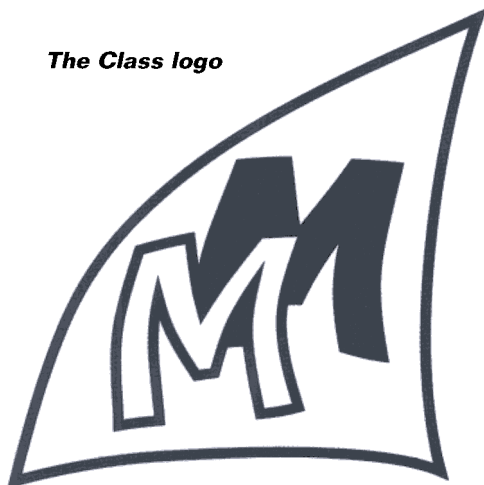


# Micro Magic

## Thomas Dreyer describes the ways in which racing has developed in Germany

### The Class logo



In late summer 2001 some Micro Magic skippers in Stuttgart, Germany, had the idea of making a Micro Magic regatta for their boats. We recognised that there was an interest in racing (playing?) with this boat, for different reasons:

1. Some of us are interested to sail a race but with not much effort, e.g. they do not want to buy/build one of the official racing boats (IOM/Marblehead).
2. Others want to see what can be made from the basic boat with some modifications and they want to compare that with others.
3. Beginners want to get more skills in sailing and boat-technique, and they want to come into contact with others.

### A fleet start during the Dutch Open championships



Micro Magic shows itself to be pretty good for joining all these different interests as its concept fits to all. It is relative low priced in opposite to what most other class-boats will cost you, it is easy for many to buy it just as a test for going into RC-sailing and as well as a handy boat compared to other boats. Although its very small size is not liked by some, on the other hand that attracts others as it is very compact and that makes it very easy to take the boat completely rigged and ready to sail every time you go out.

Micro Magic also shows a good response to the one mostly negative side of such small (toy) boats, their often very poor sailing performance due to size and weight. It is a modern racing design which makes the boat really able to sail well under a lot of wind and weather conditions, perhaps not so appreciated when looking at it for the first time. Many skippers have been astonished by its performance and it is one reason for its success on the market, where the kit, which is manufactured by the well known Graupner company (Germany), is available in most model shops. Another interesting point is that it can sail on any small local water next to you - there is no need for deep water far away. This makes it also very attractive for sailing on pools at exhibitions.

### The Class Rules

From this point of history we started to work out our idea of a simple, free class association to get a basis for future activities. We created 'class rules' which are based on some main items of the kit, but also offers some freedom for modifications/self building. It is somewhere between strict one design and a total open class, and even with modifications a boat to these rules will be recognised easily as a Micro Magic.

The rules should attract beginners as well as more experienced skippers, and as it is very easy and at low cost/effort possible, to test your own ideas from theory into practise, we did not want to forbid some kind of creativity with these boats. In respect of that aim it is not necessary to buy an original MM-kit. To build a boat according to the rules you just need the ABS-spare parts, hull and deck. Anything else can be made by yourself, which not only might save costs but is also the right way for a more specialised boat.

To give general information about what is going on and to spread our idea in Germany we used our website: [www.micromagic-rc-segeln.de](http://www.micromagic-rc-segeln.de) as a special Micro Magic website. Here we present dates and results of racing-events, tips and tricks about our boats, as well as some fundamental knowledge. All this is worked out on a private basis and we will maintain it on private basis in future. No club,



# mic!

organisation/association and company is standing in the background, nor are we influenced by any of them.

By the end of 2003 we had about 100 'registered' MM-skippers, also some first MM sailing events in North Germany, e.g. Bremen, Hamburg and Hannover. We hope eventually that our idea may find some other enthusiasts in other countries and they may be invited to take part at our Micro Magic activities.

## The Netherlands

In early 2002 Thijs and Steven Oosterheert, two Micro Magic skippers from Netherlands, discovered our idea and copied it. They took our class-rules and some other useful things, started a website: [www.micromagic.nl](http://www.micromagic.nl) and tried to collect other skippers for racing. 2003 was a real NED-MM boom and the fleet has increased to over 200 boats. In respect of that movement they organised a first 'open national Micro Magic championship' in October, where 32 skippers took part, with 6 skippers from Germany. Probably the main key to that high growth was looking for full size skippers. Often there is a general interest about playing with small boats next to the big ones, but due to cost and/or effort you have to spend to develop boats such as IOM class, this often side interest is put back in favour of the big boat. But Micro Magic is different. At about only 150 to 200 Euros you are able to get a complete boat, an amount of money you can just spend for a keel on an IOM or Marblehead, its sail winch or some sails.

