

## Sport Rotors

### Rotorblades - Press Release

Sport Copter products are made of top quality, aircraft grade components, materials and hardware. You can expect outstanding performance and excellent service, which we feel is the foundation for a successful business.

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SPORT USA, LLC., a new company, was formed out of the demand for a better aluminum single and two-place rotor system. They have announced their new rotorblade production line of "Sport Rotors". These fast selling rotorblades are the result of over 3 years of research and testing. With the emergence of the new Sport Copter series, Jim Vanek knew that his sophisticated gyroplanes would require the same of its rotor system. He, along with outside consultants, went to work and designed this new airfoil and hub bar assembly. As some of us know, Jim formerly worked with his father, Chuck Vanek, innovating the new "Vancraft" designs in the mid 1980's. He has flown in gyro's since he was 9 years old, and at this young age, could always tell when the gyro was ready to take off just by the feel of the rotors and the sounds of the aircraft. His father tested many different airfoils made of wood, vertical grain spruce, fiberglass covered, in the 50's and 60's. Jim worked with him, side-by-side, building "Vancraft Rotors" throughout the 70's and 80's. The airfoil design of the blade was the secret, &#8230;..High lift, Low drag.

Today, with the new high-strength aerospace adhesives, Jim was able to work with products not formerly available. The all-new "Sport Rotors", made by "SPORT USA, LLC" , are now the latest breakthrough in all aluminum rotorblades. The new adhesive process, the first to be used on experimental gyroplane rotorblade systems, has taken over 36 months to research and test. Jim has brought in outside consultants who specifically work with these new bonding techniques, which are currently used by "Boeing" and in other helicopter rotor systems, fighter jets, missiles and airliners. It is expensive and the processing is very critical in that you must follow specific step-by-step, procedures. Approximately 52 steps in producing a single set of rotorblades! The blades are chemically dipped in three separate tanks, and each phase of this bonding process is timed to industry standards to insure accuracy. The new bonding process uses a baked-on "Structural Adhesive Primer" which provides a high degree of protection against corrosive environments both inside and outside the adhesive bond-line. This is one of the key elements in producing the "Sport Rotors" as it is imperative to bake on the primer, prior to the bonding, as done in all aerospace bonded metal structures, to keep the blade surface, corrosion resistant and insure long life to your bond. Consequently, this process requires three bake cycles. To date, Sport Rotors are the only aluminum rotorblades available which use this process.

The blades, along with test pieces, are baked in a state-of-the-art oven, which is 20' in length, 5'2" high and 4' wide. These test pieces are peel and shear tested after each run. When shear tested, one square inch, of each test piece, will shear at 6 tons psi (per square inch). This is a guarantee that the adhesive has adhered appropriately to the aluminum and releases through the bond-line for "Perfect Adhesion". The oven is made completely of stainless steel, has a computerized digital temperature controller. This controller is vital for exactness in the incremental rise in temperature to the equally important incremental decrease in temperature, which is necessary for the accuracy in this type of bonding. The controller disallows the oven to "overheat" and regulates the levels of heating which is required in order to properly seal the blades. There are special external blower fans and an overhead crane that lifts the lid. The oven is 240 volts at 10,000 watts and able to ramp up to 300 degrees from a cold start within 60 minutes.

They are very excited about the smooth performance of the new design. After many variations of redesigning the airfoil and many flight tests later, this configuration has proved to be a winner. Flight testing includes: best glide, slow vertical descent, slow flight, high speed run, good rotor rpm recovery, high G turns (testing high loading capabilities). In fact, during the "extreme" testing phase the Sport Rotors were used for looping & Roll maneuvers and rated "High" in overall performance! They sport a high shine white epoxy urethane finish, which is enhanced by the gold cadmium (or nickel finish) on the retention straps. The Sport Rotors latest breakthrough in the design of their new rotor systems is seen in the larger, 8" chord blades, specifically at the hub bar. This is unlike any other hub bar design you have ever seen. In adding a polyurethane mount, with a spherical bearing, to the connection area of the blades, has allowed the blades to pivot. Due to this configuration the rotorblades are able to find their own lead, lag and coning angle. This simple design gives separate pitch and track adjustability allowing them to fine tune their position. The special mounting renders smoother movement during rotation and this feature of self-aligning is helpful, especially for the pilot who removes his blades from the hub bar between flights. The four main factors that Sport Rotors set out to achieve, aside from achieving a great airfoil and quality product, were: (1) Incredible Performance, (2) Longer life of the Rotor System and Rotorhead, (3) Pitch and Track Adjustability, (4) Ease & simplicity of hook-up,&#8230;. And this is what they have achieved. This system reduces bending stresses within the hub bar and rotorblades during tensile load in flight (as in a helicopter), unlike other hub bars which "cut out" inside the solid structure compromising the integrity and weakening that area. There is a definite performance difference in these larger chord blades. The aspect ratio is wider, which allow slower descent and a higher rate of climb. The 7" chord blades are recommended for lighter aircraft, but the 8" chord blades are recommended for high performance. This new rotor system was designed for longevity, in that, any wear points (flexing on the bushing) can be replaced. Thus, the blades are guaranteed for a lifetime of use.

They are currently selling these rotorblades to other manufacturers. Mr. Joe Souza of "Joe Souza Gyroplanes", or better known by his design, "The Bandit" is a regular distributor of the new "Sport

Rotors". He recommends these blades to his customers and is extremely impressed with the remarkable difference in performance. "These blades have really good inertia, real smooth flying, right out of the box. They render quality like no other aluminum blades we've used. My customers are not only impressed with the great performance they give but they look good, and add a professional touch to your machine." Customer Ron Spiess from Kerrville, TX#8230;.. "The Sport Rotors are a work-of-art, they should be commended for the quality and craftsmanship of these blades!" Jim's quote regarding these new blades: "These rotors are the finishing touches for our Sport Copters. Their quality, style and performance compliment each other, making the Sport Copter complete." Sport Rotors have been sold, as standard equipment for the "Sport Copter" customers, and now the demand is growing since these blades started to enter the market. They balance, track and fly every set of Sport Rotors before shipping. The tracking tabs (one red, one white) are left on the blade ends so you can track your blades at home!

UPDATE -- JAN.2003

We have added a new step to the Sport Rotors Rotor System manufacturing process. The blades, in the past, were buffed and polished leaving a high mirror shine finish. The problem with this type of surface is that the blades are susceptible to corrosion over a period of time. We have received feedback from our present customers who are requesting a more "low maintenance" surface which will not require a lot of upkeep. So we now have added a new "painted on sealant" which will not only make the blades look superior but will be less maintenance on its owner in the long run (and will prevent corrosion). This is the same finish used on helicopters and jets. No other aluminum blades are using this level of quality. First, we apply the Corrosion Proofing, then we apply the Primer. The blades are then painted with a White Urethane Paint. This sealant system, you will find, will insure the longevity of quality on the surface of your new Sport Rotor Rotor System. We currently have distributors in Jordan, Japan, Spain, Russia and Czech Republic