

# SAM AGRI

VENTILATION FOR AGRICULTURAL BUILDINGS

[www.sam-agri.com](http://www.sam-agri.com)



MADE IN  
FRANCE





# SAM'AGRI

VENTILATION FOR AGRICULTURAL BUILDINGS

The SAM'AGRI kit was created in order to naturally and economically optimise ventilation and solar management in agricultural buildings.

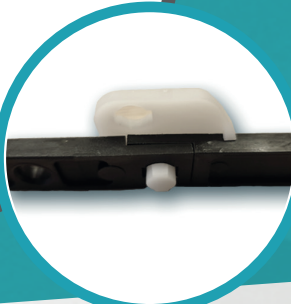
The SAM'AGRI kit is a **4-FUNCTION MECHANISM !**

Composition of our **kit** motorized

## ACCESSORIES



## MOTOR KIT



SOLAR PANEL



GEARMOTOR



ELECTRONICS ENCLOSURE



### NATURAL LIGHT

Daily natural light is key to animal as well as farmer comfort. Appropriate lighting is **paramount to animal reproduction, production and stress management.**

Our translucent UV-treated louvre blades allow you to manage light intensity in your farm building.



### NATURAL VENTILATION

Buildings are ventilated by activating the blades according to an opening percentage **specified by the farmer.**

Building hygrometry and ammonia are therefore considerably reduced. Thanks to this permanent ventilation, your herd will enjoy optimal conditions during the summer months.



### SOLAR MANAGEMENT

You can protect your animals from the sun, **avoid buildings overheating and thermal stress.**

As a result, milk production remains more stable in summer months.



### WEATHERPROOFING

Thanks to its movable blades, the SAM'AGRI kit makes it possible to ensure buildings are water- and air-proof when the blades are closed.

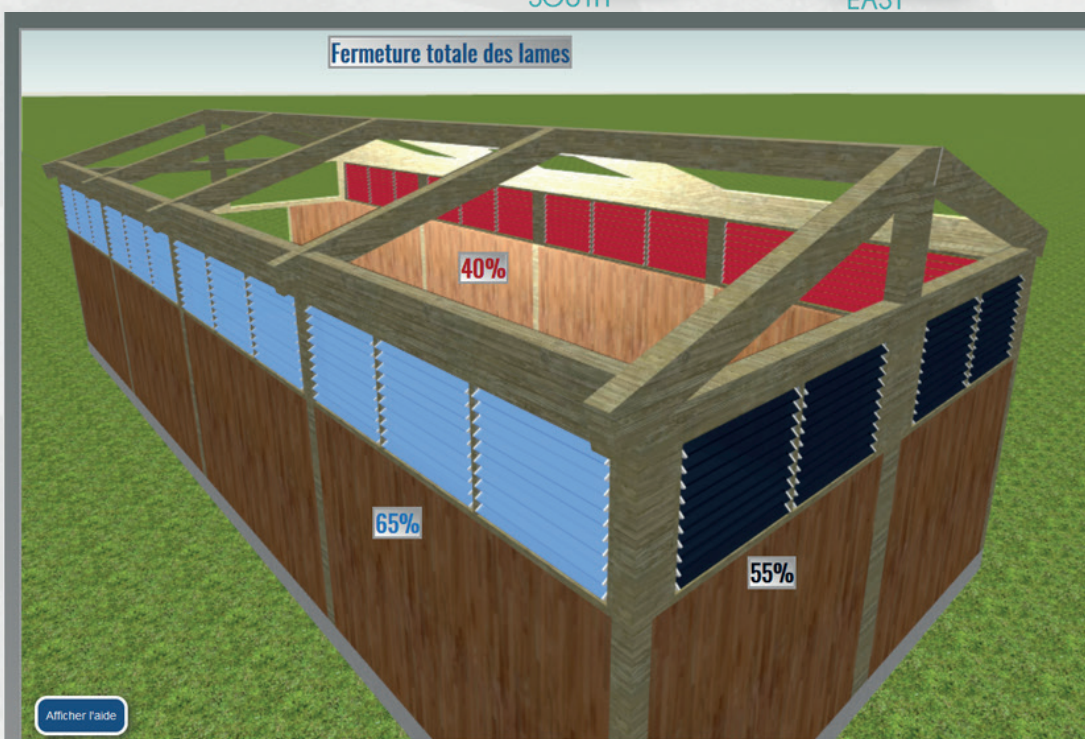
This function replaces the building cladding.

