing the industry's highest IE5 energy efficiency standard with high power density.
- Independently integrated electronic control cooling system inside the motor for improved efficiency in electronic control.
- The fan achieves a maximum static pressure efficiency of over 70%, approximately 5% higher than competing products in the industry.

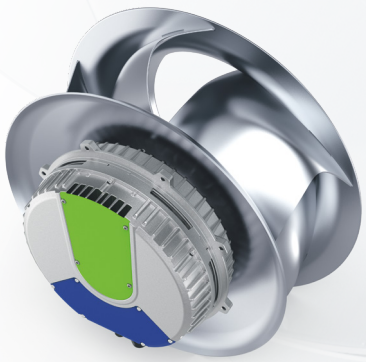
LOW-NOISE

- The special geometric shape of the blades facilitates better gas flow and reduces noise.
- Efficient motor and impeller design, resulting in approximately 2 decibels lower noise levels under typical operating conditions.

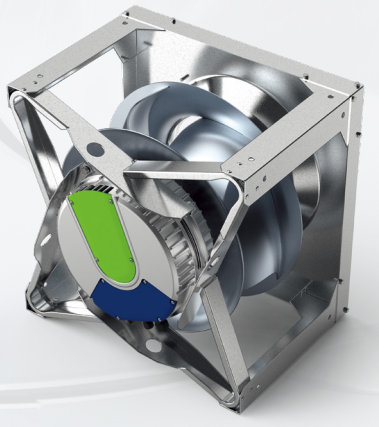
COMPACT

- Compact structure and small size.
- Superior performance in narrow spaces, saving more installation space for customers.

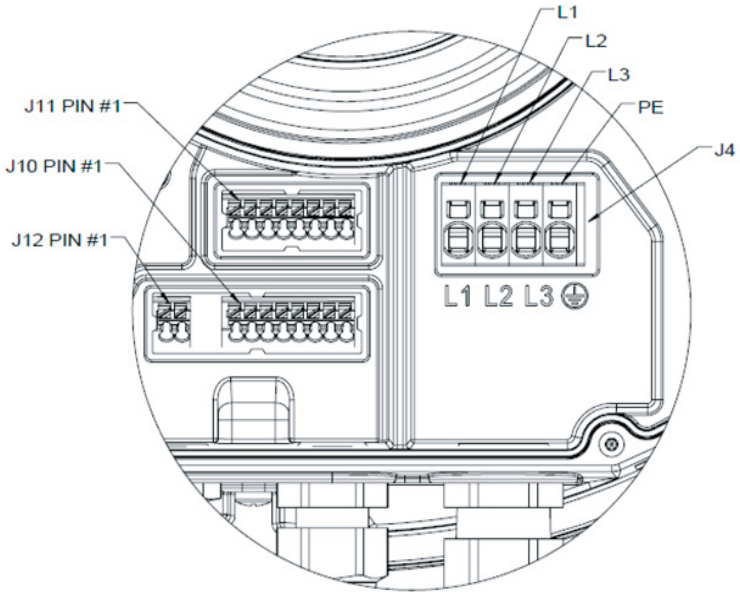
COPRA CORE



COPRA PLUG

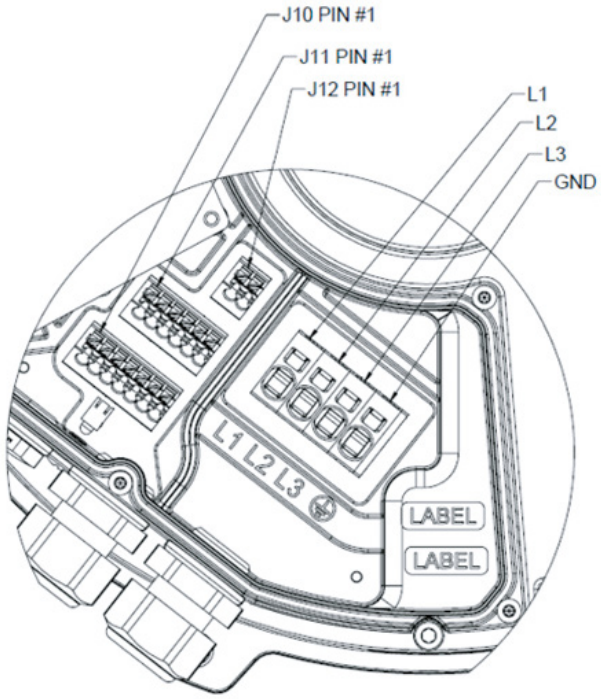


COPRA Series Backward Curved Centrifugal Fan - 4.5KW/7.8KW Wiring Diagram Explanation



Group	Interface Sequence (from left to right)	Interface Description	Interface Abbreviation
Signal Interface Group	J10#1	485 communication interface A	RS485 A
	J10#2	485 communication interface B	RS485 B
	J10#3	grounding port that complies with the ISO standard	GND
	J10#4	Auxiliary power output of +10V	+10V OUT
	J10#5	0-10V speed control signal input	0-10V IN
	J10#6	4-20mA speed control signal input	4-20mA IN
	J10#7	PWM speed control signal input	PWM IN
	J10#8	grounding port that complies with the ISO standard	GND
Functional Interface Group	J11#1	Digital signal input port 1	DIN 1
	J11#2	Digital signal input port 2	DIN 2
	J11#3	Digital signal input port 3	DIN 3
	J11#4	grounding port that complies with the ISO standard	GND
	J11#5	Digital signal feedback port	DOUT
	J11#6	Auxiliary power output of +24V	+24V OUT
	J11#7	grounding port that complies with the ISO standard	GND
	J11#8	grounding port that complies with the ISO standard	GND
Relay Interface Group	J12#1	Relay port	ROUT
	J12#2	Relay port COM	RCOM
Power Supply Interface Group	J4#1	Three-phase line 1port	L1
	J4#2	Three-phase line 2port	L2
	J4#3	Three-phase line 3port	L3
	J4#4	Grounding port	PE

COPRA Series Backward Curved Centrifugal Fan - 1.3KW Wiring Diagram Explanation



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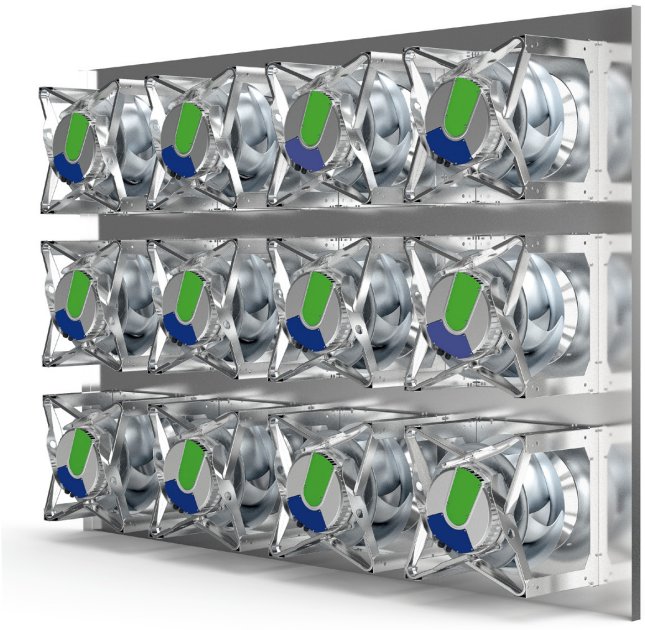
	J10#6	4-20mA speed control signal input	4-20mA IN
	J10#7	PWM speed control signal input	PWM IN
Functional Interface Group	J11#1	Digital signal input port 1	DIN 1
	J11#2	Digital signal input port 2	DIN 2
	J11#3	Digital signal input port 3	DIN 3
	J11#4	grounding port that complies with the ISO standard	GND
	J11#5	Digital signal feedback port	DOUT
	J11#6	Auxiliary power output of +24V	+24V OUT
Relay Interface Group	J12#1	Relay port	ROUT
	J12#2	Relay port COM	RCOM
Power Supply Interface Group	J4#1	Three-phase line 1port	L1
	J4#2	Three-phase line 2port	L2
	J4#3	Three-phase line 3port	L3
	J4#4	Grounding port	PE

Technical specifications

Model	Rated voltage (V)	Frequency (Hz)	Maximum power (kW)	Maximum speed (RPM)	Maximum air volume (m^3/h)	Maximum static pressure (Pa)	Weight (kg)	Ambient temperature (°C)
PA-C28-EF56	3~380-480	50/60	1.3	3480	4610	1510	21.6	-20~40
PA-C31-EJ56	3~380-480	50/60	1.3	2900	5350	1280	22.7	-20~40
PA-C35-JE56	3~380-480	50/60	4.4	3600	9500	2600	31.9	-20~40
PA-C40-JJ56	3~380-480	50/60	4.4	2980	11300	2260	34.5	-20~40
PA-C45-JM56	3~380-480	50/60	4.4	2460	13600	1920	39.5	-20~40
PA-C50-LM56	3~380-480	50/60	7.8	2450	19200	2340	60	-20~40
PA-C56-LQ56	3~380-480	50/60	7.8	2030	22000	2020	73	-20~40
PA-C63-JY56	3~380-480	50/60	4.4	1370	20800	1190	70	-20~40
PA-C71-LY56	3~380-480	50/60	7.8	1380	30000	1535	95	-20~40

