Max Bee-

Can you say "Exotic?" Igor's World Championship winning design has lots of interesting aerodynamics as well as interesting aesthetic design cues.

Part II: Building Max Bee

I know, I know, the designing article about Max Bee in the January/February issue of *Stunt News* was very technical and perhaps a "heavy" read. So now it's time for something a bit lighter: the building of Max.

I used to document every step and every detail of my models. It is good to know what is inside and where it is when, and if, I need to change something years later. I was very lucky to have such documentation when I discovered that I needed to change the leadouts in my wing. They were fraying at the leadout guide and were in danger of breaking.

I did not find the reason why it happened, but having all photos, I knew where to make a round, 10mm (.393 inch) hole in wing skin, which was enough to cut the old lines close to the bellcrank and replace them. Later I found it is also a good knowledge base for people who were building a Max Bee.

Unfortunately, I have so many detailed photos that it is impossible to publish them all in one article, so I will try to post them in subsequent *SN* issues. *(Please see the editorial in this issue for a full explanation of what we plan to do with Igor's amazing array of photos and information—Ed.)* We will see how many and how often, but I hope it will not take years to get them all published.

So for right now I have prepared this short description of the building process and a building plan that was done by Kevin Wright. My thanks go out to Kevin for his beautiful work on the plans.

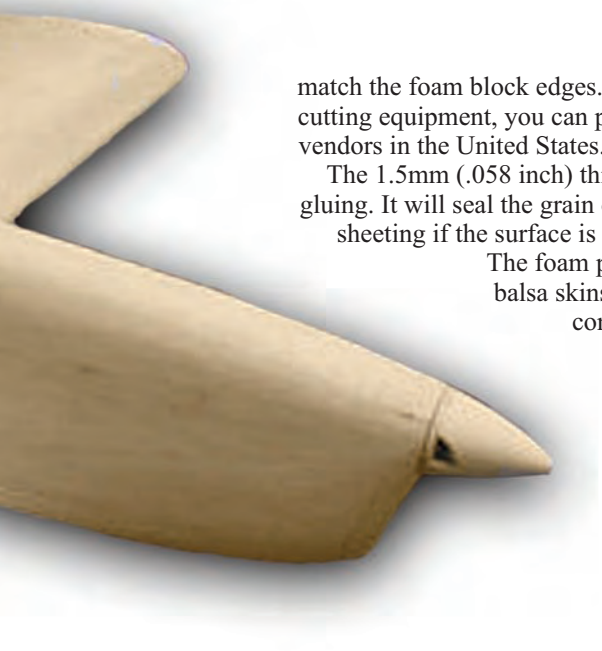
The entire model is built from light grade balsa. Thanks to the electric power train, I was able to use a minimum of plywood, laminate, reinforcing materials, and complicated structures. The wing is a balsa-covered, foam type structure made in a vacuum bag. The fuselage is a classic balsa structure.

Wing construction

This model features a foam core wing which is cut by using a thermal saw (hot-wire foam cutter). The templates for cutting are included on the building plan. The holes in the templates should

–The Slovak Way

by Igor Burger



match the foam block edges. First I cut the lower, then the upper side of each wing panel. If you do not have foam cutting equipment, you can purchase the cores or balsa finished wing panels from one of the many foam wing vendors in the United States.

The 1.5mm (.058 inch) thick balsa skin should receive a coat of dope on the side that will face the core before gluing. It will seal the grain of the balsa to a degree and save some glue weight. (The glue tends to soak into wing sheeting if the surface is not sealed.)

The foam parts have 3mm (.117 inch) thick balsa installed to allow for more secure gluing of the balsa skins at the leading edge and at the hinge line; that is the reason why the leading edge consists of two parts. The second part is attached after vacuuming and then sanded to the exact shape with the help of templates.

