
MagFan®
World leader in fan efficiency
DACS
INNOVATION IN VENTILATION

MagFan — world leader in fan efficiency

MagFan1™ MagFan3™ MagFan5™

MagFan outperforms all other fans

MagFan is the world leader in fan efficiency. No matter the version you choose they all offer unrivalled performance, efficiency, and service life.

MagFan owes its efficiency to much more than just the high efficiency motors. More than anything else, the very pronounced efficiency advantage stems from the aeromechanics applied in the development of MagFan.

This becomes quite evident when comparing capacities and efficiencies against other makes of similar size fans. Without exception, MagFan outperforms all other fans!

MagFan is the answer

MagFan is widely used in all types of livestock buildings, in greenhouses, and industrial applications. Wherever air needs to be moved efficiently, MagFan is the answer.

One unique concept

At first glance there is no visible difference between the three versions of MagFan.

MagFan1, MagFan3 and MagFan5 all make use of the same housing. The only differences lie in the motor technology used and the using of different impellers. One unique concept — three different fans.

Aerodynamics make the difference

First and foremost, remember that a fan with superior aerodynamics will always be the most efficient fan no matter the speed it operates at. So, all the way from minimum speed to full speed, the aerodynamics play the most important role in fan performance and efficiency.

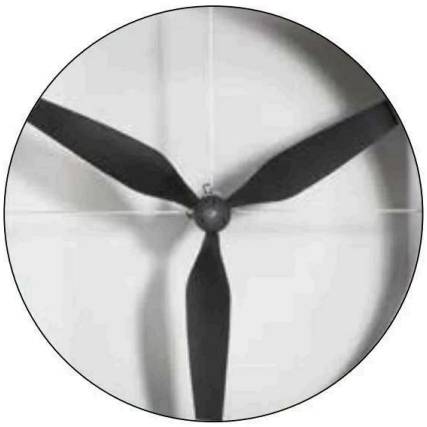
This is exactly the reason why MagFan consistently outperforms all other fans ever tested at Bess Lab, University of Illinois. By a wide margin!

Careful design leads to aerodynamic benefits

Optimized to perfection

With strict focus on aerodynamics in the design phase, MagFan has been optimized to perfection. The air entering the fan meets no restrictions and the discharge cone leads the air gently from the fan. The motor and impeller hub designs bring minimum restrictions to airflow. The impeller blades are carefully designed and tested to perfection.

These little but important details ensure high airflow rates and unsurpassed energy efficiency.



Perfectly designed impeller blades

Rounded and smooth impeller hub

Optimized housing

Carefully rounded edges

Super optimized air intake area

Aerodynamic motor design

Choosing the right MagFan

Applications

The MagFan is a very versatile fan, adaptable to a large variety of applications. Choosing the right MagFan for a given application involves determining how often the fans will run at reduced speed, but it also involves determining at what static pressure the fan will be operating.

Airflow is essential

Where outside temperatures fluctuate diurnally and/or seasonally, or where the production has variable heat production and variable temperature setpoints from start to finish (like in a building with broilers), the fan speed will vary, and the savings obtained by speed controlling will be significant. Likewise, if high static pressures are needed (like in buildings with cages or filters), the ability to produce airflow at high pressure is essential.

No matter the application, MagFan is the ideal choice because of the high efficiency and the ability to produce high airspeeds even in buildings where static pressure exceeds 100 Pa (0.4'' WC).