Unfortunately this group of skippers seem to have a wish for more limited rules for MM, as they are more used to strict one design class boats from their big toys, and often tend to hang on to what they are used to having. We expect that the growing fleet in the Netherlands will be split into two parts, one group going on with the original rules and the other will generate more limited ones, e.g. with weight limits, just two RC-functions and no modifications on hull, deck, keel and rudder.

## Micro Magic Boats

It might be interesting to see how skippers have made their boats to the original rules during the past two years. The main fleet is still built up from original kit-boats but there are some boats, which have some fine tuning and show some little modifications. We can see some boats with bias on 'life-like appearance' and others with aspects just on race-tuning. We have few race-tuned boats to a kind of



The many variations on the basic Graupner kit make for an interesting line up

upper level, as up to now there are no radical modifications, e.g. totally different keel/rudder-designs or rotating/wing masts to be seen. It is mostly more or less some standard tuning, influenced by IOM or M boats.

The German rules allow as many sails as you want to have and as many keels/lead weights to suit every situation which may occur. To give that freedom without fear of great disbalance between beginners and experienced skippers, relies on the simple fact that wind and weather is often not very stable for more than a few minutes. So to choose the right/best rig/keel out of a great and varied choice may create more problems and confusion to someone, as to just sail the boat as it is and to spend time on good trimming.

At the same time a beginner is often not helped when using a highly tuned boat, as he does not have the skills to handle it. Experts who can take use of tuning are mostly also good skippers, and they will be at the top with standard as well as with tuned boats - but they may also show beginners how it works.

The little boat is able to handle winds up to 3 Bft with its standard light wind sails and most skippers have not used smaller sails up to now. Those few who already have made smaller suit, have seen that the boat is also able to sail with 6-7 Bft, which generates a lot of real sailing fun as the boat is able to surf over long periods, along and over the waves.

## Sail Making

Some interest is being shown in replacing the kit sails with new sails, which differ in quality from kit to kit. The original sail shape is stated/fixed by the rules and you are allowed to make different sails but they have to fit into this given outside-shape. Some skippers have made simple, one panelled sails out of very light 18 g/m spinnaker sail cloth. Only a few have spent a bit more time, effort and knowledge going into high-quality panelled sails made from thin mylar films. Those sails are pretty to look at, presenting a professional high tech look to the small boat and may satisfy their owners but they do not offer an

A film plastic deck but otherwise fairly standard boat



The lower aspect sails can be used to extend sailing as far as force 7 Beaufort wind strength

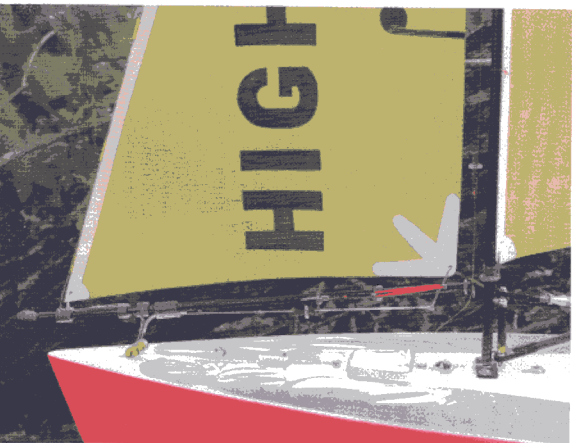




**High Noon, Thomas Reichmann's highly developed boat**



**The main outhaul on High Noon has adjustable flow via a third servo**



**The foresail boom on High Noon**



**Jorg Sprengler's boat Pinnacle**



**The gooseneck and kicker on High Noon**

automatic benefit to simple but well made standard one panel sails, which indeed may often be better for that little size.

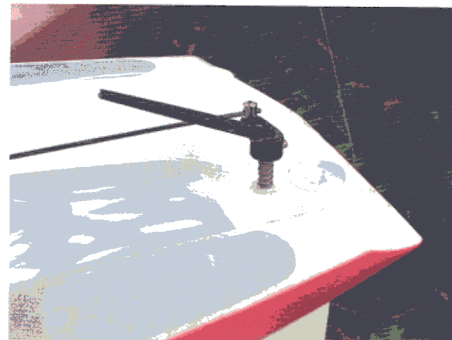
We discovered that simple thin flower wrapping film is ideal for these small sails, but as it is only clear film you get disadvantages in looking for your boat on water. A general problem, which also prevents some professional sail makers from making MM sails to order: Even if you have some experience in sail making you will find out that the available material will limit your ideas, as there is really not very much choice of thin/light materials. 50 g film used on lightweight IOM sails may be a bit to stiff for Micro Magic sails in very light winds, and most spinnaker materials only look good in certain situations and generally offer a poor profile when wet!

### Weight Reduction

One main point of tuning the boat is weight reduction. This can be easily achieved by just using smaller radio gear. Instead of standard servos, type AA NiCds and normal receivers of normal low priced radios, some more money can be spent on fine, lightweight components such as Micro/Pico servos, NiMH-batteries of AAA-type and very small receivers.