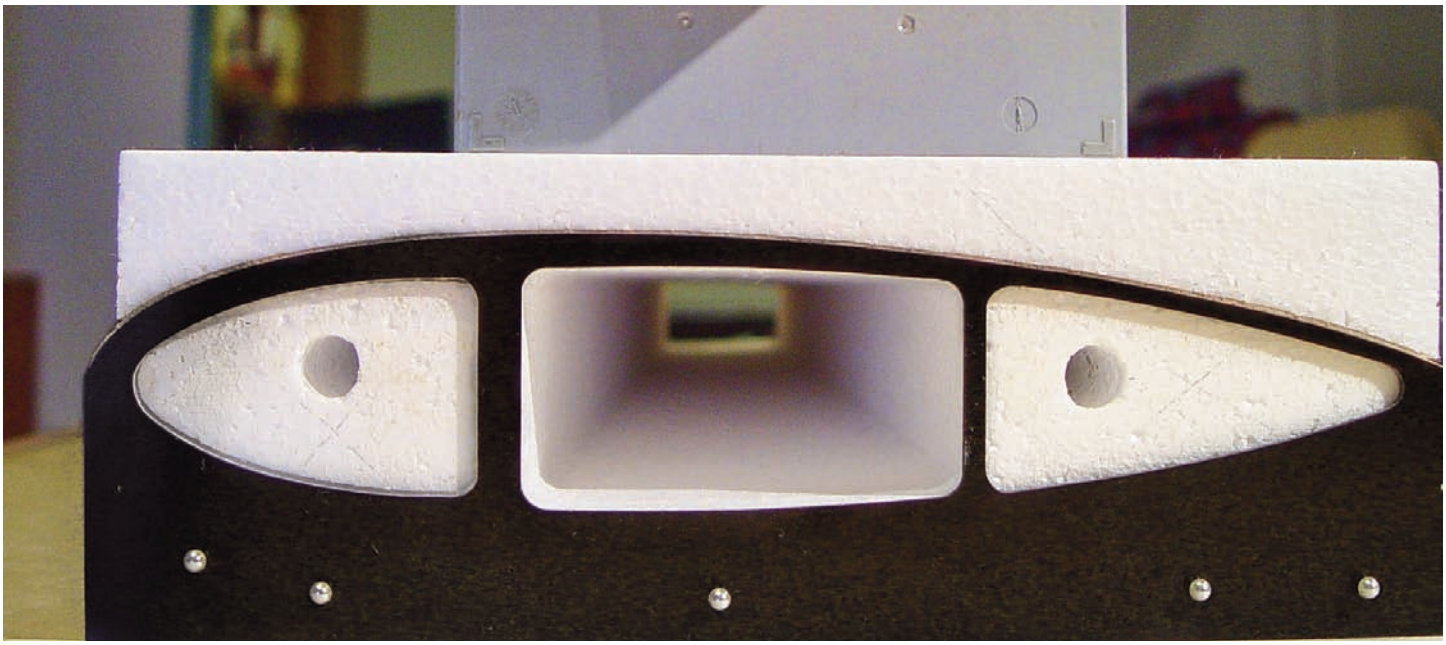
The vacuuming is the most critical operation. I usually use epoxy resin for skinning my foam cores, but this time I used Soudal 66 polyurethane foaming glue for wood. *(An equivalent product available here would be the polyurethane Gorilla glue—Ed.)* It is quicker than epoxy, but it also means that you must also work more quickly and be very exact with your work.