The SAM'AGRI kit is also a generic system that can accommodate **several types of blades: Wood/PVC/Aluminium.**

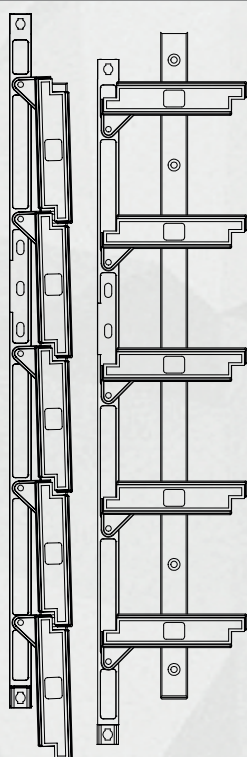
All these functions are managed by a central temperature management which ensures the opening and closing of the blades simultaneously **on the 4 cardinal points.**



## ● Central temperature management



## MOTORIZED KIT



## ● Installation recommendations

- The kit must be installed from the interior building profile with the connection point at the top.
- A 7mm shim (essential) must be positioned in the frame upon installing your first kit.
- Blade length is calculated after deducting kit thickness, i.e., **3cm** for the manual version and **4cm** for the motorised version.

### EXAMPLE:

For a 1 metre opening (1,000 mm), you would need 97cm blades:  
 $100\text{cm} - 3\text{cm} = 97\text{cm}$

It is essential to add a minimum 2mm clearance, depending on the materials used.

Note: screws (4.5\*5 wood screws or 4.8\*5 self-drilling screws) are not provided in the kit.

**Wind resistance:** 110km/h

**Composition:** PA 6/6 charged 30% glass fibre with UV treatment.

**Temperature differential of materials:** -20°C to +60°C



## ● Product target

Beyond its technical added value, the SAM'Agri system protects animal welfare and provides a suitable solution for every type of livestock farming.



HORSE



POULTRY



PIG



CATTLE



GOAT



RABBIT

## Blade comfort for each and every animal !

## ● Blades

We offer 4 types of blades

- Aluminium blades, 18mm thick (18\*99\*2000mm)

Colours : Grey - RAL 7016 and White - RAL 9010

- Thermally modified wood blades, 20mm thick (20\*99\*1200mm)

Naturally treated using high temperature steam

Colour: Natural

- UV treated PVC blades, 20mm thick (20\*99\*1000mm)

Colours: White - RAL 9010 / Translucent / Blue / Bronze

- UV treated transparent PMMA blades, 8mm thick (8\*99\*800mm)

Colours: Transparent / Bronze



## ● Our transparent PMMA blade

Today, transparency is essential for all livestock. This is why we developed a transparent blade **SAM'Agri kit**, which makes animal comfort visible to everyone.





## ● Cattle and goat farming



CATTLE



GOAT

For **cattle and goats**, translucent blades provide constant light and ventilation.

In cold weather, the blades can be completely closed to retain heat from the herd; in warm weather, the blades can be opened completely to provide continuous ventilation, and therefore **avoid thermal stress**.

**Animal and farmer comfort are both increased**, helping to stimulate production and reduce disease.

Constant natural light **improves milk production as well as reproduction**.

Wooden blades also **provide ventilation and ensure the aesthetic appearance of buildings**.







PIG

## ● Pig farming

For pig farming, opaque PVC and aluminium blades both provide solar protection and ventilation.

Pigs need a healthy environment in the pig barn for optimal growth.

By ensuring good ventilation and natural light, the SAM'Agri kit reduces ammonia and simultaneously encourages stable milk production among sows as well as piglet growth.

