



Telecommunication base station cooling



ebmpapst

The engineer's choice

About ebm-papst North America



Headquarters - Farmington, CT

- 250,000 square feet
- 275 employees
- Value added
- Acoustic testing chamber
- Complete air testing lab on site
- ISO 9001 and ISO 14001 certifications
- Distribution centers in Farmington, CT and Toronto, Canada

ebm-papst is an innovator and market leader in fans, blowers, and motors with core competencies in motor technology, aerodynamics, and electronics. With over 15,000 products, we provide solutions to a wide range of markets including Air-conditioning and Ventilation, Appliance, Automotive, Commercial Refrigeration, Heating, Industrial, Lighting, IT / Telecom, Medical, Transportation and more.

Support when and where you need it

Knowledgeable field sales professionals are close by for face-to-face meetings. Dedicated inside sales associates fulfill all of your ordering needs. To assist you with order management, our Customer Relations department provides automated services such as shipment notifications, reorder notifications, and invoicing.

Design and manufacturing

Beginning with the initial product concept, our application engineers work in tandem with customers to select the best air moving solution to suit specific goals and requirements. Once the prototype has been established, it can then be tested in our state-of-the-art airflow testing chambers to optimize performance. Each chamber has been designed to meet AMCA 210 and ISO 5801 requirements. In addition to our airflow testing capabilities, ebm-papst can conduct comparative sound, temperature, and velocity tests. The electrical engineering team can design everything from simple fan controllers for monitoring fan speed to complex controllers and power supplies, filtering, and specific communication protocols.

Logistics and inventory management programs

Our facilities feature over 90,000 square feet of climate-controlled warehousing, and utilize bar coding for real-time inventory management. Supply chain management programs such as Kanban, demand/pull, safety stock, consignment, and local warehousing can be customized to your needs.



About ebm-papst worldwide

Passionate about air technology and drive engineering

The ebm-papst product portfolio numbers over 15,000 products. We offer the right solution for almost every air technology and drive engineering task. In addition, we work with you to develop very customized solutions that extend beyond our current product line. This is made possible by our extensive team of over 650 dedicated engineers and technicians out of our three central locations in Germany.

World Headquarters: Mulfingen, Germany

- ebm-papst established in 1963
- Manufacturing: Germany, Hungary, Czech Republic, Slovenia, Italy, USA, China and India
- Worldwide revenue over 2 billion USD
- 57 sales and distribution groups worldwide
- 12,000+ employees worldwide
- Ship over 46 million products annually
- Certifications: ISO 9001, ISO 14001 & RoHS compliant
- Over 1,000 patents held in design

Core competencies: motor technology, aerodynamics and electronics

Our innovative technologies keep turning into new industrial standards. Our advantage: We consider aerodynamic relationships as a whole. Thus we combine benchmark-setting motor technology with the intelligence of state-of-the-art electronics and aerodynamically optimized shapes.

The system solution that results from these three core competencies has a synergy that is unique in all the world and makes up the majority of our product line.

GreenTech EC technology: Our motor for the future

Virtually our entire product range is now available with GreenTech, the leading edge EC technology. GreenTech EC motors deliver unparalleled energy efficiency when compared to conventional AC Technology. With wear-free and maintenance-free performance, longer service life, lower noise, intelligent electronic control, and higher aerodynamic efficiency, GreenTech EC motors from ebm-papst are the future of air moving technology.

Passion, quality and responsibility: Three reasons for our success

Only real passion for fans and motors makes the highest level of achievement possible. With a clear organizational structure, flat hierarchies and a high degree of personal responsibility, we create the perfect foundation - not only for technological innovation, but also for excellent service and active dedication to closely working with our customers.

Of course, our products are also produced with the highest quality - at a total of 18 facilities worldwide. Our quality management is uncompromising and is present in every process stage. This is also confirmed by our certification of compliance with the international standards ISO 9001, ISO/TS 16949 and the standard ISO 14001.