Without any special high tech building techniques even a beginner is able to reduce the boat's overall weight from its original 960 g down to 820 g, which is a lot not only just in theory! Even though it might look as a 'must do' project, interested skippers should pay some attention on the effects: those lighter boats show better acceleration in gusts and are more quick to surf, but they are not faster overall and they are much more sensitive to stopping in waves. Mistakes in sailing are promptly rewarded by a sudden stop of movement, while standard boats are much more relaxing to sail.

You have to keep in mind that it is indeed a very small boat and due to its racing construction it is very responsive. Some sailing-skills and quick reactions for good racing results are required. Actually our lightest



**The rudder horn. Note spring under moulding to ensure perfect fit**

boats are at about 780 g, with the original ballast weight of about 350 g, and some also with three RC functions. This weight is achieved by opening large holes in the deck and covering it just with self adhesive film which may give you an advantage of about 15-20 g (with the disadvantage of possible serious damage in case of collisions on water...). Further development down to 750 g maybe possible without high tech building.

### Advanced Modifications

By using small radio gear some skippers have already included a third function for additional jib sheet adjustment, steered via a pico servo of about 8 g. This allows the skipper to have a better control of the effective and important jib slot during racing according to the wind.

Thomas Reichmann (GER) has gone one technical step further and used a fourth servo in his 'High Noon', to have a radio controlled sail profile adjustment of main and jib, as like Marblehead champion, Janusz Walicki. Thomas' boat also has a modified hull: it is reduced in beam by 2 cm and the original hull to deck flange is cut away. But up to now we have not seen real advantages from this hull modification, which was intended to make the boat better in the light weather we mostly have in Stuttgart. This boat is our leading boat in terms of technolo-





**This boat has a new fin and slimmer ballast**

gy and has the greatest potential. Of course he has panelled sails made by his own hand to perfect profile, and he also uses ball raced fittings for the main sail luff to rotate more perfectly around the mast than it would with standard fittings at the top and bottom.

### Mast Tubes and Rigs

Thomas Reichmann uses a thin high tech carbon fibre covered alloy tube from arrows (Easton) as a mast, seen on some other boats as well. These tubes are of less weight than standard carbon tubes. A standard 6 mm carbon tube is used on many boats, as such tubes are cheap to buy in German model shops. Even if it looks like an essential improvement it may not be of real advantage over a thin alloy tube like those used in the kit. It is not lighter but offers better stiffness - which may be achieved by pre-bending a thin and lightweight alloy tube. When using a carbon tube there is no need for any shrouds as the mast is fitted like an IOM into the hull in a mast box, but only a few skippers are using a shroudless rig. I am using a 6 mm carbon tube mast on my H2O-FLOH (GER 15), which is sanded down from middle of the spar to the top, to only 4.5 mm, rigged shroudless but still offers enough stiffness when sailing and handling the boat. Some boats from the Netherlands are using only 4 mm diameter carbon tubes in combination with one or two pairs of shrouds.

### Trimming Ideas

Beside tuning the motor of the boat by using different sails/rig tuning, there is one simple method to trim the boat for different wind situations, and that is done by weight trimming. Beside the opportunity of using different keel designs with different weights and positions of weights, you are allowed to move your batteries etc. in the hull, and by putting the battery

far aft under the cockpit the boat gets better in stronger winds. Many boats from the Netherlands also use an obviously different rig trim, with the great mast raked backwards in opposite fashion to most German skippers. Even if it might be thought that a boat with such a rig trim must become strong-weather helmed, they find it has good control and speed in fresh winds, as well as in light conditions. Perhaps not really clear in terms of standard theory, nevertheless it works with good results.

Only very few modifications are to be seen on keel and rudder design up to now. There are only two or three fins, made from wood, to different shapes. The great majority are still using the kit material as it offers good quality: a nice shape from thin but stiff fibre-reinforced plastic material. No carbon fibre fins or rudders have been seen up to now. However, some have modified the standard components, e.g. made the rudder smaller in size.

### Conclusions

All in all we can state that the main point in sailing a Micro Magic is still its skippers' sailing ability to handle it. The tiny boat is very sensitive to sail trim and reacts very fast. When racing there are often several situations and possibilities of making mistakes which may reduce boat speed surprisingly quick, and even our best modified boats suffer from time to time from their skippers' mistakes.

Those who enjoy an interest in technical aspects are able to search for improvements in the boat's abilities, but those who do not want to spend their time building and just want to go sailing with their standard boats will often be at the front with more sailing practise as their background instead of tuning. Thus despite some freedom in tuning and testing, the main key still remains in 'sailing' the boat. For further information on the Micro Magic go to: <http://www.micromagic-rc-segeln.de> **mmf**



**Racing on the Stuttgart lake**



**Clearly a fan of the Volvo 60 class Illbruck!**



**Substantial mast rake on a Dutch boat**