PORCS





## ● Poultry farming, layers and broilers



**For layers,** our warm coloured PVC Bronze blades favour egg laying and reduce stress\*.

**For broilers,** blue PVC blades makes it possible to darken and calm the chicken shed.

We also have an opaque blade that makes it possible to manage lighting up to a **complete blackout** for vaccination and **egg collection**.



POULES PONDEUSES



POULETS DE CHAIR





SAM<sup>AGRI</sup>  
VENTILATION FOR AGRICULTURAL BUILDINGS



# TECHNICAL INFORMATION



## HDPE INJECTION MOULDING

### HD 6070 UA

HD 6070 UA\* is a high density polyethylene grade with a narrow molecular weight distribution, suitable for a wide range of injection moulding applications.

HD 6070 UA has the following characteristics:

- Easy processing.
- Good impact strength.
- High rigidity.
- High warpage resistance.

### Applications

- Crates.
- Boxes.
- Seats.
- Pallets.

### Typical Properties

Property/Grade	Test Method	Unit of measurement	Value
Melt flow rate (2.16 kg)	ISO 1133	g/10 min	7.5
Density	ISO 1872/1	Kg/m <sup>3</sup>	960
Vicat Softening T°	ISO R 306-74	C°	127
Tensile strength at yield	BP 13B/1	MPa	31
Elongation at break	BP 13B/1	%	> 1000
Flexural modulus	ISO 178	MPa	1400
• ESCR, F50, 23 C°	ASTMD 1693	hours	55
Charpy impact resistance	ASTMD 256	KJ/M <sup>2</sup>	6

• ESCR: environmental stress cracking resistance.

\* UA: UV stabilization.





**REPSOL**  
**YPF**

**ISPLEN®**  
**POLYPROPYLENE**

## ISPLEN® PG370 AS

Polypropylene homopolymer, 30% chemically coupled fiber glass reinforced compound. ISPLEN® PG370 AS shows a very high stiffness, keeping good impact strength at every range of temperatures. It also shows a low warpage and shrinkage behaviour.

### APPLICATIONS

Automotive:

- Under the bonnet parts subjected to severe mechanical stresses
- Technical parts

Various

- Electrical housings, power tools
- Washing machines cylinders

### VALUES

Properties	Method	Unit	Value
<b>Physical properties</b>			
MFR (230°C, 2.16Kg)	ISO 1133	g/10min	12.5
MFR (230°C, 5Kg)	ISO 1133	g/10min	50
Density	ISO 1183	g/cm <sup>3</sup>	1.14
Shore D Hardness, 15s	ISO 868	°Shore	78
<b>Mechanical properties</b>			
Flexural modulus of elasticity	ISO 178	MPa	5800
Tensile strength at Break	ISO 527-2	MPa	88
Elongation at Break	ISO 527-2	%	4
Izod Impact Strength 23 °C notched	ISO 180	KJ/m <sup>2</sup>	10
0°C notched	ISO 180	KJ/m <sup>2</sup>	8
23 °C unnotched	ISO 180	KJ/m <sup>2</sup>	55
0°C unnotched	ISO 180	KJ/m <sup>2</sup>	45
<b>Thermal properties</b>			
HDT 455 KPa	ISO 75	°C	158
HDT 1820 KPa	ISO 75	°C	140
Vicat 9.8 N	ISO 306	°C	163
Vicat 49 N	ISO 306	°C	133
<b>Specific properties</b>			
Shrinkage 150x100x3 mm	ISO 2577	%	0.30-0.60

### STORAGE

ISPLEN® PG370 AS should be stored in a dry atmosphere paved, drained and not flooded area at temperatures under 60°C and protected from UV radiation. Storage under improper conditions could trigger off degradation processes, negatively influencing processability and the properties of the transformed product.

February 2003

This information is in good faith and meant only as a guide. The transformer is each case, responsible for the product's final use of the product. Repsol YPF does not accept any liability for the use of the product. Repsol YPF does not accept any liability for the use of the product.