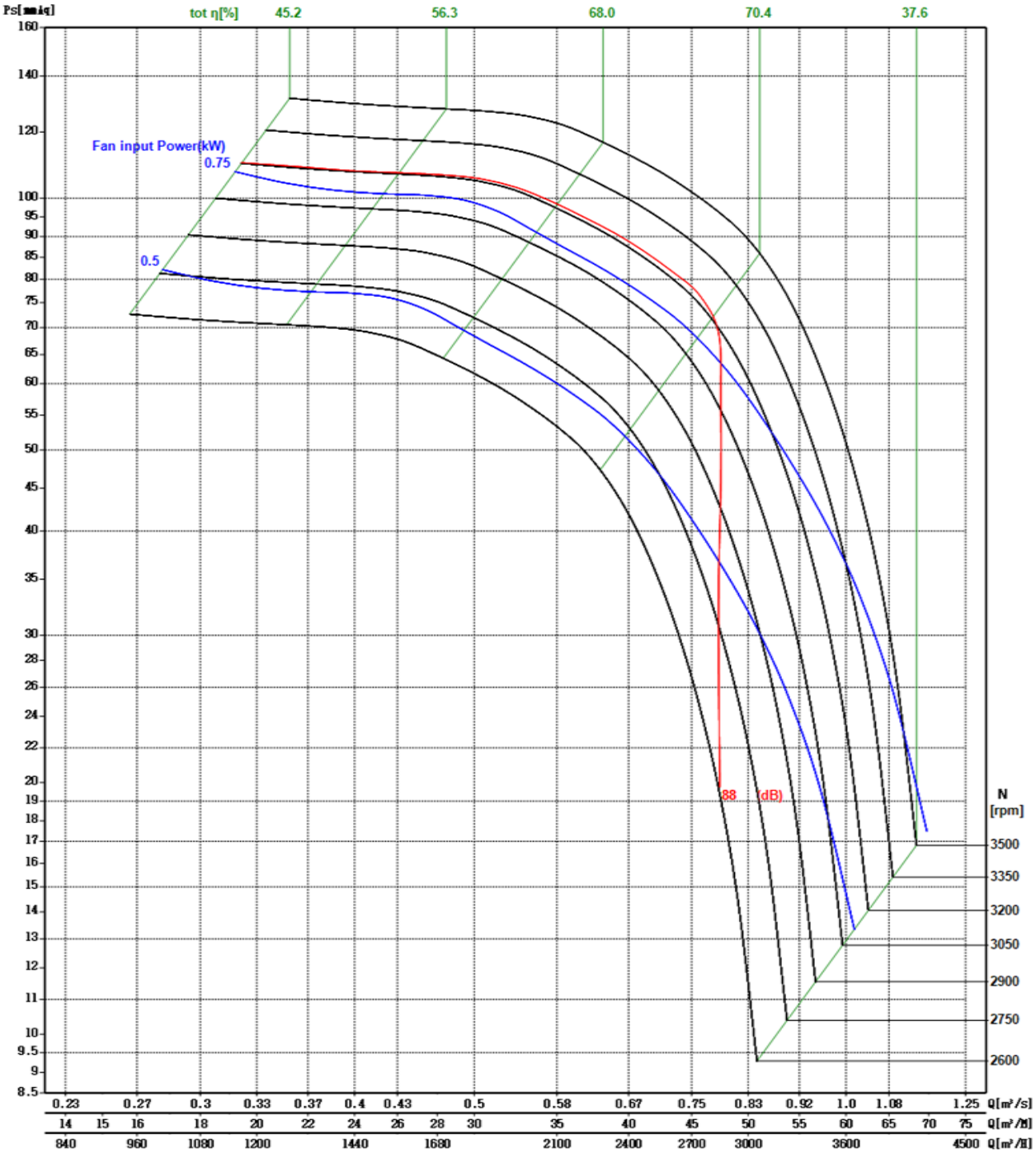


MoonMyung Ace Co., Ltd. certifies that the COPRA Plug Fans series shown herein is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