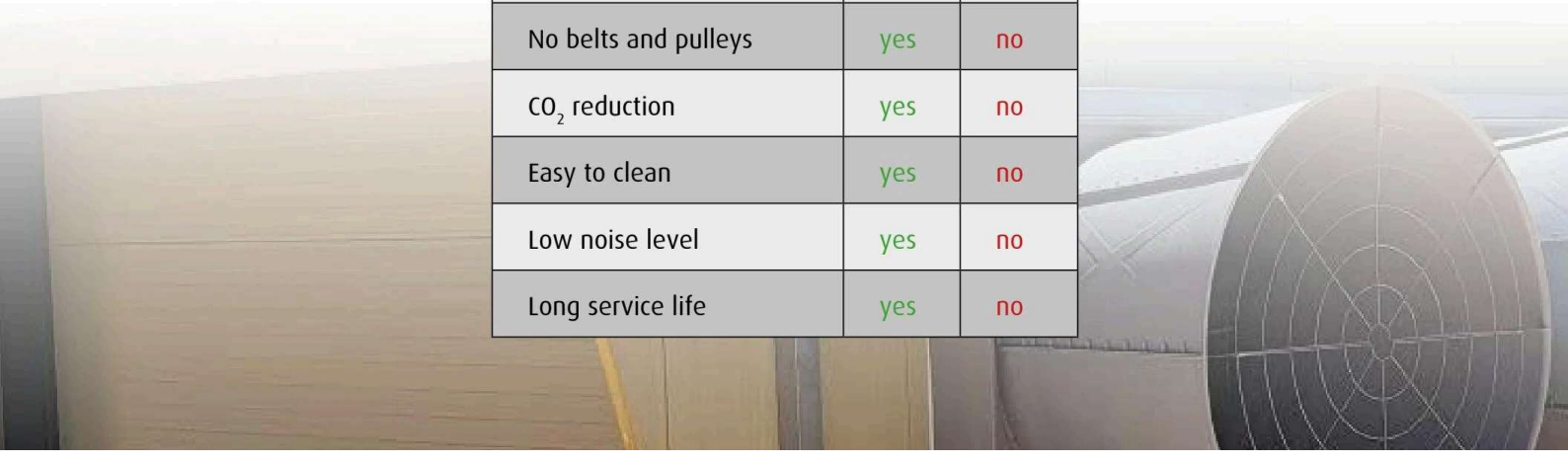
System integration

MagFan integrates seamlessly with all climate control systems and can be combined with any type of inlets. No matter how the ventilation system is designed, the superior efficiency and performance of MagFan will always lead to huge savings.

Distinct advantages

As can be seen in the below table, the direct drive MagFan (impeller mounts directly on the motor shaft) has distinct advantages when compared to traditional wall mount fans. Advantages that bring a much better return on investment.


High performance	yes	no
High energy efficiency	yes	no
High pressure stability	yes	no
Corrosion-free	yes	no
Airtight shutter	yes	yes
Emergency opening	yes	no
Fits all applications	yes	no
Installation cost	yes	no
Maintenance-free	yes	no
Return on investment (ROI)	yes	no
No belts and pulleys	yes	no
CO_2 reduction	yes	no
Easy to clean	yes	no
Low noise level	yes	no
Long service life	yes	no



Setting new standards

MagFan1 — our ON/OFF fan

MagFan1 is our ON/OFF fan. It is a direct drive fan, so no belts and pulleys — hence no maintenance. Because of its outstanding efficiency, capacity and pressure performance, the MagFan1 is the best ON/OFF controlled wall fan ever tested at Bess Lab, University of Illinois.

Higher energy efficiency

MagFan1 can also be speed controlled. Any standard variable frequency drive (VFD) will work. The VFD speed controlling allows for a high energy efficiency of the MagFan1, compared to versions offered by our competitors.

Static pressure		Airflow		Energy consumption	
” WC	Pa	Cfm	m³/h	Cfm/Watt	W/1 000m³/h
0.00	0	40 900	69 500	28.7	21
0.05	12	39 000	66 300	25.4	23
0.10	25	36 900	62 700	22.4	26
0.15	37	35 000	59 500	20.0	29
0.20	50	33 200	56 400	18.1	33
0.25	62	30 800	52 300	16.0	37
0.30	75	28 600	48 500	14.3	41
0.35	87	25 900	44 000	12.8	46
0.40	100	22 200	37 700	10.9	54

Bess Lab test report # 18465

Three-phase induction motor

The three-phase induction motor on MagFan1 has a smooth surface and carefully designed end shields that allow for high aerodynamic efficiency on this easy-to-clean, fully enclosed motor.

An upgrade that rocks!

On average, across all duty points, the MagFan3 and MagFan5 are about 10% more efficient than their predecessors. But there is much more to it than the efficiency improvements.

Whether you choose the three-blade MagFan3 or the five-blade MagFan5, you get a fan capable of delivering very high airflows even at extreme static pressures — and deliver that raw performance and extreme efficiency year after year, without any maintenance other than ordinary cleaning.

Equally important, due to the new impeller design, the fans now cover a wider operation range, with minimum speed settings of 160 rpm and maximum speeds of up to 900 rpm. This allows for a much more precise airflow control, and the redesigned impeller maintains full headwind stability even at very low rpm operation.