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**Final report**

# **MEASURE REPORT**

## **Characterisation of a ventilation kit**



Quote: DEV2020-0181  
CTTM case no : A200163  
Customer order : DEV2020 - 0181

Identifiant : A200163\_01\_A

**SAM KIT**  
22 Route des Bois  
72230 MONCÉ-EN-BELIN



## 1. INTRODUCTION

The company SAM KIT wants to measure the airflow characteristics (pressure/flow rate) of a directive ventilation kit for a farm building. The objective is to highlight the ventilation capacities according to the orientation of the blades and to conduct a mechanical strength test at a high flow rate.

## 2. EXPERIMENTAL DEVICE

### 2.1. Test bench

The sample to be qualified is installed in the measurement bay between the reverberant acoustic room and the semi-anechoic room (photos 1 and 2). A peripheral masking with bonding tape prevents flow leaks in the junction between the measurement bay and the sample.



Photos 1 and 2: Sample seen from the semi-anechoic room (left) and the reverberant acoustic room (right)

The airflow is generated by a fan that aspirates the air from the reverberant acoustic room via a suction duct (photos 3 and 4).



Photo 3: Suction duct



Photo 4: Fan



The closing/opening angle of the blades is blocked by a system (photo 5) of drill holes in the manoeuvring mechanism. These drill holes are predefined according to the orientation angle of the blades.



Photo 5: System for maintaining the opening angle of the blades

## 2.2. Instrumentation

The fan is computer-controlled via a stabilised setpoint. The flow at the level of the sample is then measured by a hot wire anemometer (internal ref. 1M845) and a turbine anemometer (internal ref. 1M1047). The comparison of the two apparatuses guarantees the speed value measured.

A Furness Control differential pressure transmitter (internal ref. 1A1338) indicates the total difference in pressure between the two rooms. In the semi-anechoic room the pressure is measured at the level of the transmitter, and the downstream pressure is taken 40 cm from the sample on the measurement bay on the reverberant side (photo 6).



Photo 6: Downstream air intake



3. MEASUREMENTS

Brief searches for information led us to find that the optimum flow rate per cow is defined at about 2000 m3/h and that 0.4m² corresponds to the ventilation area required per cow.  
The surface of the model is 0.84\*0.95=0.8 m², which would correspond to 2 cows, which is a flow rate of 4000 m3/h, or a flow rate speed of 1.4 m/s.

3.1. Influence of the orientation of the blades on the ventilation flow rate

For the optimum flow rate defined at 4000 m3/h (or 1.4 m/s through the model), a series of measurements of the difference in upstream/downstream pressure of the model was carried out for different closing angles of the flaps.  
The results are shown in table 1 and in figure 1.  
This results in that the partial closing of the flaps to 50 or 60° has a practically negligible effect on the ventilation flow rate. Indeed, the difference in pressure measured is less than 10 Pa, which shows a very low load loss.  
Beyond 60° closing, the differential pressure increases quickly and logically to high load losses.

Closing angle (°)	0	10	20	30	40	50	60	70
Differential pressure (Pa)	3	3	4	4	5	7	11	22
Flow rate speed (m/s)	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5

