quality and technology...

... for agriculture



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Agrícola

ULMA

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quality and technology for agriculture

table of

AENOR Producto Certificado 0047/000001

IQNet ISO 9001

AENOR Empresa Registrada UNE-EN ISO 9001 ER-0688/2008

ULMA AGRÍCOLA IS A **COMPETITIVE, EVER-DEVELOPING COMPANY THAT IS SPEZIALIZED IN COLLABORATING WITH GROWERS,** PROVIDING A COMPREHENSIVE RANGE OF UNDER COVER GROWING SYSTEMS

introduction

Belonging to the **ULMA Group**, ULMA Agrícola is part of one of the largest business groups in Northern Spain. Consisting of seven business units, all of them leading companies able to compete in an international, environment, sharing their experiences, assets and cultures among themselves.

The advantage of being born and developing within a financial, educational and researching network is intensified by the Mondragón Cooperative Experience.

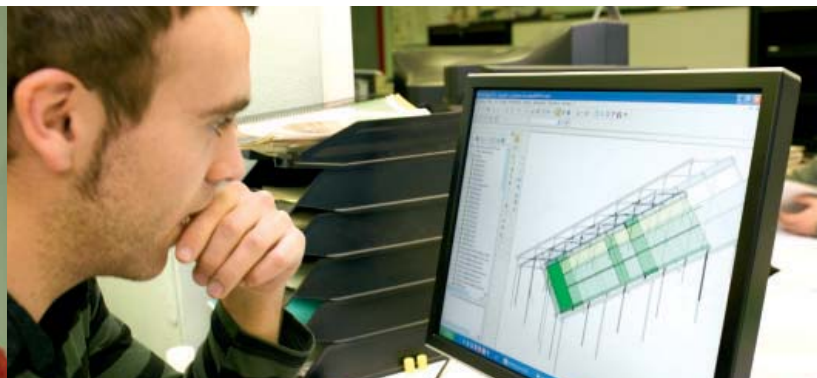
Since 1979 **ULMA Agrícola** manufactures its own materials to build greenhouse structures, using completely automated processes ranging from shaping the tube to the end product and distribution thereof.

ULMA Agrícola counts on a large sales network, both nationally and internationally, that provides assessment on each grower's needs.

Its large multidisciplinary engineering department is trained to undertake any project successfully, applying the latest design and calculation technology to make the most of the customer's available resources.

In order to provide comprehensive "turnkey" facilities designed to achieve maximum production, in terms of both quality and quantity, the company also provides an engineering, installation and specialist after-sales service.

It fulfils European design and installation regulations in force under the **UNE 13031-1 STANDARD**, using processes in which the Total Quality policy prevails, having received the **ISO 9001** certificate.



ULMA'S MULTI-SPAN GREENHOUSE IS A **MODULAR**, EASY-TO-INSTALL SYSTEM, DESIGNED TO CREATE OPTIMUM CONDITIONS FOR EACH CROP.

multi-span

The various components of the **Multi-span** range are designed to fit perfectly using screwed joints, which makes the installation process easier and absorbs better the various stresses that act on the structure. Its robustness and ability to adapt to the measurements and features of the terrain makes it a structure very much in demand.

ULMA Agrícola greenhouses fulfil the requirements of the UNE-76-208/92 Spanish Greenhouse Standard for "Multi-span greenhouses with plastic coverings". This standard specifies the loads and combinations to be considered when calculating greenhouse structures.

Screws are bichromate in accordance with UNE 76.208/92 standards and 8.8 quality in accordance with the UNE-EN ISO 898-1:2000 standard.

Excess load calculations are based on the recommendations of the European Convention for Constructional Steelwork (CECM).

As regards aluminium components and beams, they fulfil mechanical characteristics in accordance with the **UNE-EN 755-2:1988 standard** and dimensional characteristics in accordance with the **UNE-EN 75-9:2001 standard**.