Unique, protected features

The new MagFans introduce a long list of first in the business features, and no less than three new patents have been applied for:

- Increased performance and efficiency across the entire range. First fan ever to do over 30cfm/W at 30,000 cfm/0.1”, thoroughly tested at Bess Lab
- One compact (pat. pend) high output motor. Upgraded to IP66/IP4X with goretex breather plug, and running significantly cooler than any other motor on the market
- Twice the torque of other PM motors of equivalent frame size at low rpm and three to four times as much torque as BLDC/EC motors of equivalent frame size at low rpm
- A choice of 3 blade and 5 blade impellers for superior efficiency and extreme performance even at pressures exceeding 100Pa/0.4’’ WC

MagFan3

Capacity: Up to 79 700 m³/h (46 900 cfm)
Pressure: Up to 75 Pa (0.30” WC)
Air flow ratio: 0.85

MagFan5

Capacity: Up to 77 200 m³/h (45 400 cfm)
Pressure: Up to 137 Pa (0.55” WC)
Air flow ratio: 0.91

Ideal choice

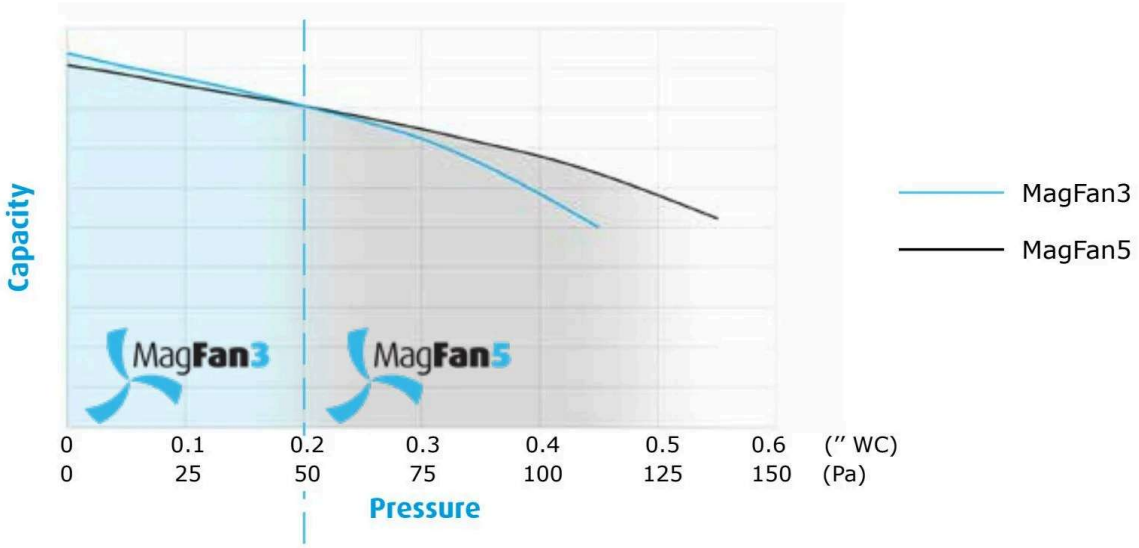
When we designed the MagFan3, our focus was to make a high capacity and high efficiency fan targeting buildings where static pressures seldom exceed 50 Pa (0.2'' WC). This means that the MagFan3 is the ideal choice for houses with floor kept animals.

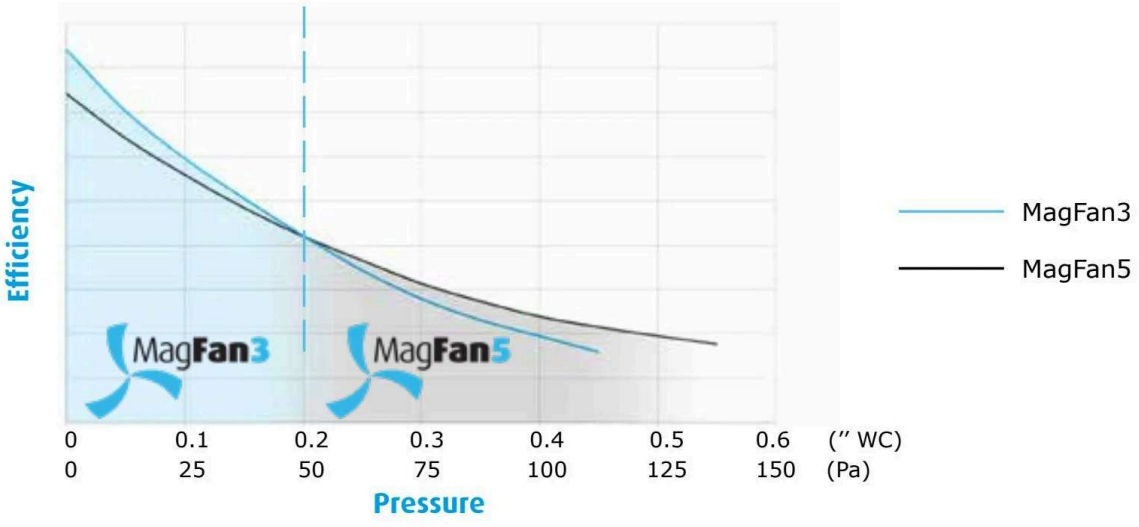
Extreme static pressures

The 5-blade impeller MagFan5 is a high-capacity fan that offers high airflows even at extreme static pressures. The MagFan5 is also a high efficiency fan that outperforms all other fans with same characteristics. The MagFan5 generates high airflow at static pressures up to 137 Pa (0.55'' WC) so it is the only right choice for egg caged facilities and filtered buildings where high static pressures are most pronounced during the production cycle.