Telecom shelter cooling

About ebm-papst (North America & Worldwide)	2-3	EC Radial Impellers	11
GreenTech EC Technology	5	EC HyBlade® Axial Fans	12
Market overview	6	DC Radial Impellers	13
Telecom shelter cooling	7	Compact Fans / Diagonal Fans	14
Interior vs. Exterior Cooling	8-9	Accessories	15
EC Plenum / K-modules	10		



The symbol of our commitment

GreenTech is a name put to the philosophy ebm-papst has used for decades: "Each new product that we develop has to be better than its predecessor in terms of economy and ecology." Our company philosophy is not just for designing new and more efficient fans and blowers; it's in practice in the offices and factories, locally and internationally. At the U.S. headquarters, two separate arrays of solar panels have been installed to provide the engineering building with electricity, along with additional renovations that make the facilities even more environmentally friendly.

GreenTech symbolizes our continuous commitment, achievements, and passion to provide customers with high quality products through the use of modern development and production methods, responsible business practices and initiatives that benefit not only the user, but the environment as well.

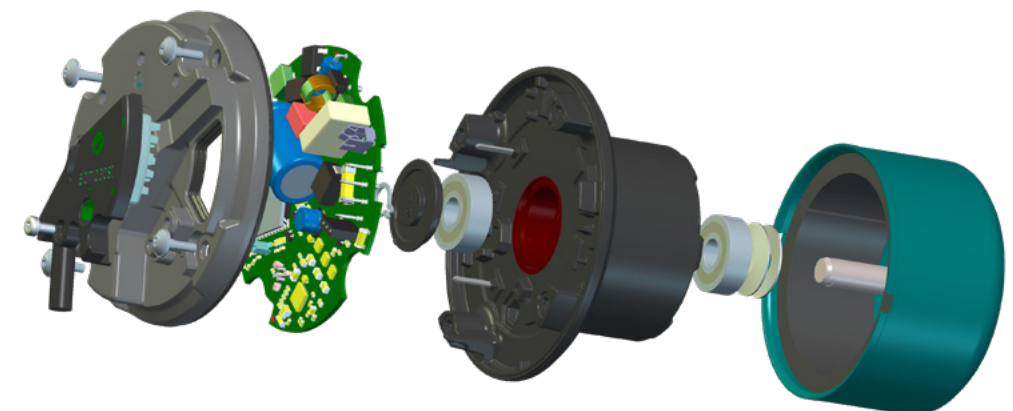
What is EC Technology?

EC technology is an important factor in our GreenTech philosophy. At the heart of this philosophy is the ebm-papst EC motor - a custom, high-voltage DC motor that permits higher efficiency and performance than traditional AC products. ebm-papst EC fans use permanent magnet external rotor DC motors with fully integrated electronic commutation (EC) and AC to DC power conversion. EC motors give the flexibility of connecting to AC mains with the efficiency and speed control capabilities of a DC motor. With EC fans, the user benefits from the innovative commutation without wear-and-tear on the motor.

With this technology, EC motors and fans can be easily controlled, are maintenance-free, offer outstanding efficiency and have a considerably long service life. The variable speed range possible in EC technology makes using a multitude of individual models a thing of the past by offering control down to lower speeds compared to the full nominal speed. With EC technology, the same performance can be achieved from various voltage and frequency ranges.



Our R&D efforts are not only focused on saving energy. In terms of air performance and low noise, our products exceed the toughest specifications. EC technology pays off for every owner or operator, while conserving precious energy resources. When you use intelligent ebm-papst EC technology in your applications, everyone wins - companies, customers, and the environment.