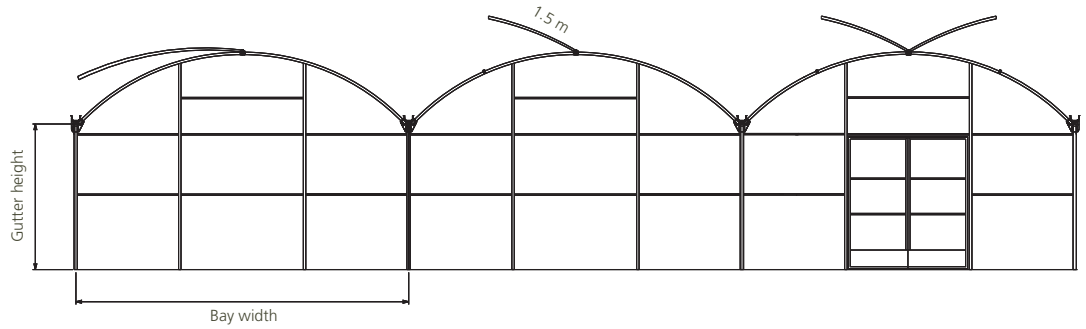
Within the **Multi-span range, the Gothic model** is designed to achieve more inside space. The gothic form of the structure and the slope of the arches makes better use of sunlight and also reduces the risk of dropping onto the crop, due to a better drainage into the gutters. The structure design makes the most of the inside space available in the greenhouse.

ULMA Agrícola S.Coop was the first Spanish manufacturer to receive standardization of its greenhouses in accordance with the UNE –EN 13031-1 standard and is currently the only manufacturer that owns the AENOR Certificate.

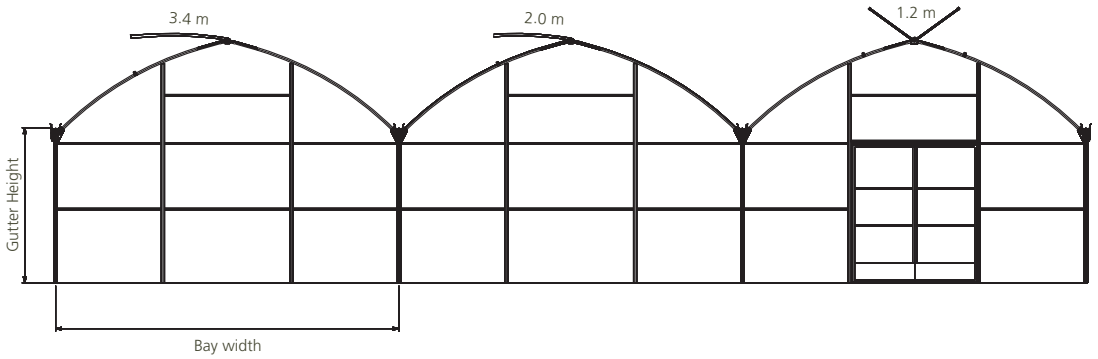
ULMA Agrícola standardized greenhouses fulfil the following:

- **European UNE –EN 13031-1 Standard** for "Greenhouses. Design and construction. Part 1: Greenhouses for commercial production"
- **RP 00.47** " Specific AENOR regulation for greenhouses".
- **UNE 76209 IN** " Wind action on commercial greenhouses".

CIRCULAR MULTISPAN (M)



GOTHIC MULTISPAN (G)



MODEL	M-6				M-8				M-9				G-8				G-9			
Bay width	6,40				8.00				9.00				8.00				9.60			
Spans	2.50				2.50				2.50				2.50				2.50			
Distance between external pillars	2.50				2.50				2.50				2.50				2.50			
Distance between internal pillars	5.00				5.00				5.00				5.00				5.00			
Crop support bar	5.00				5.00				5.00				5.00				2.50			
Gutter height	3.50	4.00	4.50	5.00	3.50	4.00	4.50	5.00	3.50	4.00	4.50	5.00	3.50	4.00	4.50	5.00	3.50	4.00	4.50	5.00
Ridge height	4.85	5.35	5.85	6.35	5.20	5.70	6.20	6.70	5.45	5.95	6.45	6.95	5.60	6.10	6.60	7.10	6.00	6.50	7.00	7.50

windows

ridge windows

Located on the ridge, they allow a uniform ventilation in the facility. The various models are designed for specific climate conditions.