Breaking point

As seen from the below graphs, the MagFan3 (blue line) has the highest capacity and is the most efficient of the two up until 50 Pa (0.2'' WC) The MagFan3 can easily produce airflows at pressures up to 75 Pa (0.30'' WC), but as can also be seen from 50 Pa (0.2'' WC) and up to 137 Pa (0.55'' WC) the MagFan5 has a higher capacity and a higher efficiency. This means that the "breaking point" between the MagFan3 and MagFan5 is at 50 Pa (0.2'' WC).





Game-changing performance

Always a winner

MagFan is the best ever tested fan at Bess Lab, University of Illinois, in terms of efficiency, capacity, and air flow ratio (AFR). No other fan has been such a significant game changer in the market for large fans and with its performance data, MagFan will always be a winner when compared to other brands.

Efficiency and sustainable production

The direct drive technology, the highly aerodynamic body and motor/impeller construction add to its qualities and makes the MagFan3 the only right choice where energy efficiency and sustainable production is in focus.
As can be seen below, the three-blade impeller provides outstanding efficiency and performance in the low to medium pressure range.

MagFan3, Bess Lab test data (metric)

Signal (approx.)	RPM	@ 0 Pa		@ 12.5 Pa		@ 25 Pa		@ 37.5 Pa		@ 50 Pa		@ 62.5 Pa		@ 75 Pa		Bess Lab Test #
		m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m3/h	
100%	910*	79 700	24	76 800	27	74 300	30	70 000	32	66 200	35	63 300	37	59 300	41	22 564
90%	820	72 400	19	69 200	21	64 500	25	60 400	28	57 400	30	53 200	34	48 400	37	22 591
80%	730	64 600	15	60 300	18	55 500	21	51 200	24	47 000	27	41 600	31	24 400	46	22 594
70%	635	55 400	12	50 200	14	44 500	17	39 700	20	32 400	25					22 595
60%	550	50 300	9	43 900	12	38 200	15	30 500	19							23 028
50%	450	40 700	7	33 100	9	23 900	13									23 028

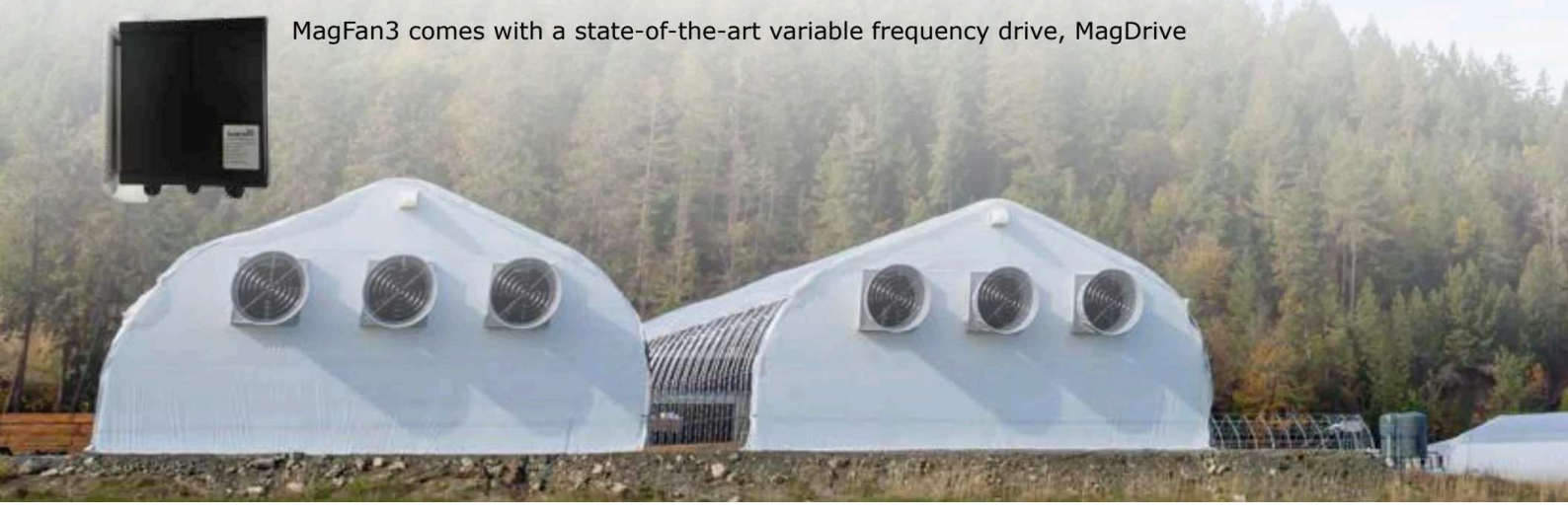
MagFan3, Bess Lab test data (imperial)