The telecommunication market

The demands for IT and telecommunications performance are constantly increasing. Maximum reliability, highly complex applications, faster processors, round-the-clock information and communication, and the ever-increasing compactness and density of computer systems demand maximum performance from the cooling system. Well-founded skills and exceptional product innovations make ebm-papst a technological trendsetter in electronics cooling. In many thousands of applications – both, standard solutions and specialized, customer-specific ones, our tried-and-tested products demonstrate the exceptional capabilities they bring to cooling tasks. There are many different applications in the IT/Telecom market where ebm-papst fans are used, such as in base stations. They ensure that we can communicate with each other while mobile, anywhere in the world. The fans keep the base station electronics at a uniform low temperature and reliably guide away lost heat. This minimizes the risk of failure of individual components and extends the service life of the system.

Another application is cooling units for control cabinets, which are used in environmental conditions defined by high temperature and an oily and aggressive atmosphere. ebm-papst primarily offers centrifugal fans for this area, but also axial fans for internal and external circulation in cooling units. In this field the fans need to be weatherproof. Therefore the fans are specifically tested for resistance to humidity, temperature fluctuations, and salt spray and fog. For the IT hardware, which includes network technology, router, data storage technology, server/mainframes and much more, ebm-papst offers a matching line of centrifugal and compact fans in GreenTech EC technology that has been specifically designed for this area.



Fans used in this field are centrifugal fans & blowers, tubeaxial / diagonal fans or centrifugal compact fans. The centrifugal fans & blowers have a medium flow rate at medium pressure. They are available with forward or backward curved blades and have low-noise level. Whereas tubeaxial / diagonal fans have a high flow rate at medium to high pressure have. Those fans have been the standard in electronics cooling for decades. They are compact, quiet and highly efficient. The fans adapt to the cooling situation and can be intelligently networked to the device logic. The compact construction allows space-saving accommodation of all devices and easy installation. If a high-pressure and a 90° air-deflection are needed, the centrifugal compact fans are the solution. ebm-papst also offers fan packages that include the inlet ring, power connector and housing for simpler installation. These fans have all critical properties that are so important in the IT area, such as a low noise level even at a high air performance. Or they can be intelligently controlled and thus adapted individually to specific customer requirements.

Telecom shelter cooling

The shelter will protect equipment from environmental impacts like heat, wetness, cold, storms or sand as well as from theft and vandalism. As the equipment can be sensitive, it is critical to maintain a steady temperature inside of the shelter throughout the year. Thereby, a maximum efficiency can be achieved and a reliable service is ensured. The equipment must be protected from environmental impacts and from dissipating heat of the operating equipment.

There are many different ways to receive a steady temperature inside the telecommunication shelter. One possibility is ventilation by exhaust fans. The fans circulate the outside air to the inside of the shelter and the arising airflow cools down the equipment. Another option is a vortex cooler; a tube which divides gas into hot and cold streams. The cold flow is injected inside the shelter and cools the equipment down. The optimal solution for protected and reliable operation of the equipment is an air conditioning solution. With such a system, it's possible to maintain a steady temperature inside the shelter, regardless of the outside temperature. A steady temperature can be achieved with a HVAC unit, which cools the temperature in the summer and heat it in the winter.

With industry-leading German-engineered compact fans and American-designed assemblies, ebm-papst can provide the perfect HVAC solution for your telecommunication shelter / base station cooling.

Benefits of using ebm-papst cooling solutions:

- German-engineered compact fans and motors, USA-designed assembly
- Energy savings
- Reliability
- Noise
- Warranty
- Lifetime
- 100% end of line testing

Our engineers and custom assembly solutions / value added capabilities can help customers to:

- Create cost effective designs
- Optimize airflow
- Lower energy consumption
- Reduce noise
- Quickly develop prototypes

Robotic bending machine



Interior cooling

Rack cooling

Heat loads have increased dramatically as more components are squeezed into densely packed rack space. Excess heat in a server room adversely affects equipment performance, shortens equipment life-spans, and is the primary reason for downtime. Rack cooling ventilation designs should reduce hot spots and provide adequate cooling to every part at the rack level. Hot spots caused by improper airflow and poor circulation that are not properly cooled result in temperatures that exceed the recommended conditions for equipment reliability and performance. Effective cooling techniques must be employed so heat can be dissipated as efficiently and as close to the source as possible. This calls for the most innovative and efficient solutions to meet the challenging needs of Telecom Shelter cooling applications.