▲ **SUPERCENIT SINGLE AND BUTTERFLY WINDOW**
For warm, high-humidity climates.

▲ **RIDGE WINDOW**
Ideal for temperate climates.

perimeter windows

In combination with the ridge windows, they achieve a strong increase of ventilation the number of air renewals per hour. The various models differ from each other in terms of their opening systems.

◀ **ROLL- UP WINDOW**
The film is rolled up and down along a main axis.

GUILLOTINE TYPE WINDOW ▶
Opening by vertical movement.

covering

ULMA structures are designed to include different types of coverings, using the necessary fastening system in each case.

plastic film

Thermal Polyethylene, Three-layer, EVA, Canvas.

semi-rigid materials

PVC, Polyester, Polycarbonate.

rigid plate

Pre-painted sheet, sandwich panel.

motorization

ULMA Agrícola equips its windows, both ridge and perimeter, with different motor systems that can activate automatically the windows and other equipment. This allows the climate variables inside the greenhouse to be controlled.

A gear reducer opening system transmits the motion through a chain coupling to a transmission axis and gear rack every 2.5 m.

In the case of roll-up windows, the opening is created by the plastic film being rolled around a main axis.

structure accessories

Front and side doors, side pillar reinforcements, K reinforcements, are just some of the components that ULMA provides to complete the standard structure.

thermal and shade screens

ULMA screens help to control:

light

ULMA Agrícola screens are very useful to reduce the amount of sunlight entering the greenhouse, by reflecting it instead of absorbing it by using the right amount of aluminium for each level of shade that achieves maximum "shade effectiveness".

humidity

The lower side of the screens has an excellent capacity of absorbing heat radiation from the ground. This means that the screen stays at a high temperature to avoid condensation and dew formation on it.

The screen design allows steam to pass easily through it. In normal growing conditions, no condensation drops are formed on the lower side of the screen.

The drops that could fall from the roof are trapped in the screen and led to the screen's fibre system where they are dried, avoiding their fall on the crop.

temperature

ULMA Agrícola screens use transparent films and aluminium sheets that block outgoing radiation. The transparent strips on the screen absorb heat radiation and allow PAR light to pass through. The laminated aluminium strips receive heat without allowing this to escape above.

When closed at night, the screens trap heat inside and reduce damage due to freezing.

When closed during the day, they reduce the amount of sunligh entering the greenhouse, helping to a better control of the inner temperature.

In both cases a strong energy saving is ensured.

reduced folding

The screen has a flexible and easily-folding structure that once folded takes up minimum space and allows the maximum amount of light to enter.

THEIR EXCELLENT FINISH MAKE THEM **IDEAL FOR PRESENTATIONS AND SHOWS**.

growing benches

The **growing benches** consist of trestle made of galvanised steel, aluminium profiles and rounded corners made of plastic.

fixed benches

The **fixed benches** are available in widths of 1.6m, 1.8m and 2.0m, with no limits on length and a standard working height of 0.8m, with the possibility of adjusting them to achieve a levelled surface.

portable benches

Unlike fixed benches, **portable benches** include two black rubber, high-adherence multi-direction wheels underneath each trestle. These allow the entire bench structure to be moved. At the ends of the bench, one of these two wheels is fitted with a brake system that avoids accidental movements. Available in widths of 1.6m, 1.8m and 2.0m.

mobile benches

Mobile benches are available in widths of 1.6m, 1.8m and 2m (maximum recommended length 20m). In this type of bench, a system consisting of rolling tubes, bearings, guides and roll over protection allows the tray platform to be moved sideways over the supporting structure fixed to the ground, just like the fixed benches. With this system, the access aisles to the benches are created when they are moved, which makes the most of the surface used the growing.

Depending on the purpose for which the bench is used, any of the above-mentioned models can be selected with a PVC or grille bottom.

