

# The future of the layer industry

cage free layer ventilation



# Why Munters?

Munters only does ventilation systems; Allowing us to focus on producing the most innovative ventilation products and building design in the industry.

- Product Quality: Most products offered in the US are built in Michigan using local suppliers.
- Data: Our products allow growers to make data-driven decisions to improve their business.
- Experience: Munters has been designing ventilation products and systems for over 70 years.
- Safety Standards: As a global supplier of agricultural, industrial and commercial products, Munters requires certifications for our products which are tested and certified to the strictest safety standards every day.
- Air Quality: CELdek is the only cooling pad manufactured with the UL GREENGUARD Gold certification, assuring your building air quality is safe for employees and livestock.
- Confidence: Munters systems are used by top producers globally.
- Munters Drive: Save energy, reduce maintenance costs and downtime, and dial in Your Perfect Climate in your building with Munters Drive patented EC direct drive motors.

# 5

KEY DESIGN  
ELEMENTS

## AIR PLACEMENT HELPS CONTROL BIRD MOVEMENT

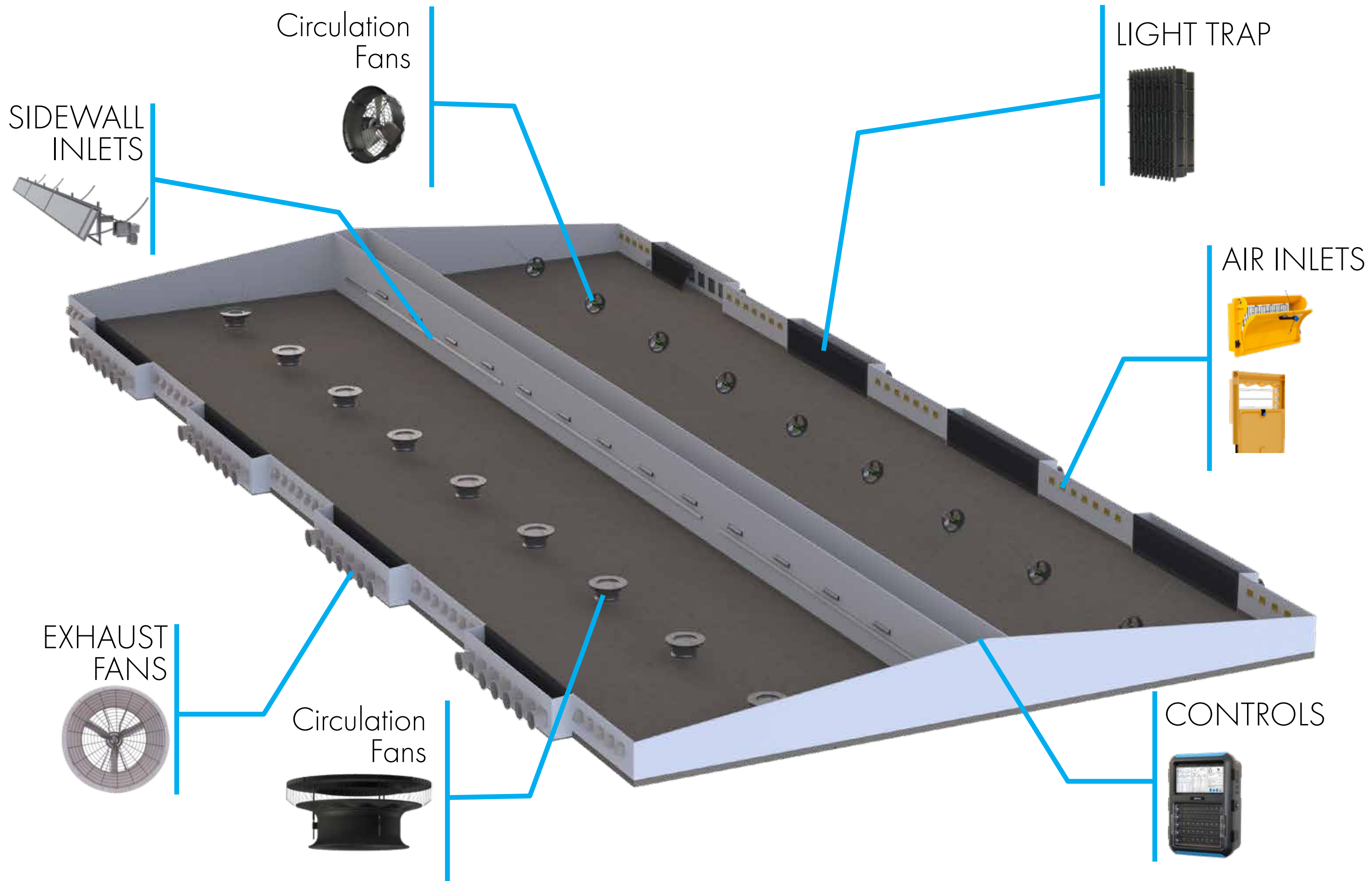


## Munters uses five key elements to control bird movement

- 1 Consideration of outdoor climate
- 2 Product design
- 3 System design — the right products for the right climate
- 4 Air placement
- 5 Integrated design

The key to profitability is controlling bird movement and nesting.

- Reduce Collection Labor
- Increase Egg Yield
- Controlled Bird Movement
- Less Bird Stress
- Fewer Bird Injuries
- Reduce Airborne Contaminates
- Improve Egg Cleanliness





## Munters Drive

Munters was the first to introduce EC motor technology to the large diameter fans specifically for agriculture. Then, we revolutionized that technology with the Munters Drive. Designed, engineered, and built by Munters engineers who are farmers themselves, the Munters Drive reduces costs across dairy, swine, poultry, and greenhouse production by solving some of the most persistent issues facing farm managers, tech managers, and controllers.

