

## STAR LETTER

WRITE A STAR LETTER AND WIN A REEDY MOTOR OR WOLFPACK BATTERY



### AN ELECTRIC MOVE

I'm in my 40's and have been dipping in and out of RC from childhood. The thing is I've always had nitro models including cars, boats and a plane. But now that my work mate and I have found the joys of nipping out our Mini Infernos for a quick blast round where ever we're working has captured the competitive side in us, we want to improve our machines. Here's the rub, I know very little about electric motors, ESCs, battery types, and how and why they all connect. I've been told this type is best, buy these batteries, you know the sort of must buy shopping lists that your mates give you with no reasoning behind it. Now to the point, is there a book or website or place that I can go that would be able to explain the delicate of electrics like Brushless, LiPo, and sensored ESCs.

Mark  
Via E-mail

You've already hit the nail on the head - everybody has an opinion and advice is free but it is rarely quality controlled. There are numerous forums that specialise in the micro scale but we think that one of the best UK sites is [www.uk-microc.co.uk](http://www.uk-microc.co.uk) but bear in mind that the ill be largely based on personal opinion and experience which can make it tricky to take verbatim. Trying to be as concise as possible, here is our response:

1. Connectors - if you plan on putting more power through your electrics, you need heavy-duty connectors. Deans style plugs are well used in the micro race scene as they are easily obtained and capable of withstanding high current draw. LiPo cells and brushless motors will stress this aspect of the installation and the standard micro connector will need upgrading before anything else.

2. Brushed vs Brushless Motors - brushed motors work on the principle of a rotating electric field being passed through a stationary magnetic field whereas brushless does the reverse - the electric fields



are stationary and only the magnetic rotor moves. Brushed motors are traditionally cheaper to buy but incur more maintenance costs because the brushes and commutator surfaces will wear and need replacing/skimming. Brushless motors on the other hand tend to be more expensive to begin with but are largely maintenance free.

3. Brushless Sensored vs Sensorless - all brushless motors have three field coils and the ESC switches power to two of them in order to create the electro magnetic field which induces the rotor to turn. However, in order to know which field coils to switch on, the ESC needs to know where the rotor is in relation to the coils. Sensored ESCs/motors do this by means of electronic sensors within the motor, which feed back accurate information about the position of the rotor. Sensorless motors do it by means of software within the ESC itself. Once spinning, both types of ESC will know which two coils need to be energised next but the difference tends to be that sensorless ESCs can hesitate slightly before responding whilst the ESC works out what to do next. Sensorless ESCs tend to be cheaper and until recently,



were the only type of brushless motors/ESCs available or the micro scene. The new Novak Mongoose however changes all of that and uses a sensored motor/ESC for improved throttle response and feel.

4. LiPo - Lithium Polymer battery technology isn't new but RC cars are slow in adopting it. There are both pros and cons to them compared to traditional NiMH/NiCd technology. They do not self-discharge very rapidly and can be charged and stored for long periods of time and offer lighter weight and higher voltage outputs. Each LiPo cell is

3.7V which is why battery packs are in multiples of this figure. It is not unusual for many recreational micro users to run three-cell 1.1V packs for mind-melting high-speed performance. However, with the extra power comes the further need to strengthen the car's driveline over time. LiPos do need special chargers and will benefit from balance charging occasionally. Not all chargers are balance charge compatible but most of the higher-end ones, like the Core RC UDC20 (reviewed in this issue) is. Be sure not to charge a LiPo too fast and if they swell, or become damaged in anyway, there is a real risk of fire, which is to be avoided at all costs. We'll be running a more in-depth technical article on LiPo technology in the near future so keep your eyes open for that soon.

NiMHs (Nickel Metal Hydrides) on the other hand, are 'safer' but do not like being left discharged for very long as this can permanently damage one or more of the cells in the pack. For high performance, most micro users are adopting brushless and LiPo technology and are being amazed at the performance from their micro machines.

# TIME WARP

AUGUST 2008

### 10 YEARS AGO - AUGUST 1998



Daniel Reckward atoned for his failure to win the 1996 IFMAR 1.8 Rallycross World Championship by winning the 1998 event in Portugal. Steve Haynes drove from the 1/32 final to take fourth place with

his Mugen MBX-4. Scott Brown won the 4WD ROAR National Championship in Chicago, Illinois. Tamiya released the new M-03 chassis complete with a superb Mini body with all the right decals. Trinity's updated motor, the D3.5 hit the shops in winds from ten to 16 turns, and their new budget 1500 cells. Celebrations were in full swing for Trinity and Losi. Trinity's slogan "A new World order" celebrated their triple IFMAR World titles and Losi's lower key press release reminded us that it had taken its first European Championship last month with Jukka Steenan. Despite Dave Burton (2WD) and Graham Allop (4WD) taking wins at Hampshire in the BRCA Off-Road National, Jamie Booth (4WD) and Craig



Drescher (2WD) remained on course for another National title each, supported by Jamie winning 4WD at Batley with Craig second in 2WD.



### 5 YEARS AGO - AUGUST 2003

Full-size meets model-size motor racing - the Rockingham club opened their permanent track on the infield at Rockingham 'Speedway' in deepest Northants. Being at the home of UK oval racing, it has a big ASCAR oval as well as a challenging infield. Team Xray welcomed Andreas Myberg to their ever-increasing works team, and Steven Pole switched to the Schumacher Team. Serpent finally released a 200mm width nitro touring car - the 705 - to join the burgeoning list of cars available for this popular class. Being a Serpent, it was beautifully engineered and of the highest quality.



Schumacher stoked more life out of the ten-year-old Cougar design by strapping a whopping 3.5cc engine into the venerable chassis to create the unbelievably quick Desert Storm three-speed truck. And on a personal note, we published an obituary for Phil Davies in this issue - and I still miss him.



### 1 YEAR AGO - AUGUST 2007

The best of the World's Touring Car drivers battled it out for the 2007 Reedy Race of Champions title in California, where Marc Rheinard won the Invitational class for the second year in a row. Scotty Ernst, the Murray Walker of RC commentary (but funnier!) saw Marc's Tamiya car take victory from Britain's Craig Drescher, with fellow-countryman Andy Moore in eighth. Eastbourne Model Car Club, Darren Simpson's brave new outdoor tarmac track, boasted a three-time World Champion as its star guest on opening day in the sunshine. David Spashett could only manage third place, but a great time was had by all. The BRCA welcomed its newest Section, with the Micro Cars (1:18 scale) announcing their National Series for the coming winter. Schumacher's new Mission car was announced, with the team drivers getting to grips with the car in the many series' taking place around the UK.