Maximum performance, custom solutions

Our fans and blowers for rack cooling within shelter applications can direct cooled air to where it can be used most productively and efficiently and are available in a wide range of AC, traditional 12, 24, 48 VDC and full EC systems. Our compact fans are high performing, able to handle high backpressures, and can be intelligently controlled and adapted to specific requirements, all while delivering long service life and maintenance-free operation. Our wealth of value added capabilities and expertise allows us to customize solutions to meet your unique data center needs.

The preferred solutions for rack and cabinet level cooling:

- Radial impellers
- Diagonal fans
- Compact fans



Exterior cooling



Modular / containerized data center cooling

A new generation of data center is becoming an increasingly popular choice as the needs for more efficient systems grow. Some companies are migrating from large facility data centers to portable or modular data centers that are set up within sea containers or other pre-packaged systems. Portable or modular data centers are fitted to house many racks of IT equipment with ultra-efficient cooling systems inside. These data centers can be manufactured and deployed more rapidly than traditional data centers because this style offers the easiest 'scalable' solution while maintaining high operation efficiencies.

Because the majority of portable and modular data centers don't have the same heat/cooling duct losses experienced in traditional data centers, the new configurations can super-charge their energy efficiency by incorporating ebm-papst's range of EC blowers and fans, from our small 80 mm fans up to 1250 mm models.

The preferred solutions for modular / containerized cooling:

- Plenum fans/RadiPac
- Radial impellers
- HyBlade® axial fans
- Compact fans

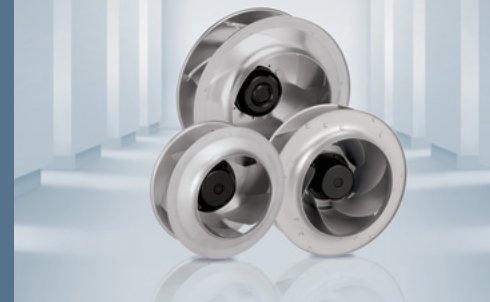
EC Plenum fans / RadiPac



Features

Sizes (mm): \varnothing 250 to \varnothing 1,250
 Air Flow (CFM): 1,758 to 27,158
 Frequency (Hz): 50/60
 Voltage (VAC): 230, 277, 380, 480
 Integrated electronics, extremely low noise and minimal heat generation with an aerodynamically optimized mounting package.

EC Radial impellers



Features

Sizes (mm): \varnothing 133 to \varnothing 630
 Air Flow (CFM): 333 to 13,741
 Frequency (Hz): 50/60
 Voltage (VAC): 230, 277, 380, 480
 Integrated electronics and extremely low noise.

Plenum fans

Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
EG1R-XXX-250	\varnothing 250	1,758	5.15	820	3,580	72	60	14.7
EG1R-XXX-280	\varnothing 280	2,322	4.52	1,000	3,100	72	60	15.6
EG1R-XXX-310	\varnothing 310	3,410	8.87	3,240	4,100	84	40	33.0
EG1R-XXX-355	\varnothing 355	3,702	4.92	1,700	2,600	73	50	28.6
EG1R-XXX-400	\varnothing 400	5,239	5.89	3,000	2,550	78	60	48.4
EG1R-XXX-450	\varnothing 450	7,216	8.33	5,370	2,750	82	40	68.2
EG1R-XXX-500	\varnothing 500	8,980	7.08	5,500	2,200	82	45	72.6
EG1R-XXX-560	\varnothing 560	10,130	5.65	4,700	1,750	78	40	88.0
EG1R-XXX-630	\varnothing 630	11,163	4.35	4,000	1,370	75	50	85.8