Signal (approx.)	RPM	@ 0.0" SP		@ 0.05" SP		@ 0.10" SP		@ 0.15" SP		@ 0.20" SP		@ 0.25" SP		@ 0.3" SP		Bess Lab Test #
		CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	
100%	910*	46 900	24.7	45 200	21.8	43 700	19.6	41 200	18.5	39 000	16.9	37 200	15.7	34 900	14.4	22 564
90%	820	42 600	30.7	40 700	27.6	37 900	23.7	35 500	21.1	33 800	19.4	31 300	17.5	28 500	15.8	22 591
80%	730	38 000	38.7	35 500	33.2	32 700	28.2	30 200	24.7	27 600	21.9	24 500	19.1	14 400	12.8	22 594
70%	635	32 600	50.4	29 500	41.1	26 200	34.0	23 400	28.9	19 100	23.6					22 595
60%	550	29 600	64.3	25 900	49.0	22 500	39.8	17 900	31.3							23 028
50%	450	24 000	90.5	19 500	63.1	14 000	43.6									23 028

* 3-phase MagDrive inverter only, application specific

Above Bess lab wind tunnel capacity; tested in DACS wind tunnel in accordance with ISO5801

Outside of pressure range at this RPM



MagFan3 comes with a state-of-the-art variable frequency drive, MagDrive

Attractive wherever high pressure is needed

MagFan5 — a five blade impeller MagFan

MagFan5 uses a 5-blade impeller, but other than that it is identical to MagFan3. It is designed for applications requiring pressure capacity of 50 to 137 Pa (0.2 to 0.55'' WC).

Increase overall efficiency and profitability

In large scale operations and HEPA filtered operations, static pressures often exceed 100 Pa (0.40'' WC). Above this point most other fans cannot produce air. In this high pressure regime MagFan5 outperforms the competition by a wide margin, while also providing unrivalled efficiency across the entire pressure range.

Because of the impressive performance of MagFan5, farmers can build up to 50% larger constructions and thereby increase overall efficiency and profitability.

MagFan5, Bess Lab test data (metric)

Signal (approx.)	RPM	@ 0 Pa		@ 25 Pa		@ 50 Pa		@ 75 Pa		@ 100 Pa		@ 125 Pa		@ 137.5 Pa		Bess Lab Test #
		m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m^3/h	m^3/h	Watt/ 1000 m3/h	
100%	845*	77 200	24	72 400	30	68 500	36	63 500	42	57 800	50	49 400	60	44 600	66	22 572
90%	770	72 800	21	65 600	27	60 500	32	54 700	39	45 900	49	27 000	70			22 596
	750	69 700	20	63 500	26	58 500	31	52 100	38	42 600	48					22 576
80%	670	61 500	17	55 700	21	49 500	27	40 100	36							22 586
70%	585	57 700	14	51 100	20	43 900	26									23 029
60%	510	46 100	10	37 800	15	24 500	25									23 029
50%	435	39 400	7	29 100	13											23 029

MagFan5, Bess Lab test data (imperial)

Signal (approx.)	RPM	@ 0.0" SP		@ 0.10" SP		@ 0.20" SP		@ 0.30" SP		@ 0.40" SP		@ 0.50" SP		@ 0.55" SP		Bess Lab Test #
		CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	CFM	CFM/ Watt	
100%	845*	45 400	24.7	42 600	19.9	40 300	16.3	37 400	13.9	34 000	11.7	29 100	9.8	26 200	8.9	22 572
90%	770	42 800	27.7	38 600	21.9	35 600	18.1	32 200	15.0	27 000	11.9	15 900	7.6			22 596
	750	41 000	29.3	37 300	22.9	34 400	19.0	30 700	15.4	25 100	12.2					22 576
80%	670	36 200	35.6	32 800	27.4	29 100	21.6	23 600	16.4							22 586
70%	585	31 200	47.4	27 100	33.5	22 100	24.2									23 029
60%	510	27 100	61.4	22 300	39.4	14 400	23.7									23 029
50%	435	23 200	80.1	17 100	45.4											23 029

* 3-phase MagDrive inverter only, application specific

Above Bess lab wind tunnel capacity; tested in DACS wind tunnel in accordance with ISO5801

Outside of pressure range at this RPM

MagFan5 comes with a state-of-the-art variable frequency drive, MagDrive.