COPRA PA-C28-EF56

WHEEL DIA	304mm	TIP SPEED = 0.016 x RPM
Outlet Area	0.109㎡	

FEG 85

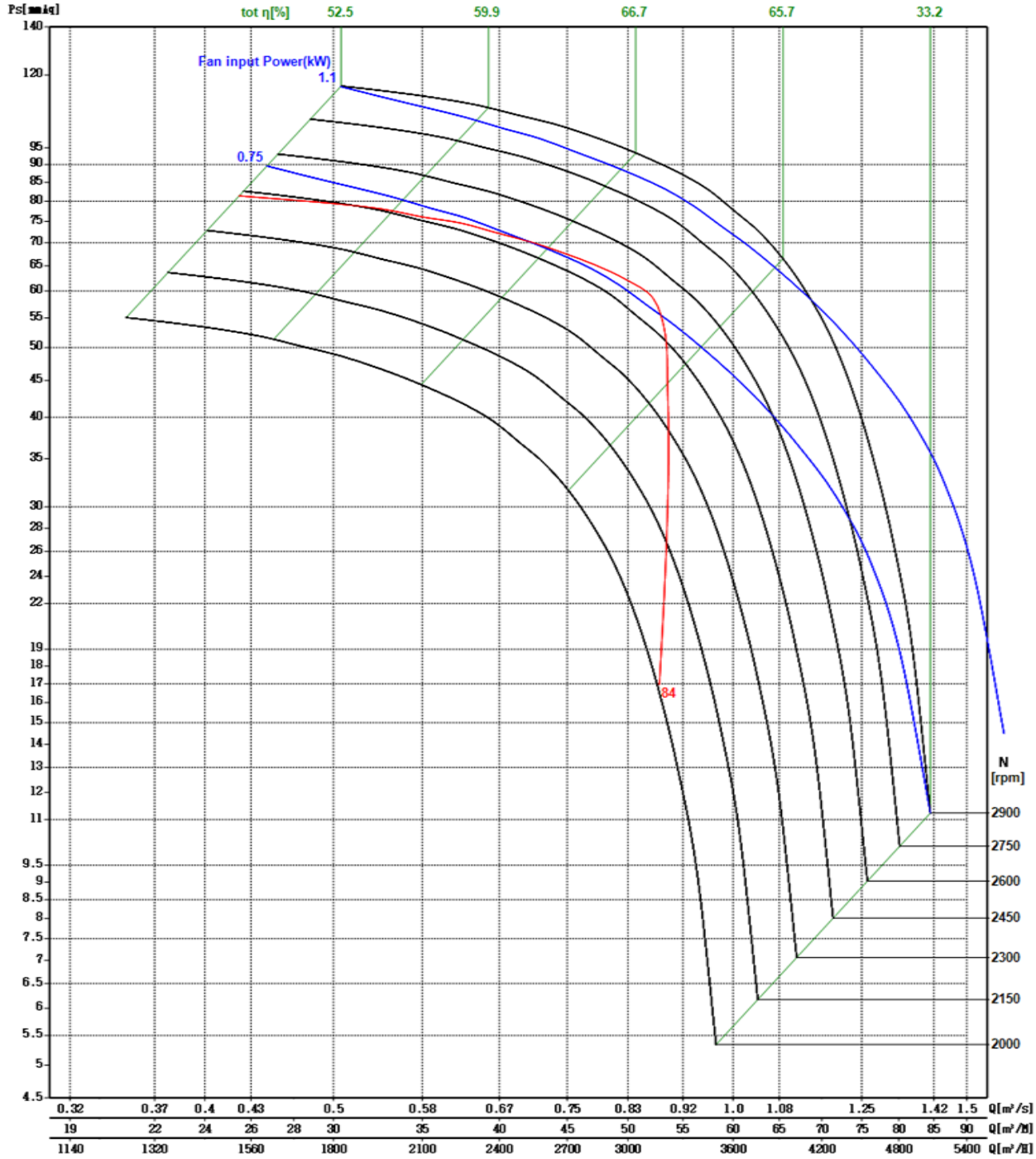


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C31-EJ56

WHEEL DIA	340mm	TIP SPEED = 0.018 x RPM
Outlet Area	0.136㎡	

FEG 75

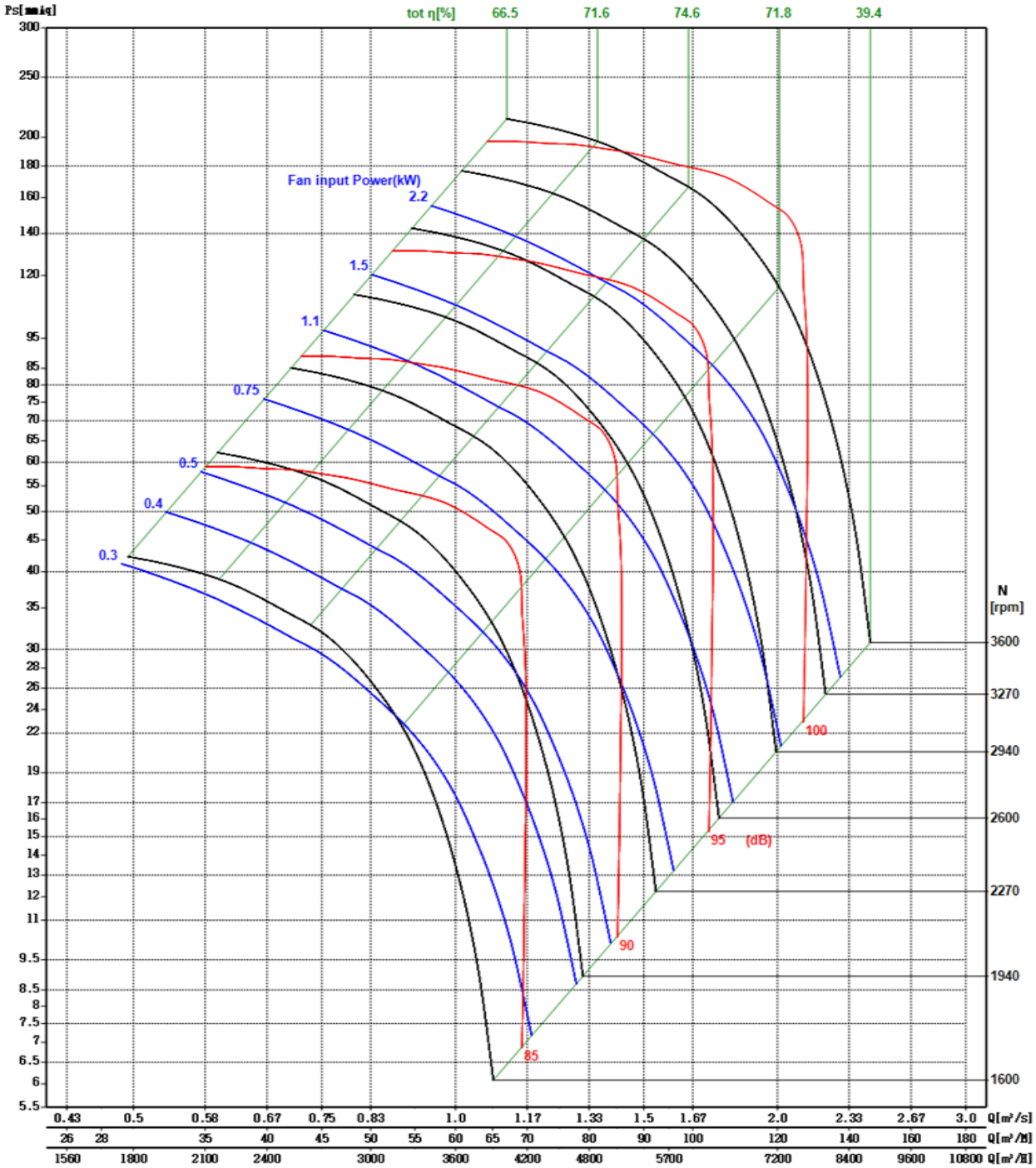


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C35-JE56

WHEEL DIA	378mm	TIP SPEED = 0.020 x RPM
Outlet Area	0.170㎡	

FEG 85

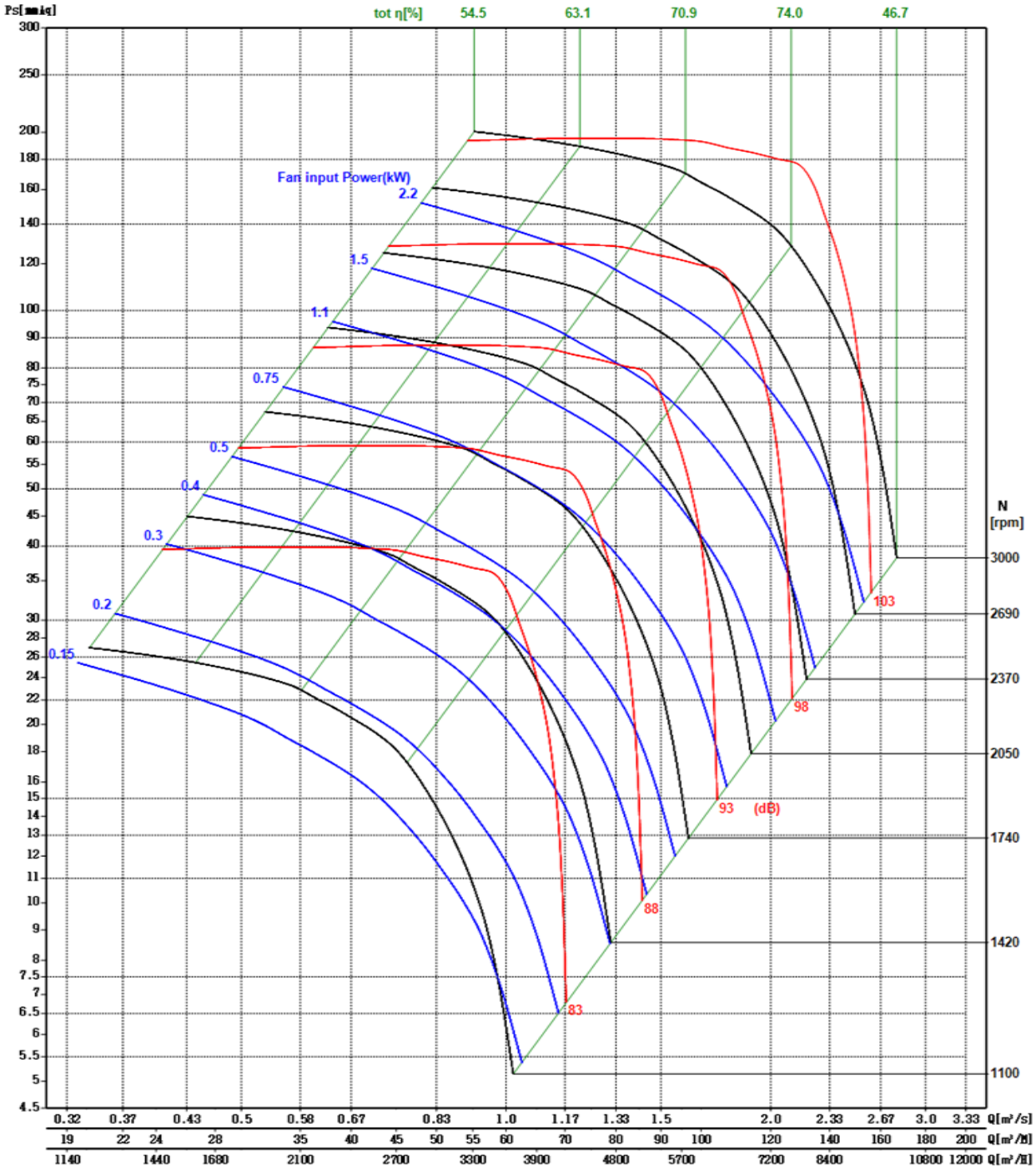