Today, more than 30,000 units are in use at over 1,400 farms worldwide, with the first Drives installed exceeding 100,000 hours of continuous operation.

Munters Drive reduces costs by:

- Lowering electrical usage — save up to 40% annually.
- Qualifying you for rebates from utility companies.
- Decreasing the need for complex wiring systems.
- Being virtually maintenance-free.
- Retrofitting to existing systems.
- Qualifies for energy rebate



## VX55 - VX51 - VX36 | Munters Drive

### Performance

	<b>VX55</b> Three Phase, 460V High Efficiency - HE	<b>VX55</b> Three Phase, 460V High Rebate - HR	<b>VX55</b> Three Phase, 460V High Output - HO	<b>VX51</b> Three Phase, 460V High Efficiency - HE	<b>VX51</b> Three Phase, 460V High Rebate - HR	<b>VX51</b> Three Phase, 460V High Output - HO
RPM	490	496	556	540	593	655
0.00" SP						
CFM	33,000	33,500	37,900	28,300	31,200	34,800
CFM/Watt	27.2	26.5	21.5	30.4	25.8	21.2
0.05" SP						
CFM	31,100	31,600	36,100	26,700	29,900	33,300
CFM/Watt	24.1	23.7	19.4	27.1	23.3	19.4
0.10" SP						
CFM	29,900	29,500	34,400	24,700	28,200	31,900
CFM/Watt	21.4	21.1	17.7	23.9	21.1	17.7
0.15" SP						
CFM	26,600	27,200	32,600	22,500	26,300	30,400
CFM/Watt	18.9	18.8	16.2	20.9	18.8	16.2
0.20" SP						
CFM	23,300	23,900	30,300	19,900	24,100	28,700
CFM/Watt	16.1	16.1	14.5	18.0	16.7	14.8
Airflow Ratio	0.73	0.76	0.84	0.75	0.81	0.86
BESS Lab Test	12797	12798	12799	12679	12680	12681

	<b>VX48</b> Three Phase, 460V High Efficiency - HE	<b>VX48</b> Three Phase, 460V High Rebate - HR	<b>VX48</b> Three Phase, 460V High Output - HO	<b>VX36</b> Three Phase, 460V High Efficiency - HE	<b>VX36</b> Three Phase, 460V High Rebate - HR	<b>VX36</b> Three Phase, 460V High Output - HO
RPM	594	649	688	796	876	992
0.00" SP						
CFM	25,000	27,500	29,300	12,550	13,950	15,970
CFM/Watt	25.4	21.6	19.4	26.1	22.8	17.8
0.05" SP						
CFM	23,500	26,300	27,900	11,690	13,210	15,420
CFM/Watt	22.7	19.8	17.7	22.9	20.3	16.7
0.10" SP						
CFM	21,900	24,800	26,600	10,840	12,460	14,790
CFM/Watt	18.2	18.0	16.4	19.9	18.2	15.3
0.15" SP						
CFM	20,100	23,300	25,200	9,770	11,670	14,090
CFM/Watt	18.2	16.4	15.0	17.4	16.3	14.1
0.20" SP						
CFM	18,000	21,400	23,700	8,400	10,770	13,350
CFM/Watt	15.9	14.7	13.7	14.9	14.6	13.0
Airflow Ratio	0.77	0.81	0.85	0.67	0.82	0.83
BESS Lab Test	13412	13413	13414	15382	18145	15380



