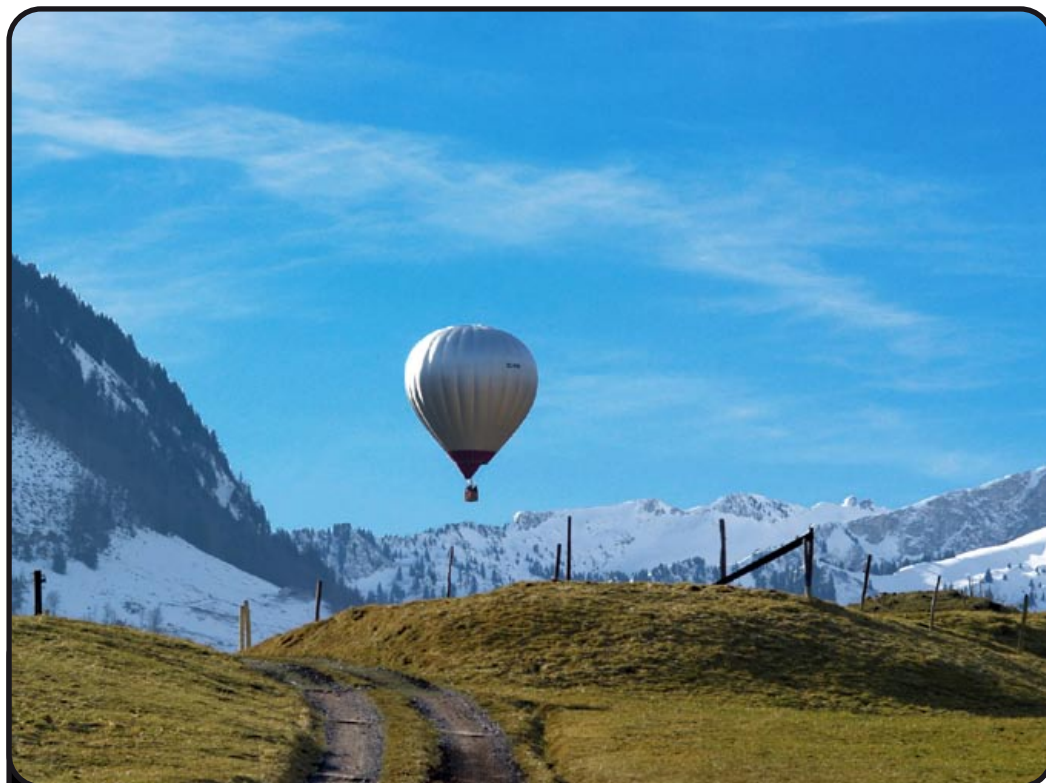


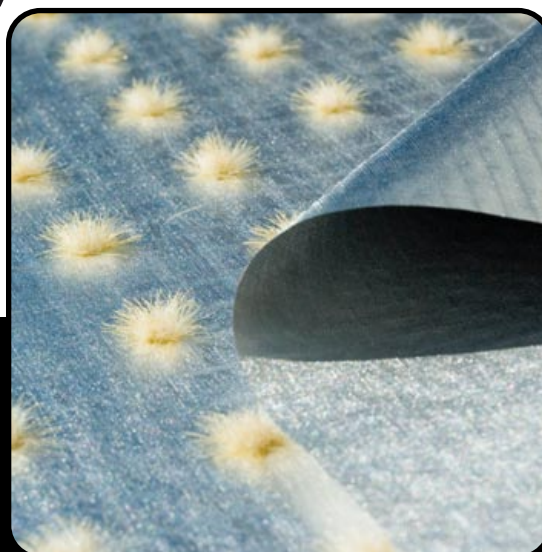
# Ecomagic!

The world's most fuel efficient hot air balloons

ULTRAMAGIC are proud to introduce a unique range of **Ecomagic** balloons made with a specially developed insulation fabric **aerofabrix®**. This fabric is available exclusively in hot air balloons designed and manufactured by Ultramagic.



M-56 **Ecomagic** Prototype - Switzerland

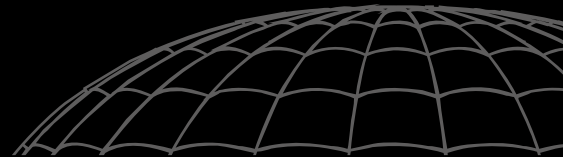


**Ecomagic** balloons have a lightweight insulation layer of **aerofabrix®** fabric inside in addition to special silver fabric on the outside. After many hours of testing and development and delivering the initial production models, limited orders are now being taken for these very special balloons.