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C40-JJ56

WHEEL DIA	427mm	TIP SPEED = 0.022 x RPM
Outlet Area	0.215㎡	

FEG 80

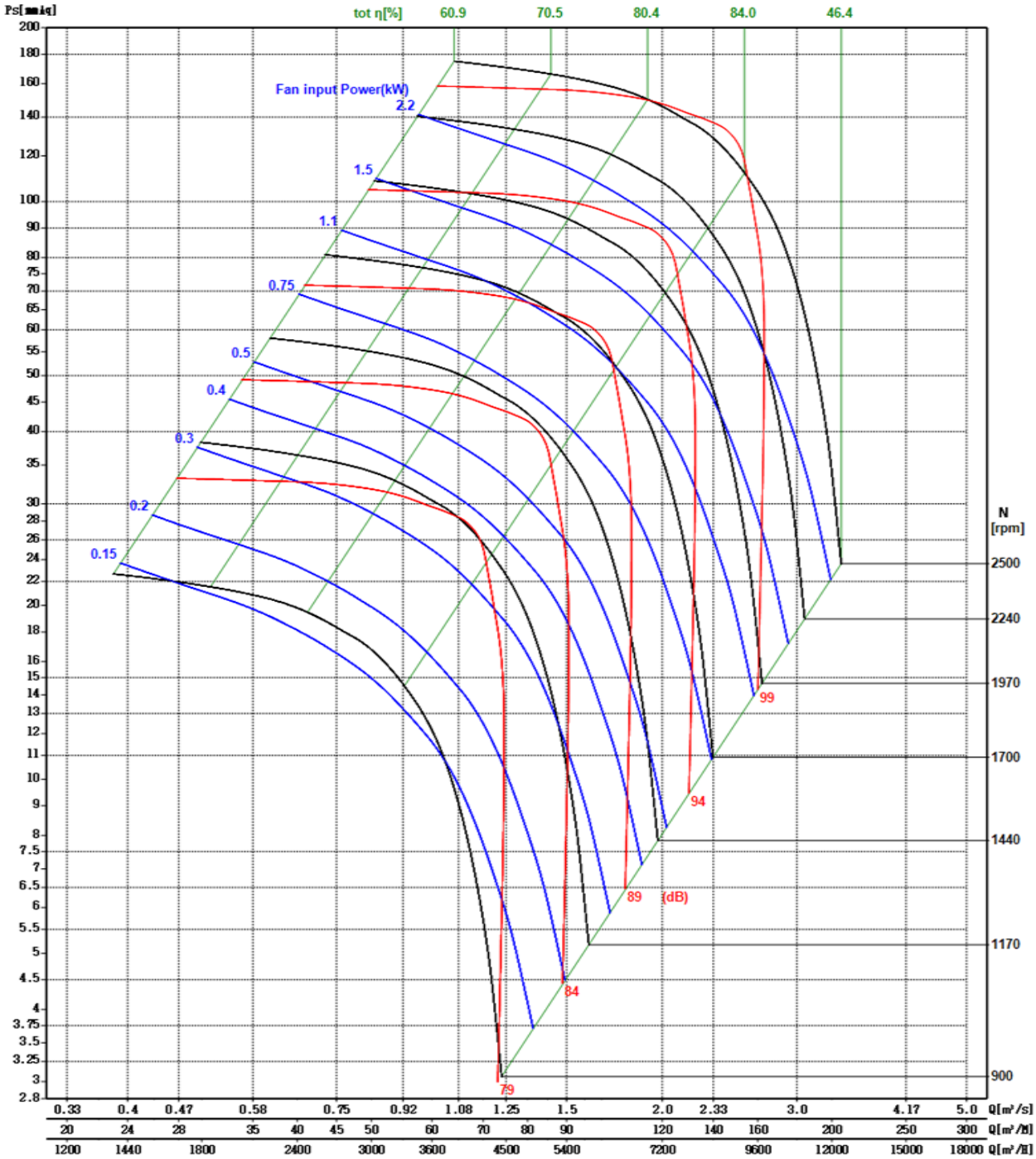


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C45-JM56

WHEEL DIA	481mm	TIP SPEED = 0.025 x RPM
Outlet Area	0.272㎡	

FEG 90

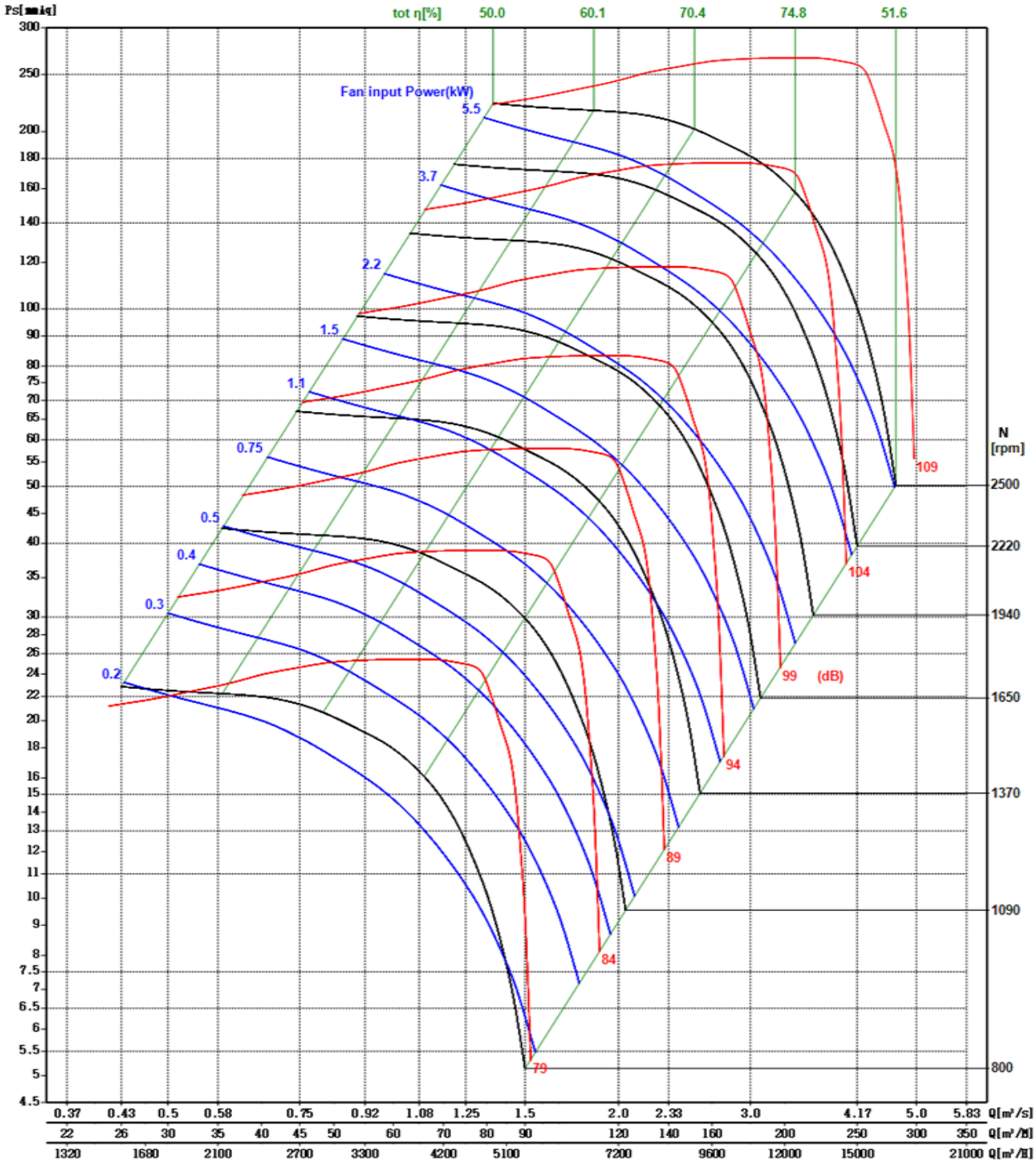


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C50-LM56

WHEEL DIA	538mm	TIP SPEED = 0.028 x RPM
Outlet Area	0.342㎡	

FEG 80

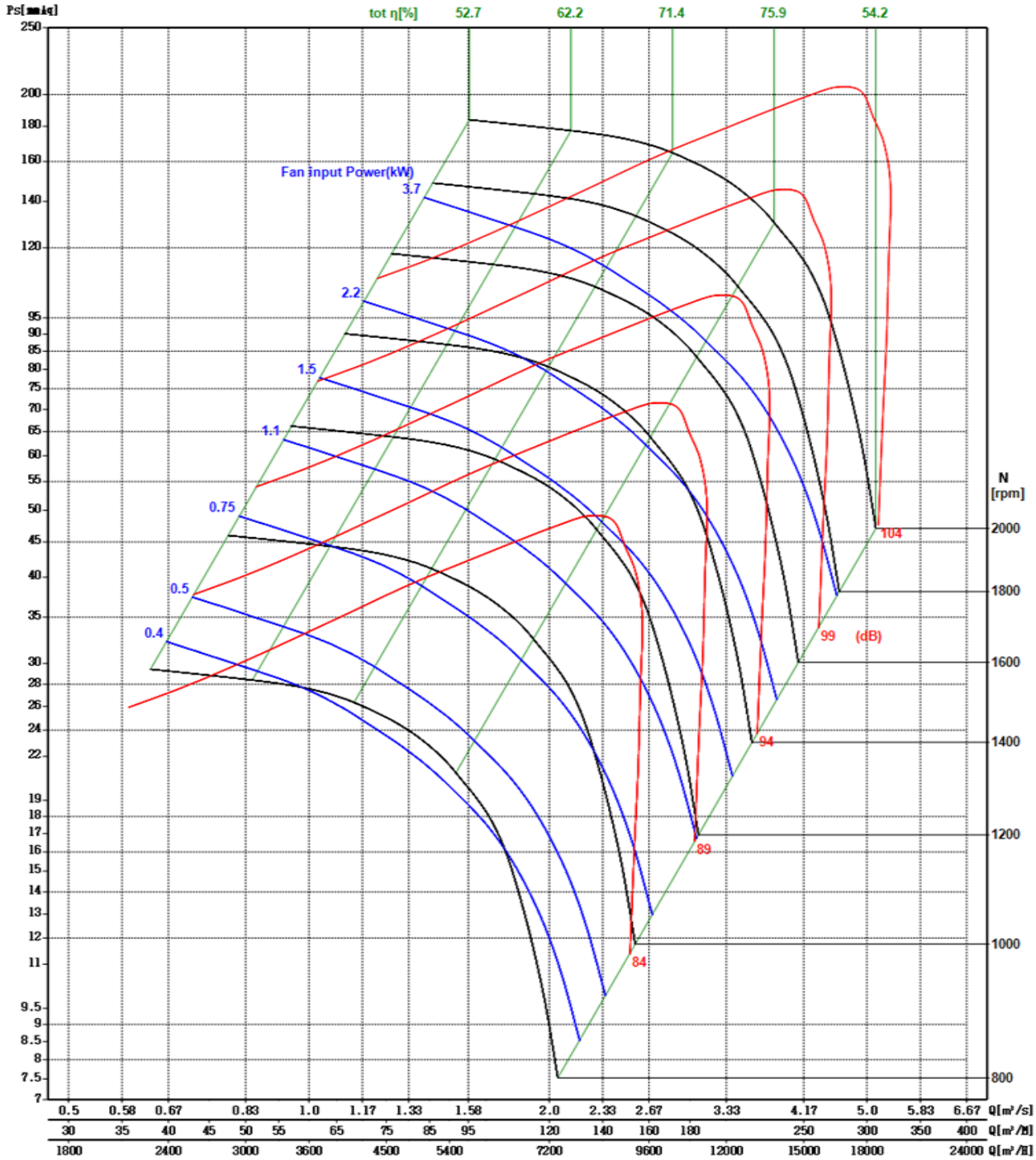