## VX55 - VX51 - VX48 | Belt Drive

### Three Phase

	<b>VX55</b> 2 HP VX552F3CP	<b>VX55</b> 1.5 HP VX5515F3CP	<b>VX51</b> 2 HP VX512F3CP	<b>VX51</b> 1.5 HP VX5115F3CP	<b>VX51</b> 1 HP VX511F3CP
Prop Diameter	55"	55"	51"	51"	51"
RPM	545	490	630	575	535
Max BHP	2.36	1.81	2.15	1.72	1.37
0.00" SP	CFM	35,200	31,700	33,200	30,300
	CFM/Watt	18.1	21.6	19.1	21.8
0.05" SP	CFM	33,700	29,900	31,900	28,800
	CFM/Watt	16.8	19.8	17.7	20.0
0.10" SP	CFM	32,100	28,000	30,400	27,000
	CFM/Watt	15.7	17.9	16.4	18.2
0.15" SP	CFM	30,000	25,700	28,800	24,900
	CFM/Watt	14.4	16.1	15.2	16.4
0.20" SP	CFM	28,000	22,900	26,900	22,600
	CFM/Watt	13.2	14.1	13.9	14.6
Airflow Ratio	0.83	0.77	0.84	0.78	0.70
BESS Lab Test	10148	10152	11372	11369	11367

	<b>VX48</b> Three Phase, 1.5 HP VX4815F3C	<b>VX48</b> Three Phase, 1 HP VX481F3C	<b>VX48</b> Single Phase, 1.5 HP VX4815F1C	<b>VX48</b> Single Phase, 1 HP VX481F1C
Prop Diameter	48"	48"	48"	48"
RPM	635	575	635	575
Max BHP	1.69	1.26	1.69	1.26
0.00" SP	CFM	27,500	25,000	27,500
	CFM/Watt	18.8	24.1	18.8
0.05" SP	CFM	26,100	23,500	26,100
	CFM/Watt	17.2	21.7	17.2
0.10" SP	CFM	24,800	22,000	24,800
	CFM/Watt	15.9	19.6	15.9
0.15" SP	CFM	23,300	20,200	23,300
	CFM/Watt	14.5	17.5	14.5
0.20" SP	CFM	21,600	17,900	21,600
	CFM/Watt	13.2	15.2	13.2
Airflow Ratio	0.79	0.76	0.79	0.76



## VX36 - VX26 - VX24 | Belt Drive

	<b>VX36</b> Belt Drive, 1.5 HP VX365ZC	<b>VX36</b> Belt Drive, 1 HP VX361ZC	<b>VX36</b> Belt Drive, 0.5 HP VX365ZC	<b>VX36</b> Direct Drive, 0.5 HP VX36ZC
	Prop Diameter	36"	36"	36"
	RPM	1,075	1,010	850
	Max BHP	1.63	1.35	0.60
0.00" SP	CFM	16,910	15,850	12,620
	CFM/Watt	11.8	13.4	21.0
0.05" SP	CFM	16,260	15,150	11,870
	CFM/Watt	11.0	12.4	18.7
0.10" SP	CFM	15,700	14,560	10,920
	CFM/Watt	10.4	11.7	16.6
0.15" SP	CFM	15,110	13,930	9,950
	CFM/Watt	9.8	11.0	14.7
	BESS Lab Test	04085	04084	93239

### Three Phase

	<b>VX26</b> ½ HP VX26F3CT	<b>VX24</b> ½ HP VX24F3CT
	Prop Diameter	26"
	RPM	1,130
	Max BHP	0.49
0.00" SP	CFM	8,950
	CFM/Watt	18.8
0.05" SP	CFM	8,480
	CFM/Watt	17.2
0.10" SP	CFM	7,940
	CFM/Watt	15.6
0.15" SP	CFM	7,550
	CFM/Watt	14.5
0.20" SP	CFM	6,960
	CFM/Watt	13.0
	Airflow Ratio	0.82