’We save 75% on our electrical bill’

PT Japfa Comfeed Indonesia, one of Southeast Asia’s leading and most progressive integrators, decided to invest in MagFan for their new PS breeder farm in Central Java, Indonesia.

The testing

”We recorded the consumption over a 24 week period, from bird placement to production. The reference building, commissioned September 2016, uses three units of 50” and four units of 54” American cone fans. In an identical test building, DACS Indonesia distributor, PT Ansell Jaya, installed seven MagFans. Both buildings were fitted with electronic meters, measuring fan energy consumption only,” says R. Syaprudin, National Manager of Farm Technology & Environment Control Department in PT Japfa Comfeed Indonesia.

The results

”The results were stunning. The house equipped with MagFan consumes only 25% of the power consumed by the control house. These houses are identical in every aspect, only difference being the fans installed. In fact, we have higher fan capacity in the house equipped with MagFans and still we come out with such a huge difference in power consumption. We have double checked all data and there is no doubt that the MagFans outperform the American cone fans by far,” R. Syaprudin points out.

The future

”The future will bring warmer climates and increases in energy costs, no doubt. Fans will be running longer and harder and power consumption will increase. Admitted, we were skeptical in the beginning, but DACS has proven to us that their fans are really an excellent investment. Not only are they extremely gentle on the power cosumption, they are also 100% maintenance free. This definitely is the fan for the 21st Century,” says R. Syaprudin of PT Japfa Comfeed Indonesia.

‘MagFans are whisper quiet’

Laurie Brosnan, one of the owners of Bettapork in Queensland, Australia, a 2000 sow full line production with three individual sites for sows, weaners, and finishers, has installed MagFans in eight sheds. Bettaport chose MagFan again for their newest expansion in 2023.

Quite convincing

”When I first saw the MagFan at the Eurotier show in 2014 I was just about to renew my finisher site. We found that the quality and the operational cost of the MagFan was quite convincing, so we decided to try them out in eight houses. Each house holds 600 finishers, so to get the air speed needed, we installed five MagFans per house,” says Laurie.

Whisper quiet

”We are very happy with the performance to date. The MagFans have fewer moving parts than other fans which means less maintenance for us. They are whisper quiet and consume far less power than any other similar size fans on our farm. My staff say the air is cleaner, fresher in these sheds. This because there is a more uniform, constant, and stable air speed throughout the house. The MagFans were commissioned in September 2015 and have been running flawlessly ever since, and no matter the season, or the age of the animals, the air quality is good, and the air speed is exactly where it should be. Great fans and an excellent investment,” states Laurie Brosnan.