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C56-LQ56

WHEEL DIA	608mm	TIP SPEED = 0.032 x RPM
Outlet Area	0.433㎡	

FEG 80



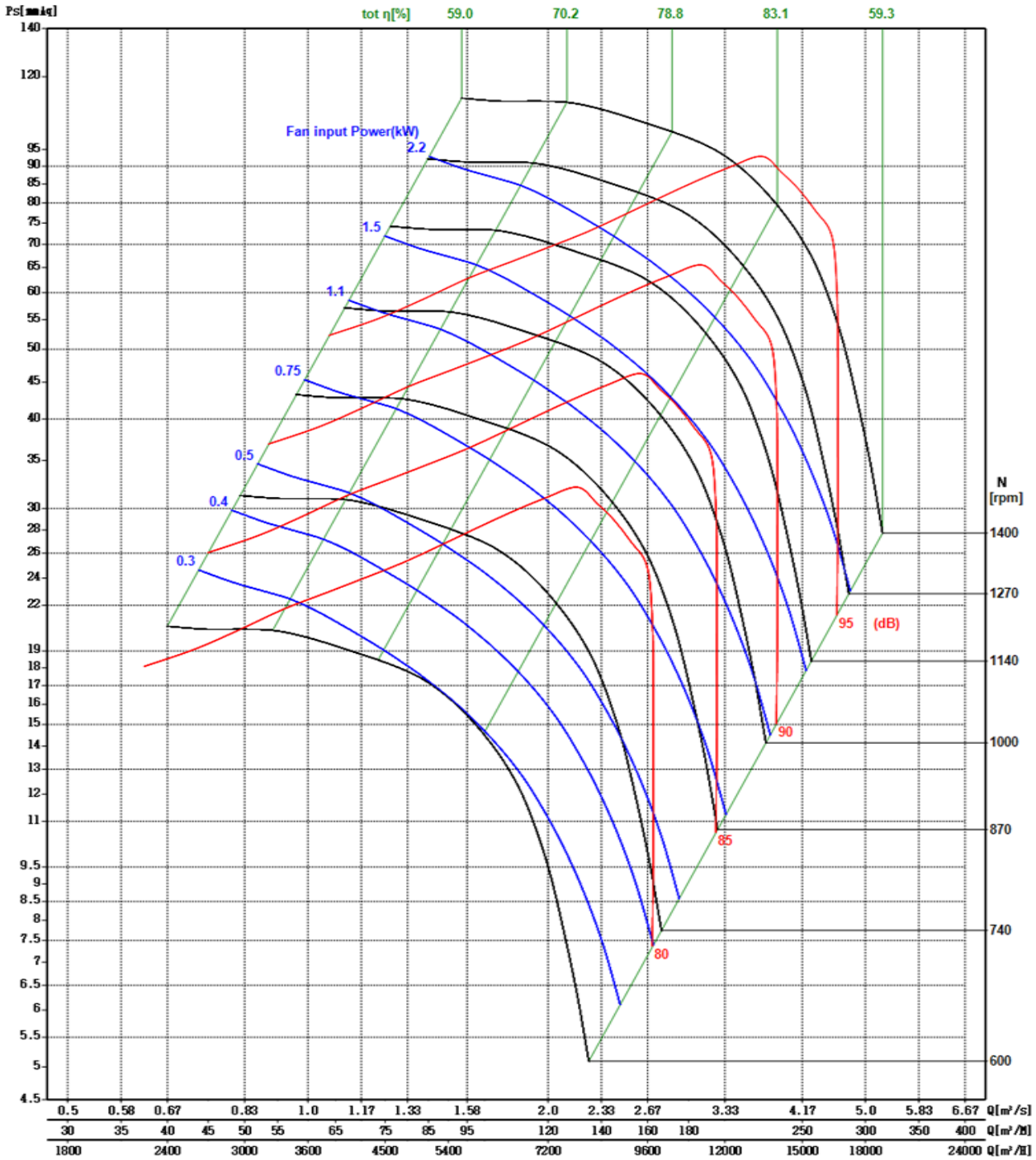
Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

25

COPRA PA-C63-JY56

WHEEL DIA	683mm	TIP SPEED = 0.036 x RPM
Outlet Area	0.545㎡	

FEG 85

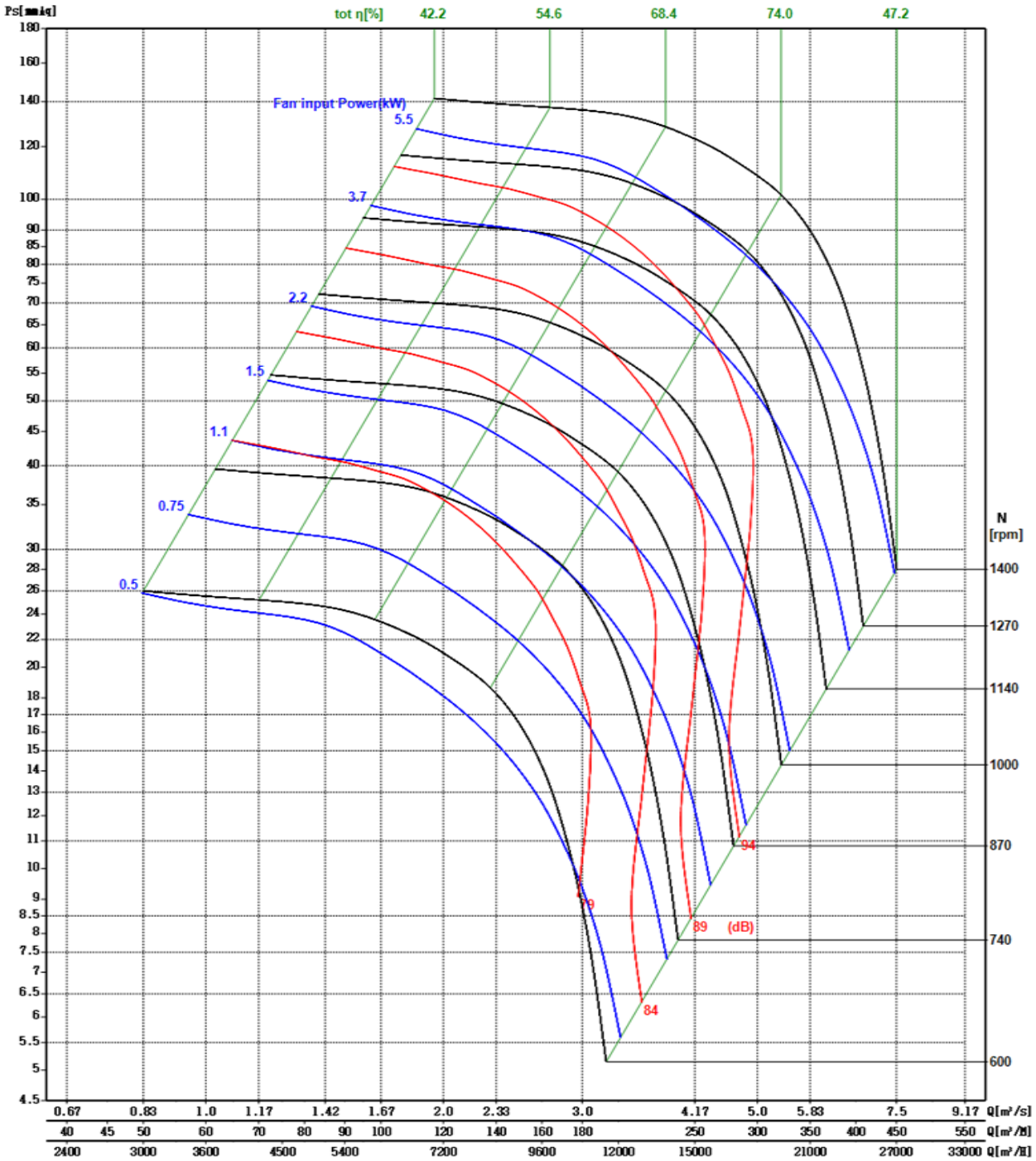


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C71-LY56

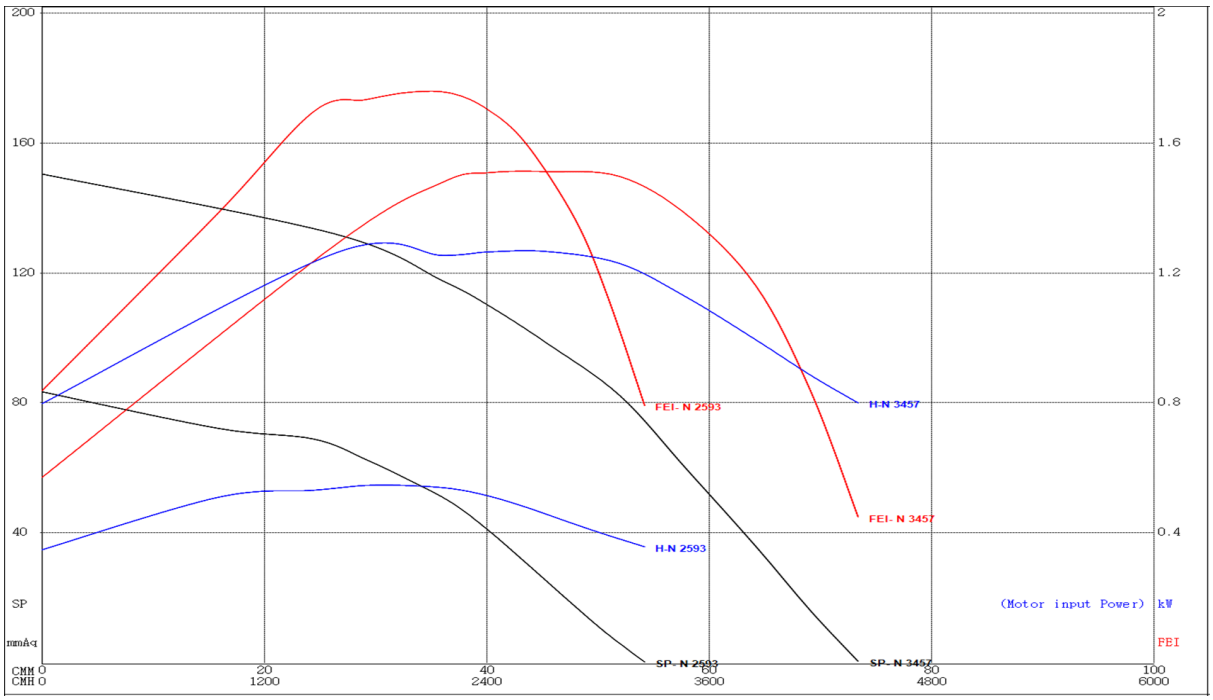
WHEEL DIA	746mm	TIP SPEED = 0.039 x RPM
Outlet Area	0.666㎡	