PVC bottom

Grille bottom

THE **FAN** IS DESIGNED TO RENEW AIR IN THE GREENHOUSE. THIS CAN BE USED IN **COMBINATION WITH COOLING PANELS TO REDUCE THE TEMPERATURE INSIDE.**

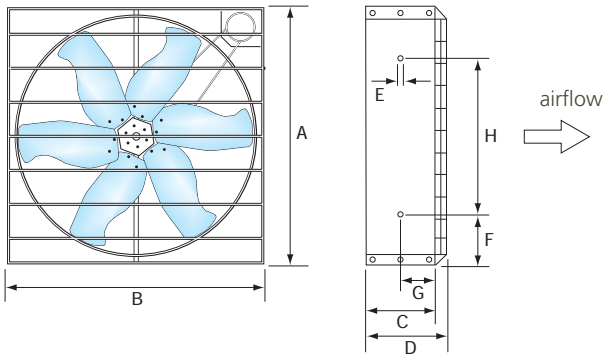
fan

The fan and venturi housing is made of resistant rolled sheet steel. The centre drum and V-shaped pulley are made of cast aluminium.

The automatic shutters, made of high-resistance pressed and galvanized, prevent dust from entering.

The propeller is statically and dynamically balanced to produce low noise and vibration levels. It is available in pre-painted galvanized steel or stainless steel.

It is equipped with a class A motor, whose main feature is the efficiency and low energy achieved. It is available to work at 230 v 1f or 230/400 3f at 50 or 60 Hz.



	MAIN INSTALLATION				MEASUREMENTS			
Measurements	A	B	C	D	E	F	G	H
EM 30	950	950	450	530	M8	240	295	475
EM 50 n	1.380	1.380	450	530	M8	270	308	830

Depth D refers to the fan with a CE safety guard over the shutter

		EM30		EM50N	
		0.5CV	0.75CV	1and 1.2 CV	1.5 CV
Weight of fully equipped fan	Kg	55	56	84	86
Nominal propeller speed	Rpm	590	640	368	427
Airflow at O Pa	M3/h	13.500	14.550	36.180	42.125
Specific output at O Pa	M3/wh	20.2	17.9	34.5	28.0
Propeller diameter	mm	760		1.270	
Number of blades		6		6	
Number of shutter blades		7		10	
IEC protection for electrical motor		IP55			

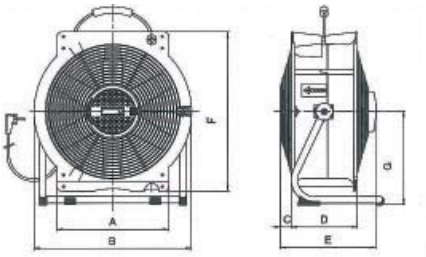
air circulation fans

Air recirculating fans have an influence on climate quality and homogeneity in the greenhouse. Air recirculation helps to avoid condensation, plant diseases and improves transpiration.

All of the components are corrosion-resistant. They are equipped with top-quality motors with a protection system (IP 55).

	MB 4E40Q	MB 4E50QB
A	365	420
B	515	620
C	38	38
D	216	240
E	314	328
F	520	620
G	304	369

measurements in cm



MODEL	RPM	Airflow (m³/h)	Voltage (V)	Frq. (Hz)*	Nom. I (A)	Power Consum. (W)	Current width		Weight (Kg)
TB4E40Q	1400	5050	230	50	1.1	230	16	47	9
TB4D40Q	1400	5050	230/400	50	1.0/0.6	210	16	47	9
TB4E50Q	1400	7760	230	50	1.8	390	18	58	11.5
TB4D50Q	1400	7760	230/400	50	1.9/1.1	400	18	58	11.5

* Optional air circulation fan for 60 Hz

THE HEATERS ARE **DESIGNED TO HEAT THE AIR INSIDE THE GREENHOUSE** AND ALLOW RELATIVE HUMIDITY TO BE CONTROLLED TO A CERTAIN EXTENT

air heater

The housing is made of pre-coated galvanized steel.