RadiPac

Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
K3G630-AS	\varnothing 630	15,139	7.90	11,000	1,850	83	40	352.0
K3G710-AS	\varnothing 710	19,266	7.02	11,800	1,550	80	40	425.9
K3G800-AS	\varnothing 800	20,871	7.02	11,600	1,370	82	40	431.2
K3G900-AS	\varnothing 900	21,134	5.16	8,700	1,050	78	40	510.4
K3GZ50-XX	\varnothing 1,250	27,158	1.12	2,750	350	62	40	792.0

Contact Engineering for specific part numbers and values.
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Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
R3G133	133	333	1.21	17	3,200	48	60	1.1
R3G190	190	575	4.80	169	4,120	63	60	3.0
R3G220	220	749	3.73	168	3,230	62	45	3.2
R3G225	225	767	3.05	170	2,860	60	60	3.9
R3G250	250	1,758	5.15	820	3,580	72	60	14.7
R3G280	280	2,322	4.52	1,000	3,100	72	60	15.6
R3G310	310	3,410	9.11	2,915	4,100	82	40	33.0
R3G355	355	3,702	4.92	1,700	2,600	73	50	28.6
R3G400	400	5,239	5.89	3,000	2,550	78	60	48.4
R3G450	450	7,216	8.33	5,370	2,750	82	40	68.2
R3G500	500	8,980	7.08	5,500	2,200	82	45	72.6
R3G560	560	10,130	5.65	4,700	1,750	78	40	88.0
R3G630	630	11,163	4.35	4,000	1,370	75	50	85.8

Not all sizes available in all voltages.

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EC HyBlade[®] axial fans



Features

Sizes (mm): ø300 to ø1,250
 Air Flow (CFM): 1,873 to 38,675
 Frequency (Hz): 50/60
 Voltage (VAC): 230, 277, 380, 480
 Integrated electronics and extremely low noise.

DC Radial impellers



Features

Sizes (mm): ø101 to ø400
 Air Flow (CFM): 112 to 1,947
 Voltage (VDC): 12, 24, 48
 DC fans with electronically commutated external rotor motor and fully integrated commutation electronics.

Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
W3G300	300	1,873	0.56	170	2,020	62	60	8.8
W3G350	350	2,198	0.40	165	1,480	59	60	11.2
W3G400	400	3,316	0.65	400	1,630	67	60	19.1
W3G450	450	3,856	0.50	345	1,300	61	60	20.9
W3G500	500	6,130	0.81	980	1,600	68	60	36.3
W3G560	560	6,756	0.73	950	1,350	77	60	46.2
W3G630	630	12,502	1.17	3,200	1,510	78	65	88.0
W3G710	710	14,614	0.97	2,830	1,250	75	60	94.2
W3G800	800	16,479	1.05	2,980	1,090	76	65	114.4
W3G910	910	20,609	0.77	2,880	1,000	74	65	125.4
W3G990	990	20,559	0.73	2,580	960	77	70	135.1
W3GZ50*	1,250	38,675	0.79	4,700	690	76	60	318.3

Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
RER101	101	112	1.76	19	5900	62.9	70	0.7
RER120TD	120	230	2.56	92	6300	72.6	60	0.9
RER133TD	133	333	3.06	87	6000	70.4	65	2.0
RER160NTD	160	298	4.72	142	6000	71.8	65	1.3
RER175TD	175	578	4.03	166	5400	75.4	65	1.7
RER190TD	190	572	3.81	148	4400	66.6	65	1.9
RER220TD	220	755	2.75	140	3500	68.7	55	2.1
RER225TD	225	944	3.10	165	3300	72.4	55	2.3
R3G250	250	932	2.42	135	2645	72	60	6.6
R3G280	280	1192	1.72	123	1965	70	60	7.3
R3G310	310	1546	2.30	208	1930	69	60	9.7
R3G400	400	1947	1.61	192	1160	63	60	11.7

*1,250 mm size only available with aluminum blade design.

