

Batteries 101

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I am writing this as both a short lesson on batteries and information on how to keep them working properly. Since Crowley Ridge Aviation started installing "Fast Starts" we have had reports of the Fast Start possibly killing one battery on the AT-602 and AT-802 aircraft. We did find out that the Concorde RG24-20 sealed battery worked better, but there were still some problems.

So, I went to battery school. What I saw was that many ag planes sit for periods of time and the battery deteriorates. When batteries are improperly maintained (over or under charged or left uncharged for extended periods) small crystals of sulfuric acid from the battery's electrolyte form on the battery's charge plates. They act as a resistor preventing the battery from ever again accepting a full charge, no matter how long a charging source may be connected. Once this occurs, the cranking power is severely reduced, as well as its life.

When the Fast Start is used on a three-battery system, all three batteries are probably compromised. However, when you take one out of parallel and put it in series with the two, the current will go to the lone battery instead of the starter.

At Crowley Ridge Aviation, we found out that there is a way to prevent this from happening and at the same time greatly increase the life of all three batteries. There is a relatively inexpensive product available to actually reverse the sulfating on the battery plates and bring them up to peak charge. Being skeptical of products that may turn out to be just snake oil, we had to try it out. Our neighbor had a new AT-802 and after 40 hours he said the Fast Start wouldn't engage. We brought the plane in and sure enough we checked the batteries only to find out that none of the three were at a good state of charge. We put in a new battery in the boost position and the Fast Start worked. That is an expensive fix and really only a temporary one at that. So, we first put the original boost battery on a trickle charge for an hour and re-installed it. Then we talked the owner into trying a Battery Minder on the plane. The Battery Minder has a pig tail that connects to one battery and is secured so that the actual unit can be plugged in through the reverse scoop on the right side of the plane. After a couple of nights with the Battery Minder plugged in the owner reported that his plane is cranking better than ever.

According to the people that make the Battery Minder, their patented technology

actually removes the build-up on the battery plates and will keep the battery at its peak.

The Battery Minder will not replace the need for a quality aviation specific charger to put the first initial charge on a new battery, but it will keep it at its desired state of charge

We were so impressed with the product that Crowley Ridge Aviation is now a dealer for the Battery Minder. I feel that if for less than \$200.00 you can increase the life of a several hundred dollars worth of batteries, then that is a very good deal. Of course, that doesn't mean you don't have to keep the fluid levels correct in a flooded cell battery and with the Air Tractor keeping watch for that funky green stuff that builds up on the battery cables. Crowley Ridge Aviation does offer the Concorde RG24-20 sealed battery under our STC and PMA for all turbine Air Tractors. With it, there is no more corrosion and no more water to add. It is essential on all turbine aircraft to have a good reliable source of starting power and the Battery Minder looks to be a valuable asset to keeping the batteries at their best. Of course, the Fast Start does, as intended, reduce both start time and temperature, but it won't work without good batteries.