FEG 75

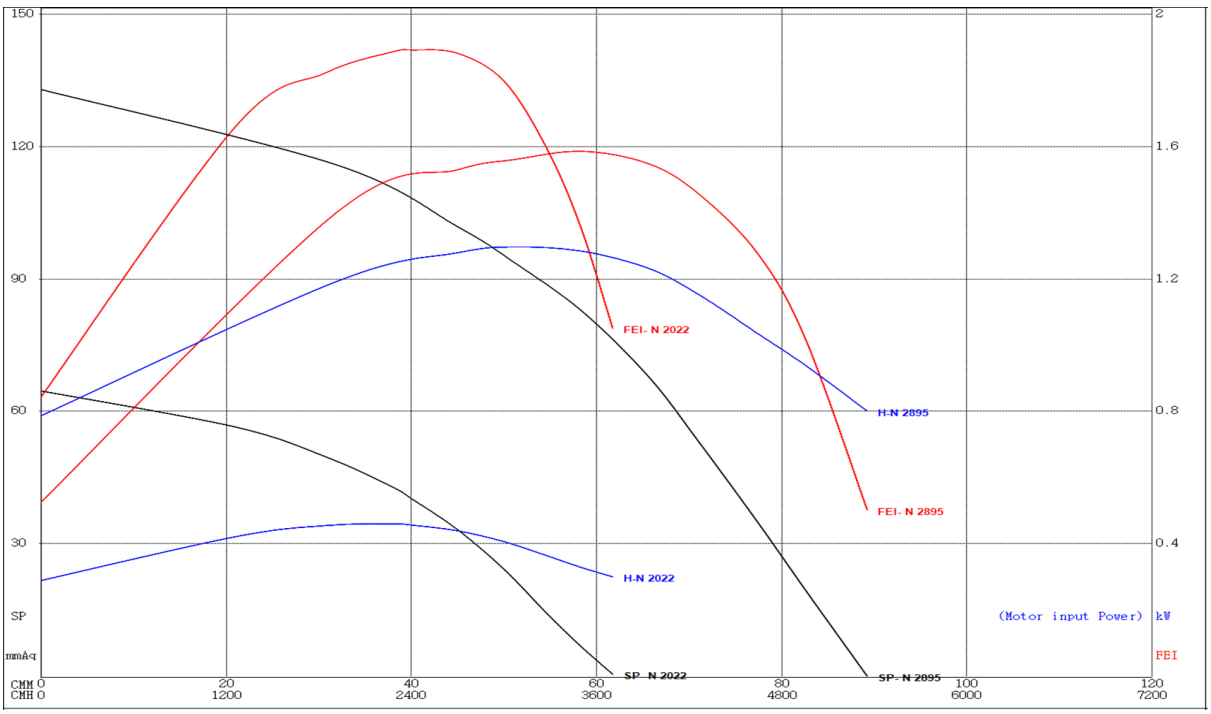


Performance certified is for installation type A –free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories).
Values shown are for outlet LwoA sound power levels for installation type A: free inlet, free outlet with partition. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.

COPRA PA-C28-EF56
Fan Energy Index

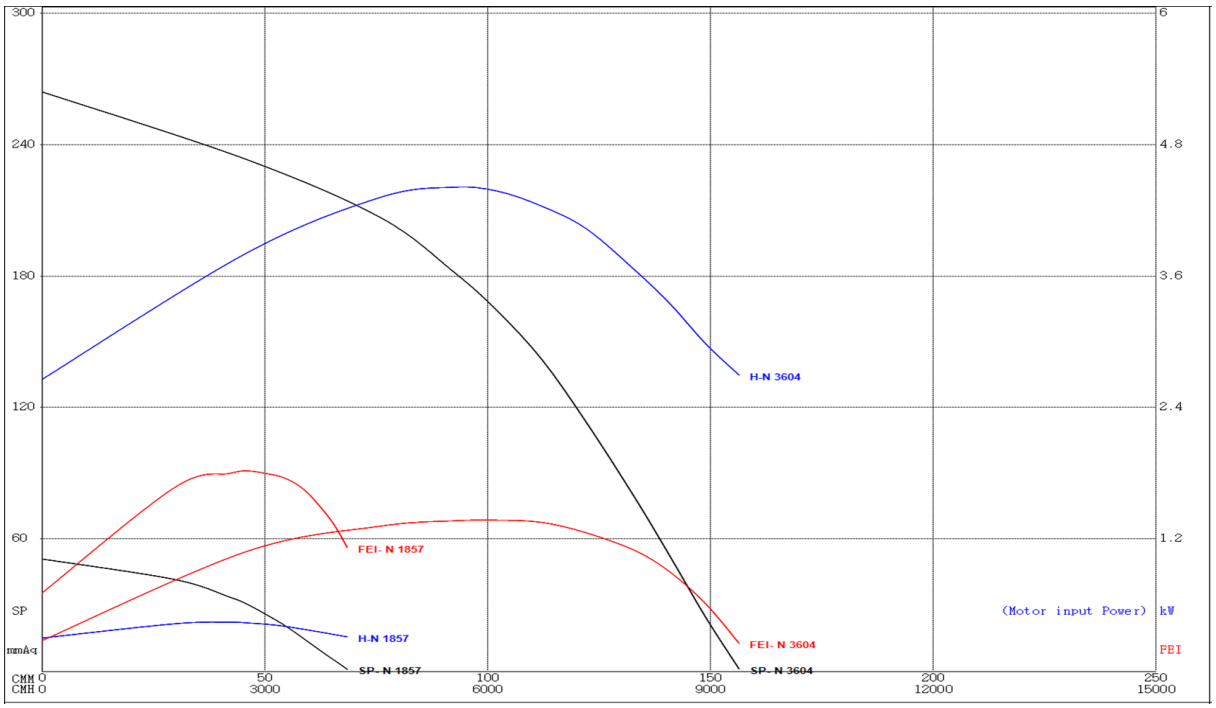


COPRA PA-C31-EJ56
Fan Energy Index

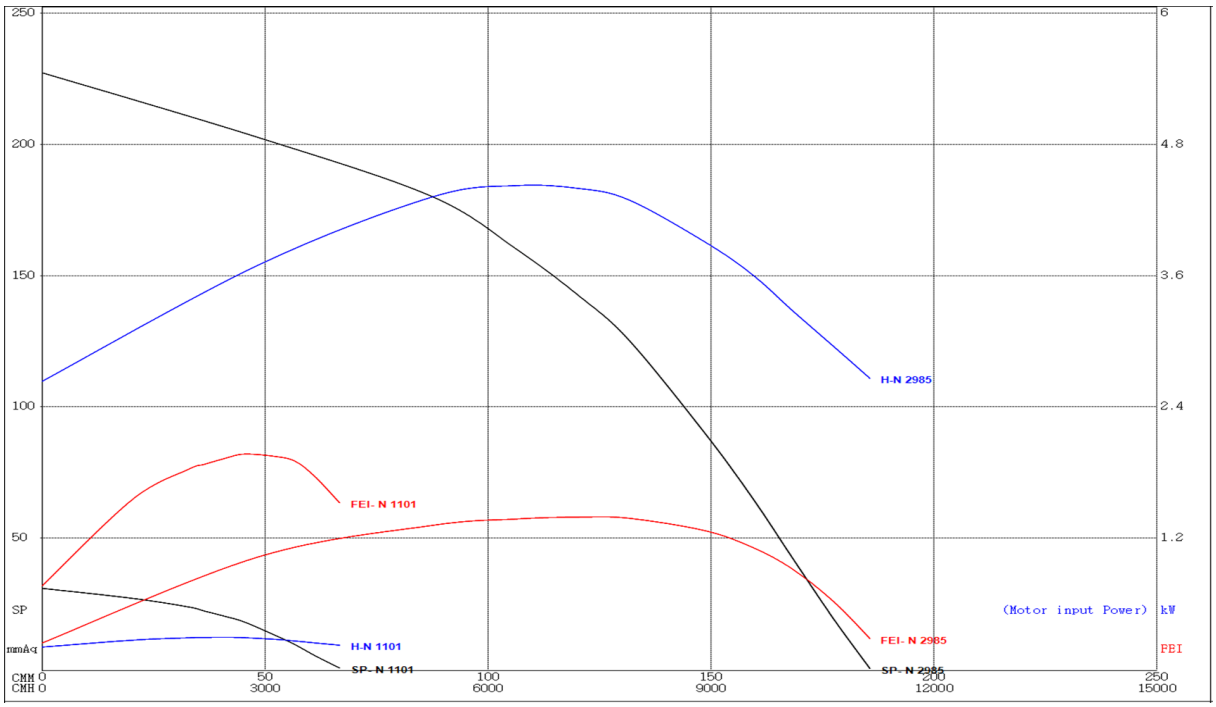


FEI calculation is based on wire-to-air test
Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories). Power rating (kW) includes transmission losses.