Table 1: Load loss values according to the closing angle

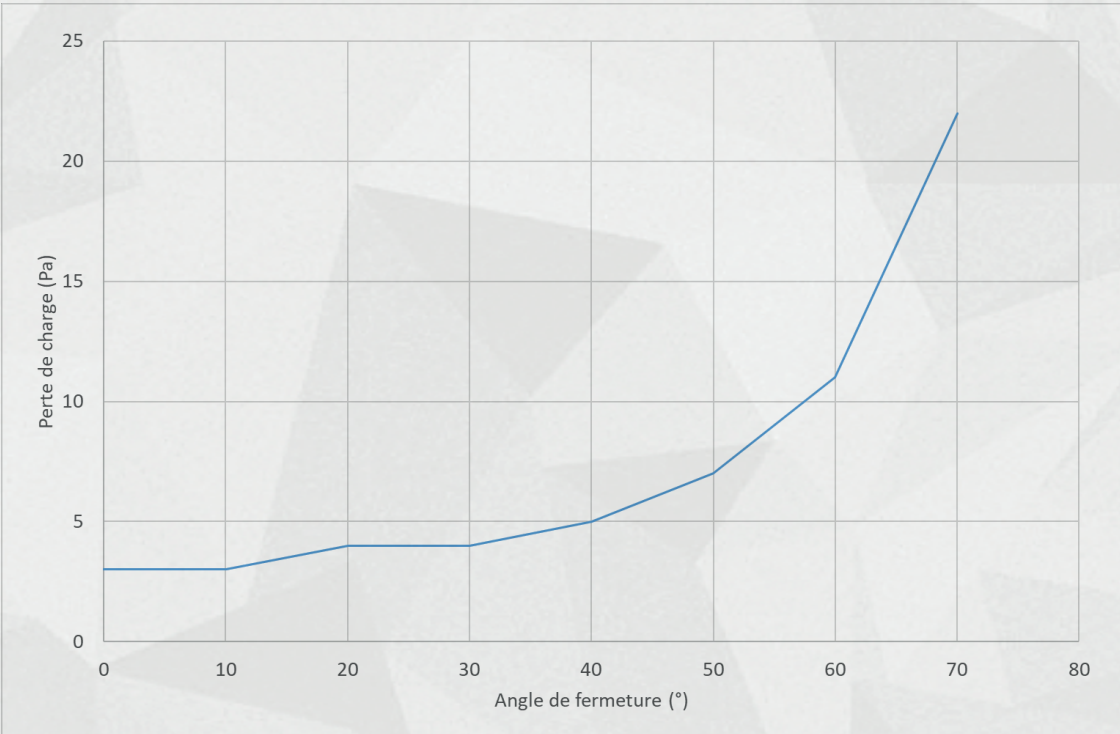


Figure 1: Change in the load loss according to the closing angle of the blades with stabilised flow



### **3.2. Mechanical strength**

Technical documentation 202\_1 from the CSTB dated 01/10/2018, gives classification criteria with respect to the wind resistance for parts of the flap, slat, louvre, etc. type. The maximum value ( $V^*6$ ) is obtained for a differential pressure of 600 Pa with a mechanical strength without technical deformation of the structure.

In the case of the model tested, tests were conducted for a closing of 70° and for full closing with pressures greater than 700 Pa.

A visual inspection made it possible to check the absence of notable deformation of the model subjected to this differential pressure.

This verification was not carried out according to the standardised experimental protocol which in particular includes deformation measurements. That is why this measurement is only an indication.



**Final report**

# **STUDY REPORT**

## **Climatic ageing**



**CENTRE DE TRANSFERT  
DE TECHNOLOGIE DU MANS**

Devis : DEV2017-1112

N° d'affaire CTTM : A180011

Commande client : Bon pour  
accord du 10/01/2018

Identifiant : A180011\_01\_A

**S A M**

22 Route des Bois  
72230 MONCÉ-EN-BELIN



1. YOUR REQUEST/YOUR OBJECTIVE

Resistance to climatic ageing of plastic models of shutter flaps with aluminium directive blades.

Three models will be inserted into the climatic chamber.

2. RESOURCES

Upon reception at CTTM, the parts were identified in the following way :

Date of reception	CTTM reference	Customer reference	Number of parts
19/12/2017	MAT17/2528	old	1
	MAT17/2529	hybrid	1
	MAT17/2530	new	1





### 3. EQUIPMENT AND METHOD

#### **BINDER MKF 240 climatic chamber**

The apparatus is referenced in the quality system of CTTM under number 2O966.

**BINDER MKF 240 climatic chamber** that can be adjusted without humidity from -40°C to 180°C and as climatic operation from +10°C to +95°C.

Ageing cycle programme:

- High tier: 70°C for 5 minutes at 50% RH
- Ramp-down: 2°C/minute
- Low tier: -10°C for 5 minutes
- Ramp-up: 2°C/minute

Duration of one cycle: 90 minutes.

Repetition of the cycle for 21 days.

A visual inspection is conducted at regular intervals.

### 4. VISUAL INSPECTION

After 21 days, no defect appeared on the 3 models.



## ● NOTES





All technical informations on  
[www.sam-agri.com](http://www.sam-agri.com)

NKS Design - Ne pas jeter sur la voie publique.



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