Installations all over the world


England


Indonesia


Colombia


Philippines


Myanmar


Australia


Malaysia


Argentina

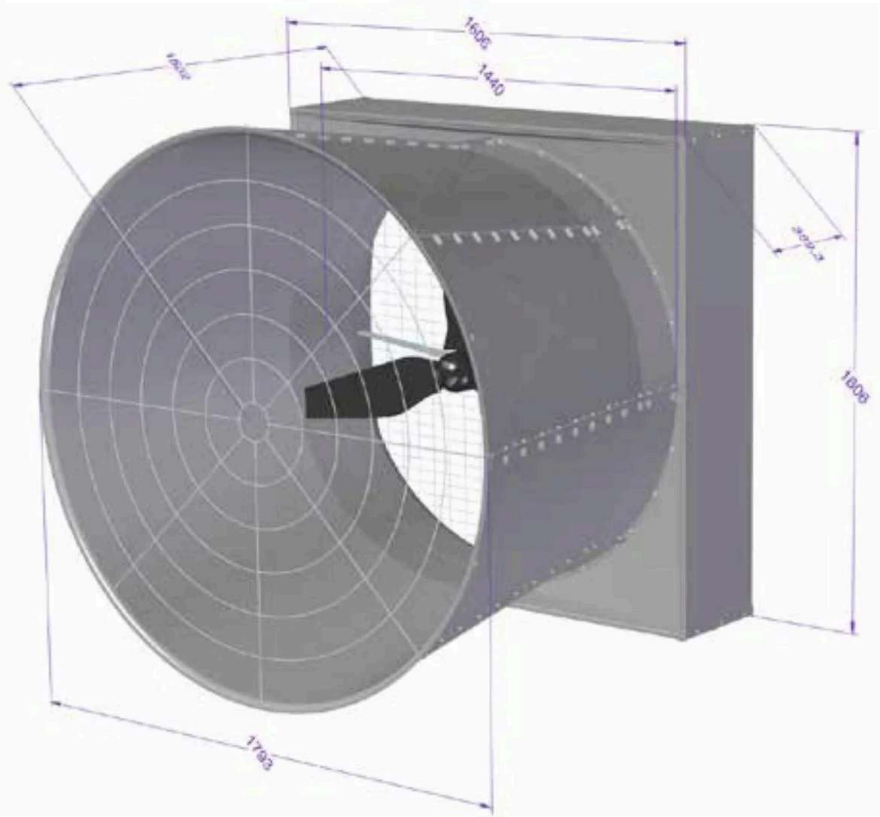

Canada


USA


Spain


Italy

MagFan — Technical specifications



Housing and cone	PP-HD, gray (RAL 7040) PVC, gray (RAL 7040)
Impeller blades	Material: Technofiber PP Tip clearance: 0.4” (10mm)
Brackets, guards	Stainless steel / AISI 304 / A2
Dimensions assembled	Weight: 90-120kg /200-250 lbs L × W × D (mm): See drawing Impeller diameter: 1430mm / 56.5”

	MagFan3	MagFan5	MagFan1
Drive	MagDrive – water-proof speed drive (IP 66) Cos (phi) / power factor at full load: 0.99	MagDrive – water-proof speed drive (IP 66) Cos (phi) / power factor at full load: 0.99	
Output (continuous duty)	In-built drive and motor protection Insulation class F, 170°C magnets In-built double Klixon thermal protection	In-built drive and motor protection Insulation class F, 170°C magnets In-built double Klixon thermal protection	Insulation class F In-built double Klixon thermal protection
Motor	2.5kW RPM: max 900 Permanent Magnet synchronous 3-phase	2.5kW RPM:max 900 Permanent Magnet synchronous 3-phase	1.8kW RPM: 720 @ 50Hz / 870 @ 60Hz Asynchronous 3-phase motor
Voltages	85-265VAC 50-60Hz single phase 360-500VAC three phase	85-265VAC 50-60Hz single phase 360-500VAC three phase	3x400V, 50/60Hz or 3x230V, 50 Hz (D) or speed controlled via any VFD
Capacity	Up to 79700 m^3/h (46900 cfm)	Up to 77200 m^3/h (45400 cfm)	Up to 69500 m^3/h (40900 cfm)
Pressure	up to 75 Pa (0.30” WC)	up to 137 Pa (0.55” WC)	up to 100 Pa (0.40” WC)
Air flow ratio	0.85	0.91	0.85

The only loss-free damper system

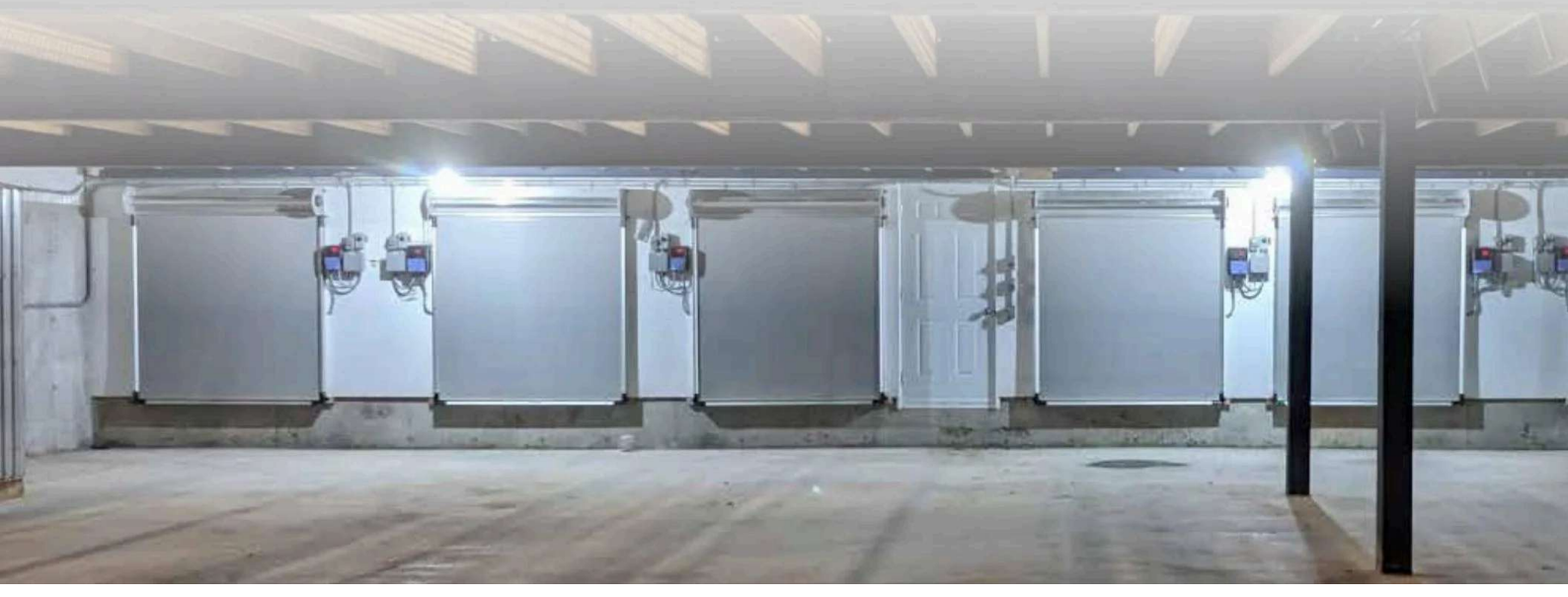
MagDoor is a fast-operating roller door that substitutes conventional shutter systems and ensures completely unrestricted airflow and unsurpassed efficiency.