COPRA PA-C35-JE56
Fan Energy Index

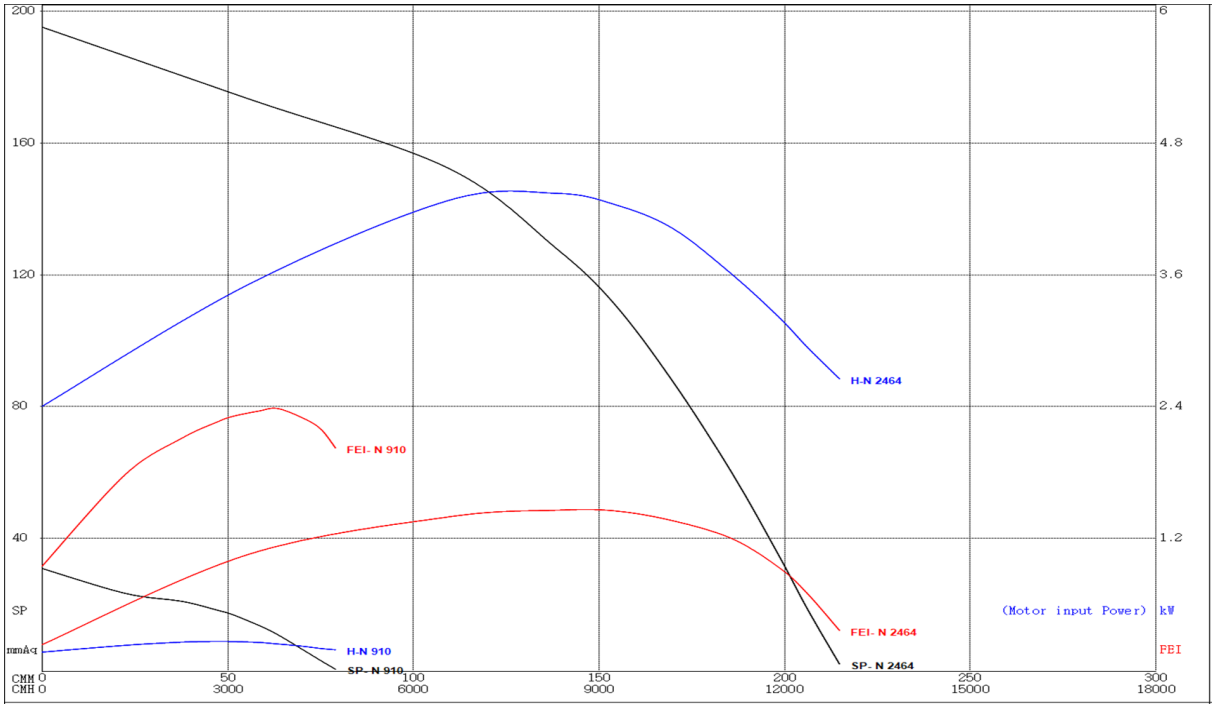


COPRA PA-C40-JJ56
Fan Energy Index

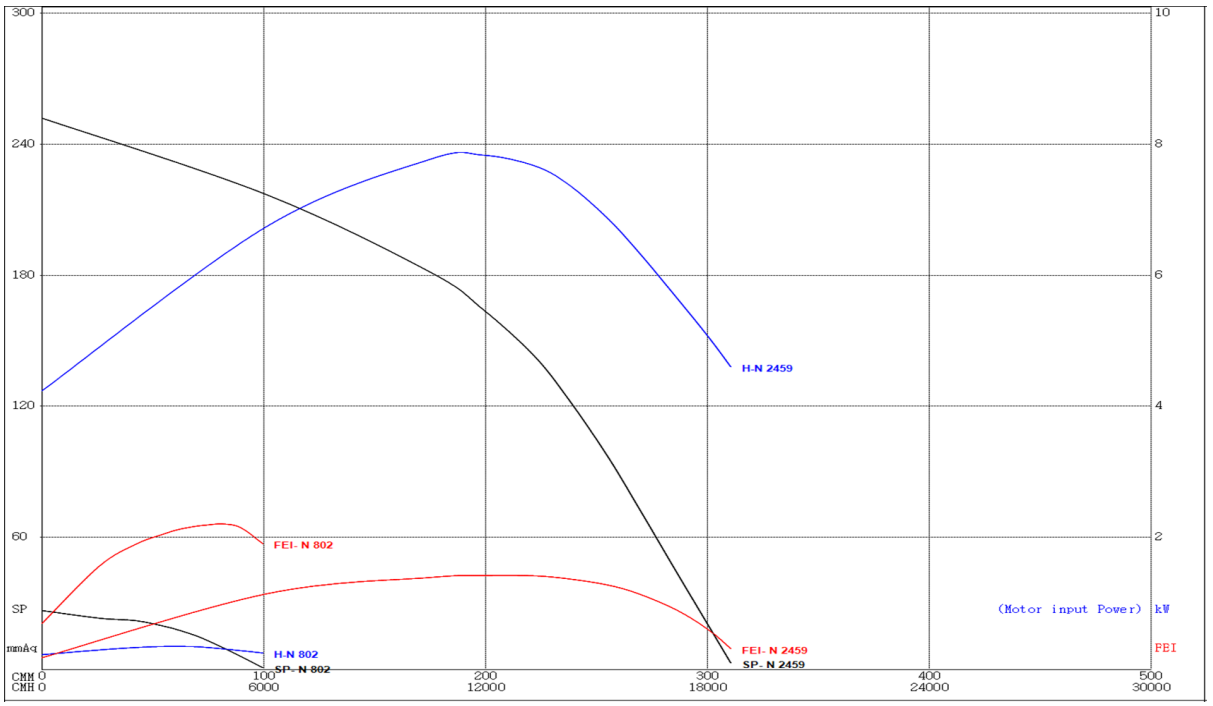


FEI calculation is based on wire-to-air test
Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories). Power rating (kW) includes transmission losses.

