GLOW PLUGS

The glow plug is used to provide ignition for the fuel/air mixture in a similar manner to a spark plug in a petrol engine. A spark plug could also be used in our model engines running with our special fuels but would then require added equipment and complexity with the possibility of interference with the radio receiver. However, glow plugs can not be used with an engine running on petrol (likewise without added equipment).

So how does it work? To start the motor we must first heat up the element (the small coil of wire inside the plug) by connecting it to a battery. Most plugs are designed to use 2 volts but some can only handle 1.5 volts. Make sure which one you have! A 2 volt plug will not get hot enough on 1.5 volts for easy starting while a 1.5 volt plug will burn out on 2 volts (the coil melts).

Once the motor is running the battery can be disconnected. However, the plug will continue to glow with an orange heat to provide ignition. How does it do this without a battery?

It all hinges on the fuel we use (or part of the fuel) and what the element is made from. The working part of the fuel is methanol which is a type of alcohol, but not the drinking kind, it is quite poisonous. The element is made from several metals alloyed to make it strong enough to handle the heat and vibration. The metal we are interested in is the platinum. When platinum comes in contact with alcohol there is a catalytic reaction between the two which heats the platinum while causing the alcohol to ignite. So one helps the other.

But the element is glowing all the time the motor is running so how does the fuel know when to start burning (in other words, what determines the ignition point)?

Well this goes back to the catalytic reaction again. This reaction depends on two things, one is the temperature of the element (the hotter it is the easier it will react) and the pressure of the fuel/air mixture inside the cylinder (the higher the pressure the easier it will react).

Glow plug temperature is controlled by using different HEAT RANGE plugs. Just like motor car spark plugs, glow plugs come in different heat ranges from hot to cold with maybe half a dozen steps in between. If in doubt, use the plug specified by the engine manufacturer. Using a hotter plug than normal will advance the ignition point and a colder plug will retard the ignition. The only way to determine exactly the right heat range plug is by using an accurate tacho. The plug that gives the highest rpm (for the same fuel and propellor) is the correct plug.

But what about the pressure of the fuel/air mixture? This is determined by the compression ratio of the engine and normally is fixed by the manufacturer with possibly some small change allowed for by fitting or removing shims under the cylinder head. Not something to play with unless you know what you are doing. For ultimate power a competition modeller will juggle combinations of plug, compressions and type of fuel (mainly nitro methane content) but this is way beyond the needs of the sporting flyer.

Here are two brands of plug with their various heat ranges.

OS PLUGS	ROSSI PLUGS
The complete line up of O.S. plugs are as follows: OSMG6300- #0 Economy standard plug similar to the #8. OSMG6304- #1 Hot plug for low nitro (0-5%). OSMG6308- #3 Medium plug for medium nitro (5-25%). OSMG6312- #5 Cold plug for high nitro (25% +). OSMG6316- #7 2 stroke engines requiring an idle bar. OSMG2691- #8 "The" standard. For use in all 2 strokes, any nitro. OSMG6320- #9 For general use in 2 stroke engines. OSMG2692- #F For O.S and other four strokes. OSMG2688- #RE For the O.S. Wankel rotary engine.	10001 R1 EXTRA HOT FROM 0,8 TO 2CC 10002 R2 HOT FROM 2 TO 3,5CC 10003 R3 MED FROM 3,5 TO 6CC 10004 R4 COLD FROM 6 TO 10CC 10005 R5 EXTRA COLD FOR NITRO FUEL AND RC 10006 R6 COLD FOR NITRO FROM 10 - 13CC 10007 R7 COLD FOR NITRO FROM 13 - 15CC 10008 R8 SUPER COLD FOR NITRO FROM 15-30CC 10010 RC HOT FOR RC FROM 2,5 TO 6CC 10020 RC COLD FOR RC FROM 6 TO 15CC 10011 G1 HOT FOR R15 SPEED 10022 G2 MED FOR R15 SPEED 10033 G3 COLD FOR NITRO FROM 18% TO 30% FOR R15 SPEED 10044 G4 EXTRA COLD FOR NITRO FUEL FROM 30% TO 15% FOR R15 SPEED 10055 G5 EXTRA COLD FOR NITRO FUEL FROM 50% TO 70% FOR R15 SPEED.