MagDoor, with its insulated PVC segments, seals off a full-size wall fan like MagFan, to prevent backdraft and cold air ingress. Alternatively, it may be used as an air intake, sealing off a vent opening in a wall, for instance a tunnel air inlet in a tunnel ventilated building. Mounted in front of a MagFan with an additional fan cover on the outside fan cone, the combination offers excellent thermal insulation and air tightness.

Typical applications are poultry, pig and dairy production facilities or industrial buildings.

Correctly installed and operated, the MagDoor can withstand pressures of 150 Pa (0.6” WC)

- Tubular motor design
- Integrated limit switches
- Fully enclosed motor
- 230VAC 50/60 Hz operation
- Opens and closes in 20 seconds
- Manual emergency opening
- Can be power washed



Sustainability

MagFan – fostering energy efficiency in livestock buildings

The global demand for energy continues to rise and ventilation of livestock buildings represents a notable percentage of global energy consumption.

Thus, improving the efficiency of ventilation systems plays an important role in fostering energy efficiency in livestock buildings. MagFan greatly reduces energy consumption and at the same time improves indoor air quality via proven climate control strategies.

A lasting ventilation solution

In fact, MagFan is so efficient that the energy consumption in four (4) buildings equipped with MagFans is the same as in one (1) building with traditional fans – the same ventilation capacity installed in all five buildings.

In other words, MagFan cuts your energy consumption by 75% compared to buildings where traditional fans are installed. MagFan simply is your best choice for an energy efficient and lasting ventilation solution.

Solectrify your business

Solar Panels are ideal for livestock production because solar panels produce electricity during daytime — just when the need for ventilation in a building for livestock is at its highest.

Furthermore, electricity is getting increasingly expensive, and nothing indicates this will change. DACS have a solution for that. MagFans in combination with Solectrifiers.

The Solectrifier harvests electricity directly from photovoltaic panels and feeds this electricity via the MagDrive straight to the MagFan — reducing electricity consumption by as much as 91%.

The Solectrifier technology allows the MagFans to run completely off-grid during daytime, when the photovoltaic panels provide the required power to drive the fans.

Other benefits from installing a set of MagFans/ Solectrifiers:

- Main cable can be downsized 35%
- Generator sets can be downsized 35%
- Transmission (cable) losses completely eliminated with Solectrifier

Responsibility by design

MagFan was constructed with efficiency in mind, but we also focused on a design that would significantly reduce transportation cost. Finally, we wanted a product with an estimated service life of 20 years.

We have already proven that MagFan reduces energy consumption by as much as 75%.

The innovative design reduces shipping volume by 75% — we can ship 165 MagFans in a 40’ HC container.

The result is CO_2 emission reductions in manufacturing and transportation, as well as a remarkable emission reduction throughout MagFan’s long service life.

That is responsibility by design.

ENERGY EFFICIENCY IS OUR DNA

DACS is a family-owned company with more than 30 years of experience.

We specialize in developing, producing, and servicing climate and ventilation control system for livestock production.

The DACS ventilation systems create a perfect in-house climate with a minimum of energy consumption, ensuring a profitable production no matter the time of year. Built to the highest standards, thus providing minimal maintenance and long service life.

We have used our comprehensive knowledge on both livestock production and ventilation in the development of among others our award-winning wall fan MagFan. Our products meet or exceed the international ISO5801 standard.

We want to be close to our customers. We know your world, and we understand your challenges.

DACS bring you:

- ***Energy efficient ventilation systems***
- ***Total production and climate control***
- ***Improved animal welfare***
- ***Timely, accurate deliveries***
- ***Superior product quality and service***

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