**Ecomagic** Balloons  
Something special. Available only from Ultramagic

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JAAKKO KAAVA

M-56 Test Balloon EC-KMM - Tikkakoski, Finland



M-56 Test Balloon  
EC-KMM - Igualada,  
Spain

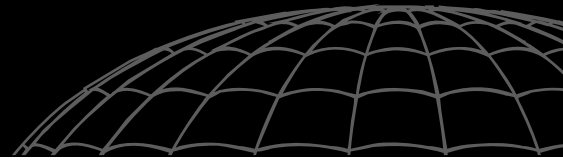
Ecomagic Balloons

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M-42 Duo - Half **aerofabrix**®  
European Balloon Festival 2008  
Igalada, Spain



MARK STEINMETZ

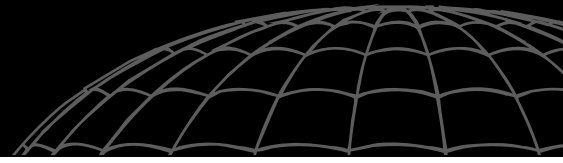
V-14 Record Attempt Balloon  
Complete **aerofabrix**® - France

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M-105 Complete **astrofabrix**®



FESTO AG & CO. KG

M-56 Test Balloon first flight



BALLONETC

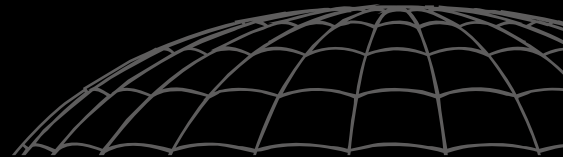
EC-KMM Slowly deflating  
Hoyel, Germany

Ecomagic Balloons

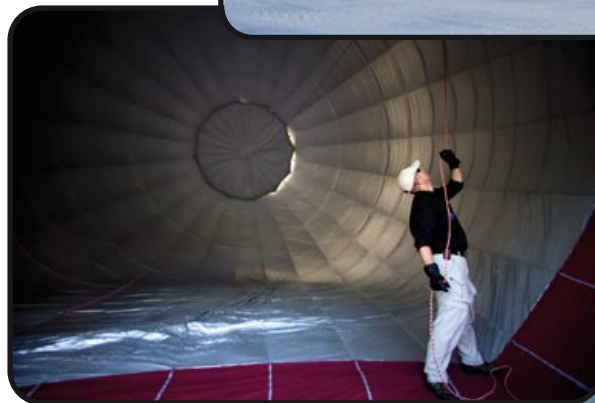
Something special. Available only from Ultramagic

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JAAKKO TOIVAN



BALLONTEC

M-56 Test Balloon - Finland

EC-KMM inside inspection  
Kirchlengern, Germany

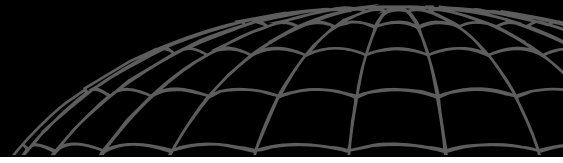
aerofabrix® insulation fabric



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*Imagine flying a hot air balloon that is genuinely insulated to save on heat loss  
Imagine flying a hot air balloon that uses up to 70% less fuel than a standard balloon  
Imagine flying a hot air balloon that is able to fly at much lower internal temperatures  
Imagine floating across the sky without burning for minutes at a time  
Imagine the silence as you fly long distance in even just a small balloon  
Imagine being able to fly an extra passenger in the size of balloon you normally fly  
Imagine planning to attempt to break a duration record for a hot air balloon*

Well there is no need to imagine any longer as the **Ecomagic** balloon has arrived!

## Background and history of Ultramagic Ecomagic range of balloons

After two years of investigations and development on September 25th 2007 the first Ultramagic **Ecomagic** balloon was launched. This balloon EC-KMM has a volume of 56,000 ft<sup>3</sup> (1600 m<sup>3</sup>). The aim was to verify performance and insulation effects as well as operation characteristics of this balloon made with **aerofabrix**® insulation fabric. Tests then continued for about 100 flight hours with different flight profiles, varying weather conditions and durations to gain valuable data and experience. In the very first minutes of the very first flight it became obvious that the **Ecomagic** balloon was very special. The efficiency of the design was already being revealed. Periods of over one minute were experienced in low level flight without burning. The silence was more reminiscent of a gas balloon than that of a hot air balloon.

## So how did **aerofabrix**® insulation fabric come about? How did Ultramagic become involved in such a groundbreaking development?

**aerofabrix**® insulation fabric is a brand name of Dr. -Ing. Alexander Bormann. He is connected to the Technical University of Berlin, Germany and the Institute of Aeronautics and Astronautics.

Before the introduction of **aerofabrix**® insulation fabric, Alexander with his colleague Dipl. - Ing. Stephan Skutnik of the Technical University of Berlin had been carrying out research for some time on balloons and airships and the various means of buoyant gas. The concept of the use of superheated steam as buoyant gas for an Aerostat was investigated and a working demonstration balloon was produced – The **HeiDAS** (German abbreviation for Hot Steam Aerostat). Refer to pdf document "Steam balloon Research"



FESTO AG & Co. KG

The successfully tested **HeiDAS** demonstration balloon at the institute of Aeronautics and Astronautics was promoted by the **FESTO** company. **FESTO** is well known for its innovative marketing "Air to Air". Further development of the **HeiDAS** is still under review. However a major benefit of the development of insulation material was gained from this project which led to potential work with hot air balloon use.