COPRA PA-C45-JM56
Fan Energy Index

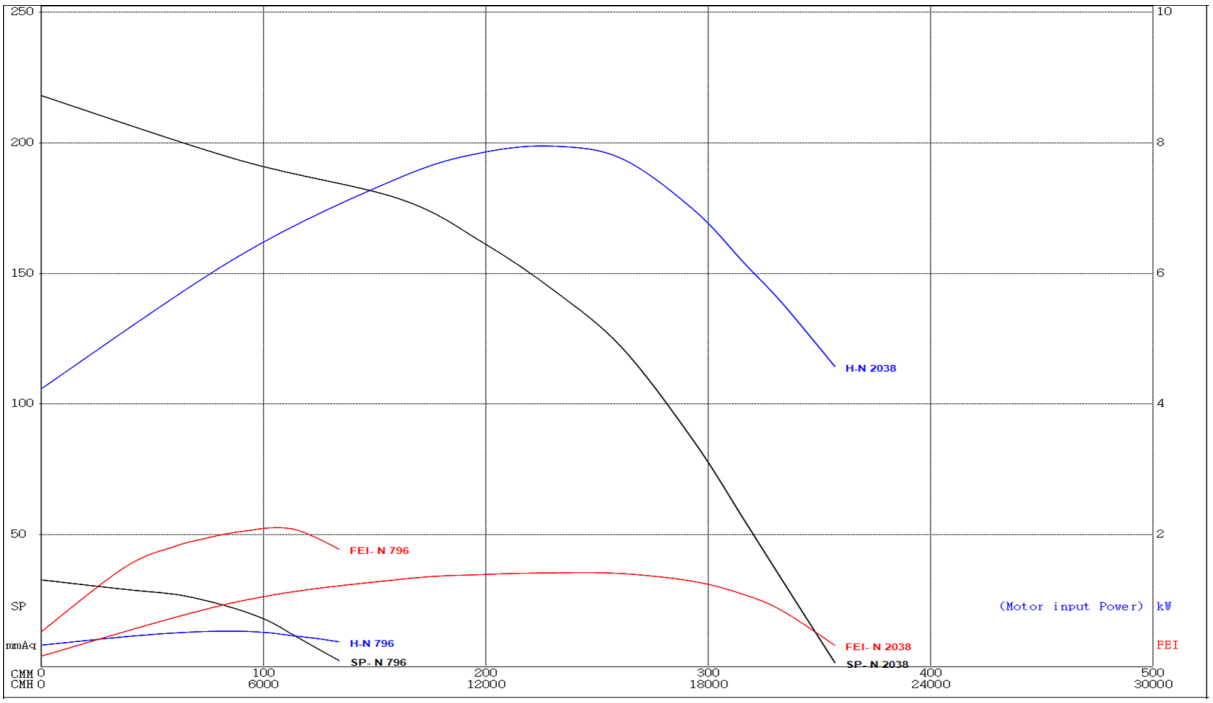


COPRA PA-C50-LM56
Fan Energy Index

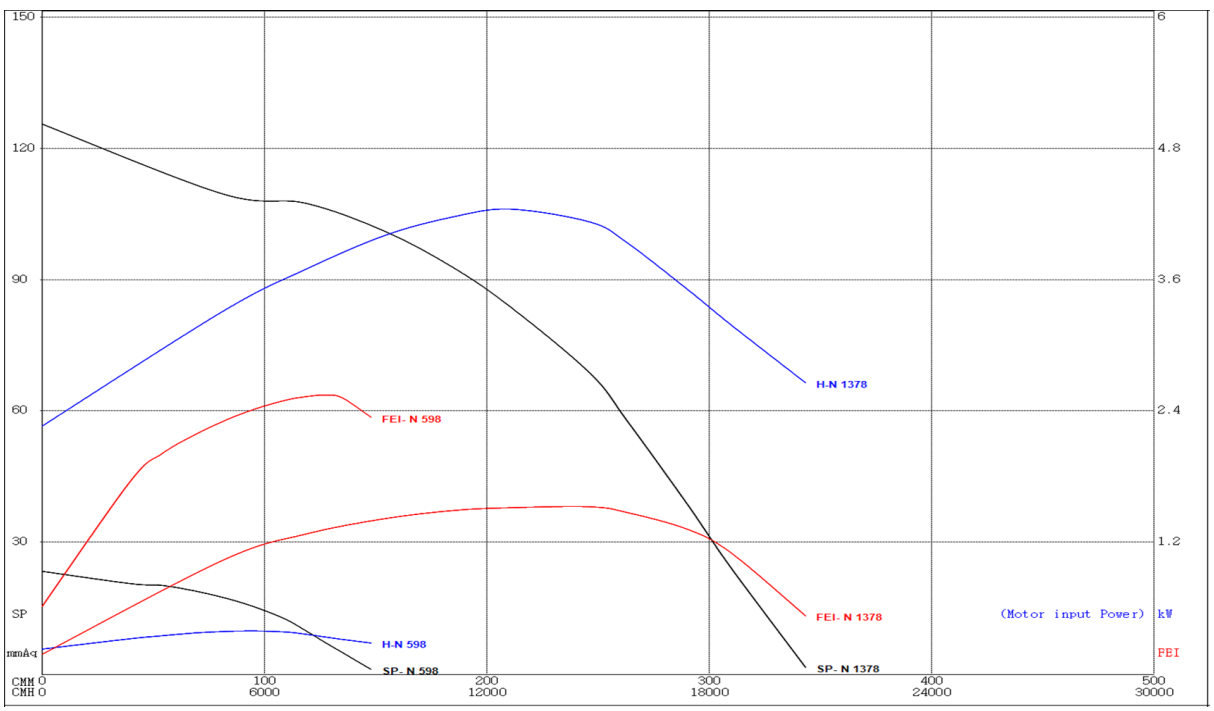


FEI calculation is based on wire-to-air test
Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories). Power rating (kW) includes transmission losses.

COPRA PA-C56-LQ56
Fan Energy Index



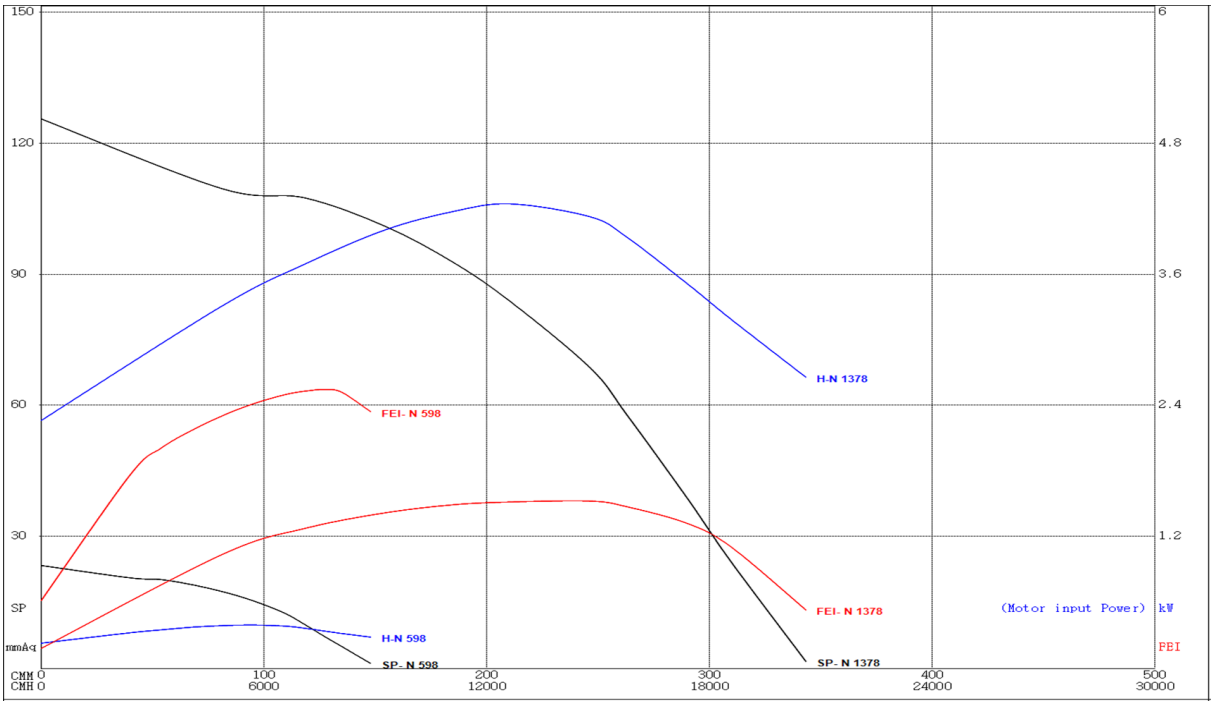
COPRA PA-C63-JY56
Fan Energy Index



FEI calculation is based on wire-to-air test
Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories). Power rating (kW) includes transmission losses.

COPRA PA-C71-LY56

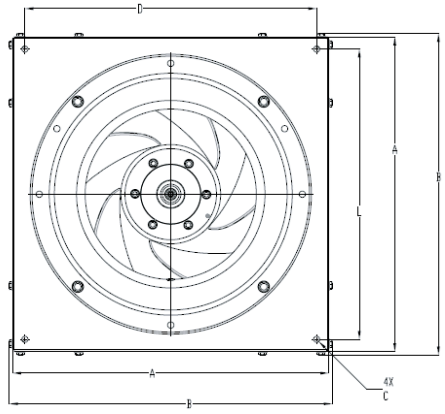
Fan Energy Index

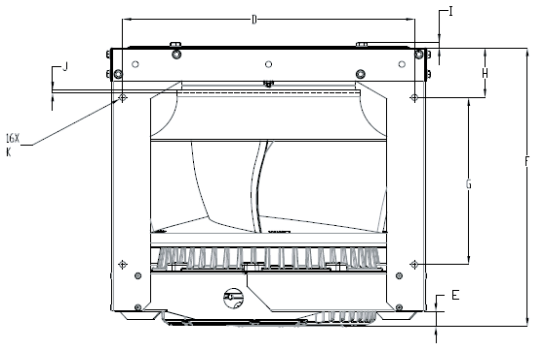


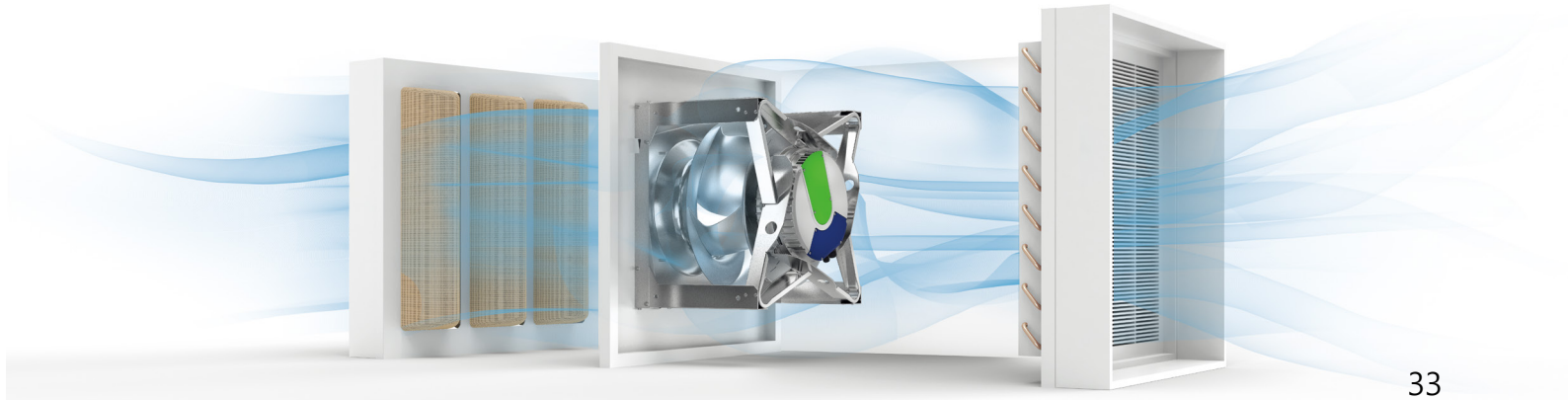
FEI calculation is based on wire-to-air test
Performance certified is for installation type A - free inlet, free outlet with partition. Performance ratings do not include the effects of appurtenances (accessories). Power rating (kW) includes transmission losses.

Dimensions of the COPRA backward centrifugal fan

Model	A	B	C	D	E	F	G	H	I	J	K
PA-C28-EF56	355	365	9	318	10	307	170	70	6.5	1.0-4.8	9
PA-C31-EJ56	390	400	9	352	24	333	185	70	9	1.1-5.4	9
PA-C35-JE56	430	440	9	392	23	389	220	70	8	1.2-6	9
PA-C40-JJ56	475	485	9	438	23	421	253	75	8	4	9
PA-C45-JM56	580	590	11	514	35	450	275	75	8	5	11
PA-C50-LM56	630	643	11	564	52	520	280	90	8	1.7-8.5	11
PA-C56-LQ56	690	703	11	624	19	553	305	115	8	1.9-9.5	11
PA-C63-JY56	760	773	11	694	27	600	355	115	13.7	2.1-10.7	11
PA-C71-LY56	840	853	11	774	12	650	420	115	12.7	2.4-12	11







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