Contact Engineering for specific part numbers and values.
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Compact fans



Features

Sizes (mm): ø82 to ø200
 Air Flow (CFM): 131 to 968
 Voltage (VDC): 12, 24, 48
 DC fans with electronically commutated external rotor motor and fully integrated commutation electronics.

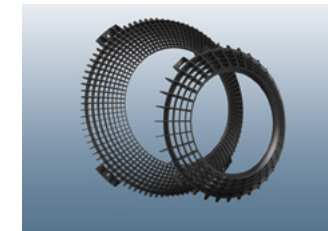
Compact Fans								
Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
8200J	80x38	131	2.62	36	14,000	71	70	0.4
3200J	92x38	165	2.82	50	13,000	73	70	0.5
4100N	119x38	336	5.04	120	11,000	78	75	0.9
5300	140x51	395	5.44	149	9,200	79	65	2.0
6300	172x51	561	4.64	150	9,200	75	65	2.0
2200F	200x51	720	4.03	1.03	6,500	72	65	2.2

Diagonal Fans								
Series	Size mm	Max. Air Flow CFM	Max. Static Pressure in. wg	Power Input Watts	Nom. Speed RPM	Sound Pressure dB(A)	Max. Ambient Temp. °C	Weight lbs
DV6300	172x51	649	6.05	390	6,800	89	65	2.10
K3G200	225x89	968	3.23	418	5,480	87	60	4.80
K3G200-AD	200	547	.884	80	3,100	72	60	4.41
K2E200-AD	200	550	0.80	90	3,200	69	85	5.73

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Accessories

FlowGrid

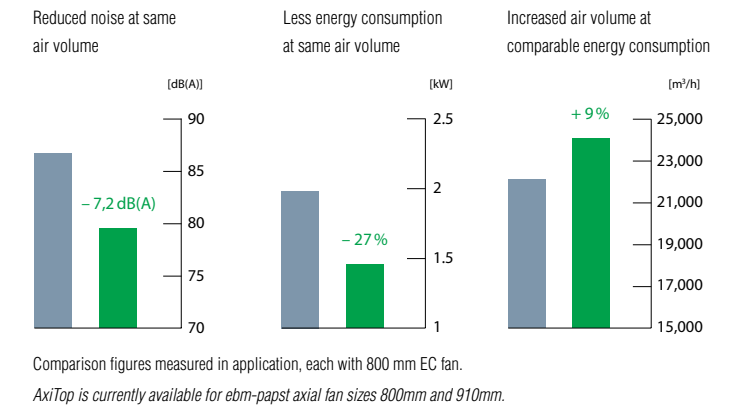


FlowGrid, the grill on the air intake side, drastically reduces the noise-generating disturbances. The vortex strings are split when hitting the grille and considerably weakened as they flow through it resulting in considerably lower sound pressure.

AxiTop axial fan diffuser



The AxiTop diffuser is designed to recover wasted energy by purposely and efficiently decelerating the flow and reducing swirl, boosting the pressure rise of the impeller. Aerodynamic efficiency is increased and acoustic noise is reduced.



Temperature sensors



Part No.	Nom. Voltage VDC	Current Draw mA	Output Voltage VDC	Output Current mA	Output Impedance kΩ	Measuring Temp. °C
50005-1-0174	15-30	10	0-10	1.0	1.1	-20 to 80
50002-1-0174	18-60	10	2-10	0.1	6.8	-30 to 55
50003-1-0174	18-60	10	0-10	0.1	6.8	10 to 45

USB-RS485 adapter



Part Number: 21490-1-0174
 The ebm-papst USB RS485 adapter connects RS485 devices to a computer USB. This also requires the ebm-papst EC Control software version 2.0 or later. The USB drivers required for operating the adapter are also included.

Knob potentiometer



Part Number: 420-05-0640
 This unique design consists of a knob driving and incorporating a potentiometer. The mounting hardware and terminals are situated on the back side of the panel reducing to a minimum the required clearance.

Contact Engineering for specific part numbers and values.
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The engineer's choice