## VX26 - VX24 - VX18- VX16- VX14 | Belt Drive

### Single Phase

	<b>VX26</b> ½ HP VX26F1CP	<b>VX24</b> ½ HP VX24F1CP	<b>VX18</b> ½ HP VX18F1CP	<b>VX16</b> ¼ HP VX16F1CP	<b>VX14</b> ⅓ HP VX14F1CP
Prop Diameter	26"	24"	18"	16"	14"
RPM	1,060	1,080	1,660	1,670	1,650
Max BHP	0.39	0.37	0.39	0.23	0.13
0.00" SP					
CFM	7,800	6,490	4,450	3,300	2,020
CFM/Watt	19.9	16.1	11.5	14.2	13.8
0.05" SP					
CFM	7,290	6,090	4,300	3,100	1,910
CFM/Watt	17.8	14.7	11.0	13.2	12.6
0.10" SP					
CFM	6,740	5,740	4,120	2,900	1,790
CFM/Watt	16.0	13.4	10.2	12.1	11.6
0.15" SP					
CFM	6,070	5,250	3,940	2,700	1,660
CFM/Watt	14.1	12.2	9.6	11.1	10.5
0.20" SP					
CFM	5,280	4,760	3,740	2,400	1,440
CFM/Watt	12.2	10.8	8.9	10.0	8.9
Airflow Ratio	0.72	0.78	0.87	0.77	0.75



## ATLAS 74 | Big Performance

The Atlas 74 is designed, engineered and built in the USA with premium American-made parts for the demanding conditions of a modern dairy operation. Featuring a corrosion-resistant fiberglass housing that is easy to clean and built to withstand tough conditions. Munters also uses a premium 182-frame-motor to give you a more durable and top performing motor for years of use. Atlas was designed to provide the best airflow and no other fan of this size performs better, meaning fewer fans to install and maintain and a lower total cost of ownership

### Performance<sup>◇</sup>

Static Pressure	Atlas 74 - Premium		Atlas 74 - Efficient	
	CFM	CFM/WATT	CFM	CFM/WATT
0.00"	57,700	27.5	54,900	29.3
0.05"	54,100	24.1	51,200	25.6
0.10"	50,400	21.2	47,400	22.4
0.15"	46,500	18.7	43,100	19.4
0.20"	42,100	16.2	38,200	16.5
Airflow Ratio	0.78		0.75	

<sup>◇</sup>Tested in accordance with AMCA Standard 210



## CIRCULATION FANS

### CX24 | Circulation

- Optimized orifice and propeller design maximizes airflow and centerline velocity
- High quality variable speed motor
- The patent pending chevron design is engineered to reduce sound levels
- Integrated 4-point mounting hardware enables flexibility in installation, can be easily moved for cleaning, storage, and post-flock maintenance
- Corrosion-resistant orifice
- Optional guard kit available

		CX24P1	CX24P3
Phase		1	3
Horse Power	HP	1/3	1/3
Voltage	V	115/208-230	208-230/460
Thrust	lbf	6.34	6.38
Efficiency Ratio	lbf/kw	18.2	19.5
Volts	V	230.1	226.6
Amps	A	1.65	1.58
Kilowatts	kW	0.349	0.328
Airflow	thrust cfm	5640	5580
Efficacy	thrust cfm/watt	16.2	17
5d Centerline Velocity	fpm	1120	1120
BESS Lab Test #		c20283	c20050

### Vario | Circulation

- Built with thermally insulated polyurethane material and premium corrosion resistant materials to assure top performance for many years.
- Diameter of 36 inches.
- Adjustable air distribution across a large distribution diameter.
- Variable speed option available.
- Mounts to ceiling using chain links.
- Up to 72 foot throwing range



# INLETS

## Horizon | Tunnel Door

- Custom designed actuator, rack and pinion system
- Multi-row control using a single actuator
- The door uses a unique closed cell foam which offers 30% additional R-Value, pushing the Horizon Door to an R-Value of 8, topping the market
- Doors open to near 90° for maximum airflow
- Designed for easy assembly with welded bracketry, minimum fasteners and minimum adjustments
- Powder coated tubing and bracketry, along with outdoor rated actuator and gear transmission unit

## Horizon | Continuous Sidewall Inlet

- Uses many of the same durable Horizon components making it easy to build a custom system that works for your specific building
- Single row door pivots into the bird area allowing all mechanical components to be safely located in the plenum area for easy maintenance, out of the way of the birds.
- Unique gear drives provide precision opening and closing with 5 year unconditional warranty
- Door uses a unique closed cell foam which offers 30% additional R-Value, with a market-topping R-Value of 8.
- Heavy duty door seals, flexible hinge and 1.5" thick door ensures a tight seal when closed.
- The rack-and-pinion and oversized gear drive actuator offers worry free operation in warm or cold weather