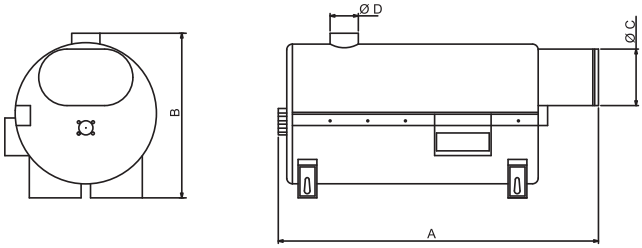
The combustion chamber and heat exchanger are made of stainless steel.

The combustion inspection process is straightforward.

It works in accordance with the indirect combustion principle through the heat exchanger, with the combustion gases and airflow completely separate.

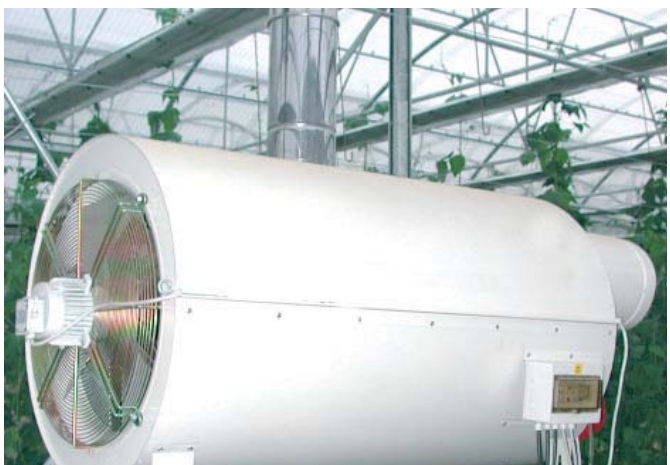
The combustion gases are expelled from the building through the chimney.

It is provided with a dual switch thermostat to increase safety and avoid unstable heater operation.



Model	MEASUREMENTS (MM)			
	A	B	Ø C	Ø D
GP-50	1570	780	400	150
GP-80	1760	870	500	150
GP-130	2000	970	600	200

Model	Calorific power cal/H (KW)	Airflow (m^3/h)	Working Voltage (V)	Weight(Kg)
GP-50	50,000 (58.1)	4,700	230/400 3f	90
GP-80	80,000 (93.0)	5,800	230/400 3f	120
GP-130	130,000 (151.1)	9,500	230/400 3f	145



THE **CLIMATE CONTROLLERS** IN THE **MICROCLIMATIC SYSTEM RANGE** ARE CAPABLE OF CONTROLLING THE GREENHOUSE VARIABLES AND ACHIEVING THE RIGHT CLIMATE **FOR ANY TYPE OF CROP.**

climate control

THE R&D&I DEPARTMENT AT ULMA AGRÍCOLA, TAKING ADVANTAGE OF ITS EXPERIENCE IN THE SECTOR, HAS DEVELOPED A WIDE RANGE OF EQUIPMENT TO FULLY AUTOMATE ITS GREENHOUSES.

AT THE MOMENT ULMA AGRÍCOLA COUNTS ON AN EXTENSIVE RANGE OF CLIMATE CONTROLLERS IN WHICH THE LATEST GSM TECHNOLOGY CAN BE INCORPORATED, AS WELL AS VARIOUS SENSORS, INVERTER BOXES AND SIGNAL AMPLIFIERS.

climate control

The large LCD screen, along with the detailed menus, make this a user-friendly tool in spite of its high level of sophistication. It is your best friend to get the most of your installation.