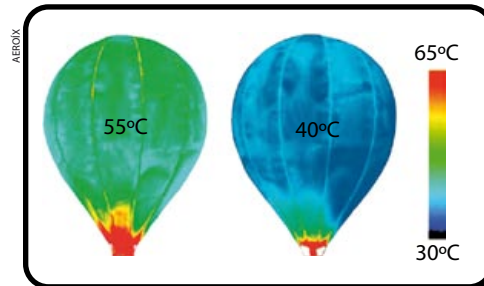
**Ecomagic** Balloons

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The developers Alex and Stephan were invited to **Ultramagic** in 2005 to present the results of the **HeiDAS** project and the subsequent fabric developments. During this meeting it was quickly realised that it may be possible to use the special **HeiDAS** materials in a hot air balloon and to produce an insulated hot air balloon. Thus the concept of the Insulated Hot Air Balloon (IHAB) was born which has now become the **Ecomagic**.



Thermograph of non-insulated (left) and insulated (right) model balloon using 2,5 mm **aerofabrix®**

Two years of painstaking research and development then took place to establish the exact insulating material requirement characteristics for the Insulated Hot Air Balloon (IHAB). Working models were designed and produced by the "IHAB team" of **Ultramagic** and Alex and Stephan. Extensive testing was then carried out to obtain the necessary data.



Close-up of different variants of the **aerofabrix®** flock insulation

All of this led eventually to the first fantastic flight of the **Ecomagic M-56 EC-KMM** in September 2007 and the subsequent testing. Further testing then continued with this balloon throughout Europe and still continues with more exciting data still being gathered on the balloons performance.



**Ecomagic M-56 Test Balloon** during its 1st flight in igualada (right). Inflation in Chateau d'Oex (left)

**Ecomagic Balloons**

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It was only then only fitting that **FESTO** the promoter of the **HeiDAS** project become the first customer of Ultramagic for the production version of the IHaB – **Ecomagic**. This was the all silver **FESTO** balloon, an Ultramagic M-105 made with **aerofabrix®** insulation fabric.



The **FESTO Ecomagic** M105 during its first flight

## **Ecomagic balloons are now available to special order**

### **Benefits and Possible applications.**

Please make no mistakes. Ecomagic balloons are very special and consequently it may be that they will be reserved for very special flights or applications. Only time and experience will tell. However there are many benefits achieved in the use of these balloons enabling a number of applications to be made.

- There is no doubt that the insulation used in **Ecomagic** balloons ensures a greater duration of flight. This opens up the opportunity of using these balloons for attempting to **break duration records**. One balloon of this type has already been delivered and a number more are already under consideration.
- Using less fuel can mean that less fuel is required to be carried. This can mean that **extra passengers** can be taken on board instead of fuel.
- Needing to burn less opens up the opportunity to fly an **Ecomagic** balloon with **smaller and lighter weight burners**.
- Using less fuel can **save on overall ballooning fuel costs**.
- Less burning allows a more silent flight. **Less disturbance to livestock and horses**.
- Lower operating temperatures could result in **longer envelope life**.
- Environmentally friendly and energy efficient technology – **could help find suitable sponsors**.
- There is as possibility to take partial advantage of **aerofabrix®** insulation fabric in **top parts only** of the envelope. M- 42 test envelope already produced with great success with larger sizes also now in production.

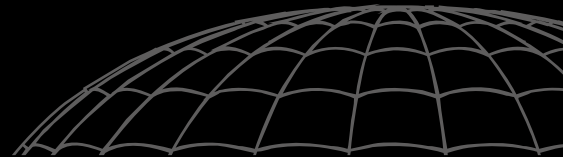
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## What are the drawbacks?

- Because of the nature of the material construction having 2 layers, **Ecomagic** envelopes are more bulky and take more space when packed.
- Because of the special insulation properties as well as the construction technique involved, **Ecomagic** envelopes take longer to deflate on the ground and pack away.
- Because of the large development investment undertaken and the very special nature of the materials being used, Ecomagic envelopes are significantly more expensive than envelopes made with conventional materials. As with all new developments, costs are likely to reduce as time goes on. However at this stage one should clearly take into consideration the many benefits and applications already mentioned when looking at the price. In many cases the extra cost involved could be recovered in savings elsewhere.
- Because of the earlier points made **Ecomagic** envelopes are not available in the very large sizes at this point in time.

## How long to produce and deliver an Ecomagic

This will depend on the size of the envelope and current stock level of the special **aerofabrix®** insulation fabric at the time of order. As production time is also longer due to the special construction techniques involved a longer lead time is required. Ask for more details on delivery at time of placing order.



M-56 Test Balloon during its first high altitude flight in the Pyrenees, Spain.



*Designers and manufacturers of  
Magic technology for over 25 years*

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**Ecomagic** Balloons made using **aerofabrix®** insulation  
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