## Horizon | Intermittent Sidewall Inlet

- The Ideal solution for minimum ventilation needs. The Inlet concept uses many of the same durable Horizon components making it easy to build a complete custom building solution.
- The 15" x 8' long inlet offers a curved door in order to increase the air velocity as it enters the building and direct the air along the ceiling.
- Seals on sides and edge of the door gives unmatched tightness when closed and directed air when in operation.
- Heavy duty door seals, flexible hinge and 1.5" thick door ensures a tight seal when closed.
- The rack-and-pinion and oversized gear drive actuator offers worry free operation in warm or cold weather



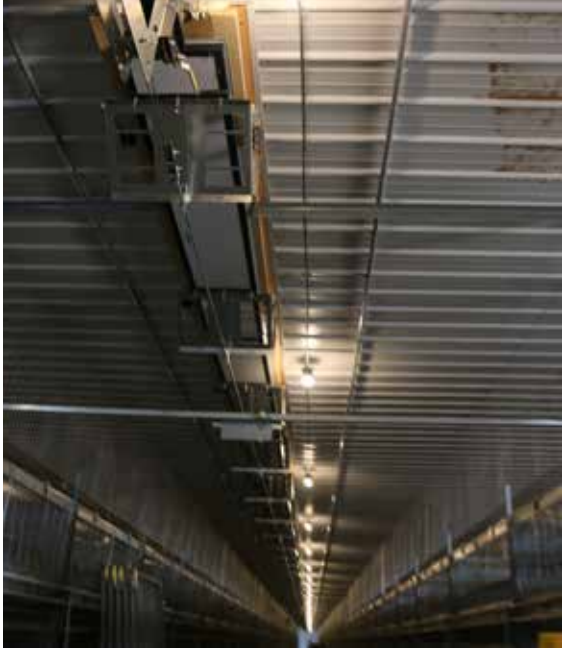
## INLETS

### »ZEW« Professional 2900 | Wall Inlet

- Designed for colder climates
- Significantly reduces the formation of ice even at extreme external temperatures
- Reduces energy costs by forgoing forced ventilation
- Spreads the temperature uniformly inside the building, as the minimum air rate can be geared solely to the requirements of the animals.

### »ZEW« Flatwave | Wall Inlet

- Wave design made for high throwing range at minimal opening
- Air guidance directed slightly upwards – even at minimal opening
- Air guide blades are individually adjustable
- Made of heat-insulated polyurethane
- Compact design
- Integrated slot for optional bird protective grid and air conduction sheet



## INLETS

### Pivot Air | Ceiling Inlet

- Complete package, from actuator to baffle.
- Components include: LA - Pipe Drive System & transition kit, risers and baffles
- 12" and 20" Slot sizes
- Easy to install and adjust
- 1" high density foam wrapped in corrugated PVC baffles
- Rubber seal to keep out draft
- Solid rod riser connections to eliminate stretch ensuring tight closure
- Custom engineered pivot point for smooth operation
- Designed to work with LA - Pipe Drive System

### Blade Style | Light Trap

- High light reduction
- Low resistance to air flow
- Each piece is fully assembled
- Easy to clean
- Will not corrode
- Made from ultraviolet resistant PVC

### LA | Actuator

- Extremely quiet, self-locking double worm gear unit, long service life, zero maintenance.
- Universal mounting with standard at back or optional on side left (symmetrical)! Removable feet.
- Installed precision END 20 gear limit switch for 580 shaft revolutions (microswitch in cURus).
- Coil protection contact integrated on all single-phase motors, so no separate motor protection switch is required. Turnkey with cable.

### Control Your Environment

The environment in the barn comprises light control (regulates sexual maturity), avoiding stress for the birds and of course assuring adequate ventilation capacity and air exchange rate to maintain air quality and avoid heat stress. In colder climate zones, minimum ventilation rate is crucial to avoid suffocation of the layer hens and ensure a good egg laying rate. Correct temperature must be kept in relation to the birds' ages, avoiding temperature swings and maintaining a uniform climate inside the barn. Ammonia emission control can be instrumental in densely populated areas to be able to expand the farming operations and maximize production.

Find your nearest Munters office at [www.munters.com](http://www.munters.com)

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