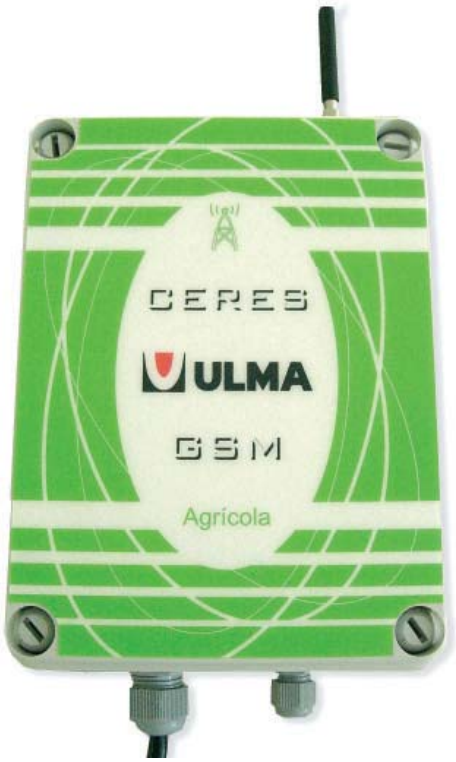
Name	Applications				
	Ridge Window 1 Side	Ridge window 2 sides	Side vent 2 sides	Screen	Heater + Recirculator
0110				X	X
1000	X				
1110	X			X	X
3000	X		X		
2110		X		X	X

GSM technology

CERES is a module that allows the latest GSM technology to be incorporated in the MicroClimatic System climate controller. It is a remote surveillance, control and supervision system that gives the user greater peace of mind while away from the facility.

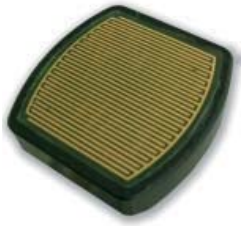
CERES counts on a list of mobile telephones, which the user can fully configure, from which queries can be made, manoeuvers performed and notices received about any incident in the facility, using simple SMS text messages.

CERES allows the user to know the status of the facility anytime, anywhere.



sensors

ULMA Agrícola offers a wide variety of top-quality sensors, in keeping with the precision and reliability required for all of the components of our climate control system. Using these sensors, even the most complete meteorological station can be configured.

ANEMOMETER	THERMOMETER	RAIN SENSOR
		
WEATHER VANE	**PYRANOMETER**	**COMBINED TEMPERATURE AND HUMIDITY**
		

inverter boxes and signal amplifiers

Inverter boxes with circuit breaker protection to control the rotation direction of the fan motors and screens.
All of the power phases consist of top-of-the-range components.
The equipment protection level is IP-55 (dust and water).

PRODUCTION SYSTEMS BASED ON ADVICE AND SERVICE PROVIDED BY **ULMA AGRÍCOLA**.

applications

THE VARIOUS OPTIONS AND REINFORCEMENTS THAT ULMA PROVIDES FOR ITS MULTI-SPAN GREENHOUSES, AS WELL AS THE MANY SOLUTIONS FOR COVERS, AUTOMATED SYSTEMS AND EQUIPMENT, DETERMINE THE POSSIBILITY OF USING THE STRUCTURE FOR ANY APPLICATION THAT THE CUSTOMER DESIRES.

AS A RESULT WE CAN SEE AUTHENTIC PRODUCTION SYSTEMS BASED ON THE ADVICE AND SERVICE THAT ULMA AGRÍCOLA PROVIDES; GROWING FACILITIES, LIVESTOCK FARMS, INDUSTRIAL BUILDINGS, ETC.

growing facilities

Growing vegetables, decorative plants and cut flowers are some of the most common activities that ULMA Agrícola greenhouses have been dedicated to.

Usually this kind of facilities are equipped with a wide range of indoor climate control equipment.

industrial buildings

In this case, the covering most commonly used is rigid plate, polycarbonate or sandwich panel.

In order to achieve the maximum, trusses or K reinforcements are used to have more space between pillars, allowing vehicles to drive around inside.

livestock farms

All kinds of farms have been equipped with under cover greenhouse structures using any of the covering materials that ULMA Agrícola provides. This make these facilities difficult to distinguish outwardly from the industrial buildings or growing facilities.

garden centers

Like any retail establishment, Garden Centers aim to look after design and details. This is why the most popular covering for this type of facility is the plate or glass panel cover.

Thermal screens and growing benches are very useful as inside equipment.



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