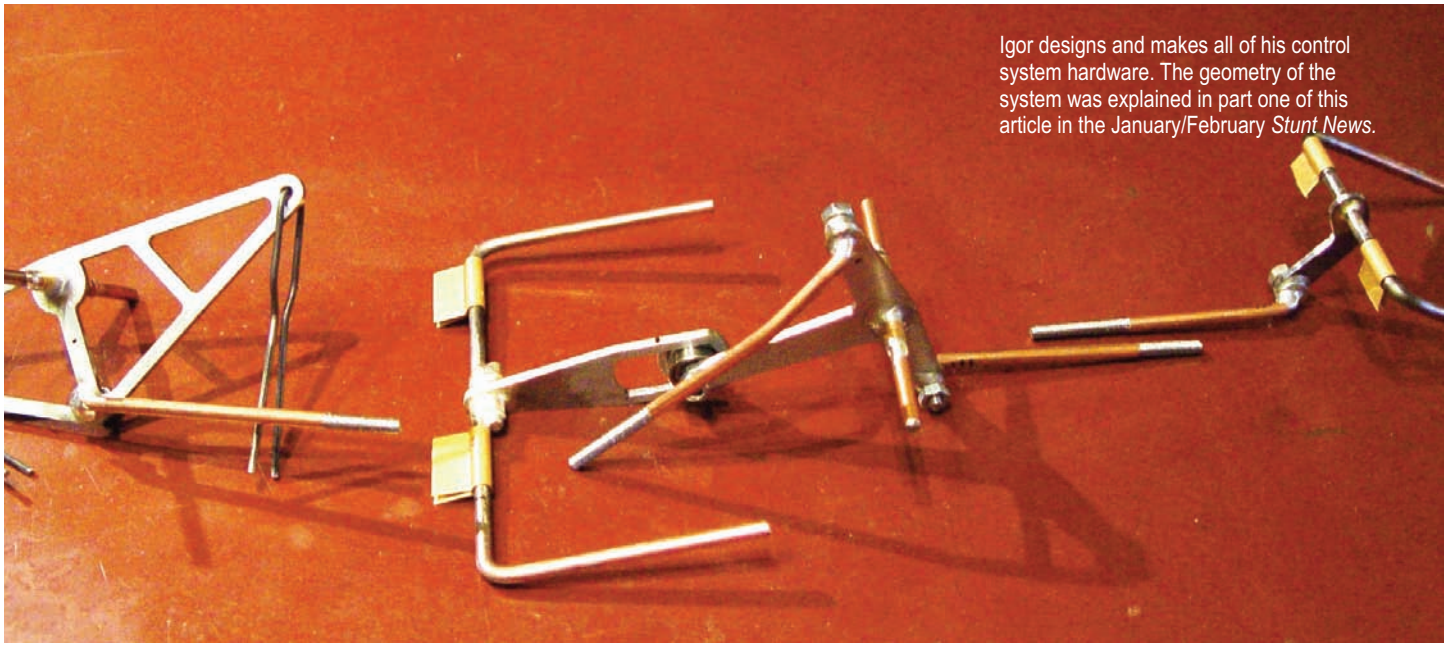
Some practice on a scrap wing panel might be useful here before you proceed to skinning your actual cores. I recommend the use of epoxy for your first vacuuming experiments. *(Typically, an epoxy laminating resin such as Z-Poxy Finishing Resin is a good choice when skinning foam cores—Ed.)* A far more detailed explanation of foam core fabrication, preparation, skinning, and vacuum

The Max Bee's unique profile was loosely borrowed from the famous Gee Bee racer. It is enhanced greatly by the beautiful paint trim design by Igor's friend, Tania Uzunova.

Above: Igor cuts and sheets his own foam core wings. To insure that his wings are both strong and light, he prefers to vacuum-bag the sheeting to the core.

Below: Internal coring removes a great deal of weight. Note that Igor leaves two integral foam spars to support the airfoil shape as is normal in modern foam wing construction.





Igor designs and makes all of his control system hardware. The geometry of the system was explained in part one of this article in the January/February *Stunt News*.

Igor prefers to build the fuselage for his models in a fixture and around the covered and assembled wing. He does not use a saddle cutout.

bagging will be explained in my columns that will appear in this magazine in the near future.

Once the wing has been skinned and sanded, it is then internally cored out in three sections and has hollowed balsa block tips installed. The stabilizer is built the same way, but it is not cored out internally.

The flaps and elevators are made from 6mm (.234 inch) balsa sheets. The wing and stabilizer are then covered with thin paper and are doped and sanded. Only then do I install the bellcrank and join wing halves. The joint is reinforced by glass cloth and epoxy resin.

Fuselage

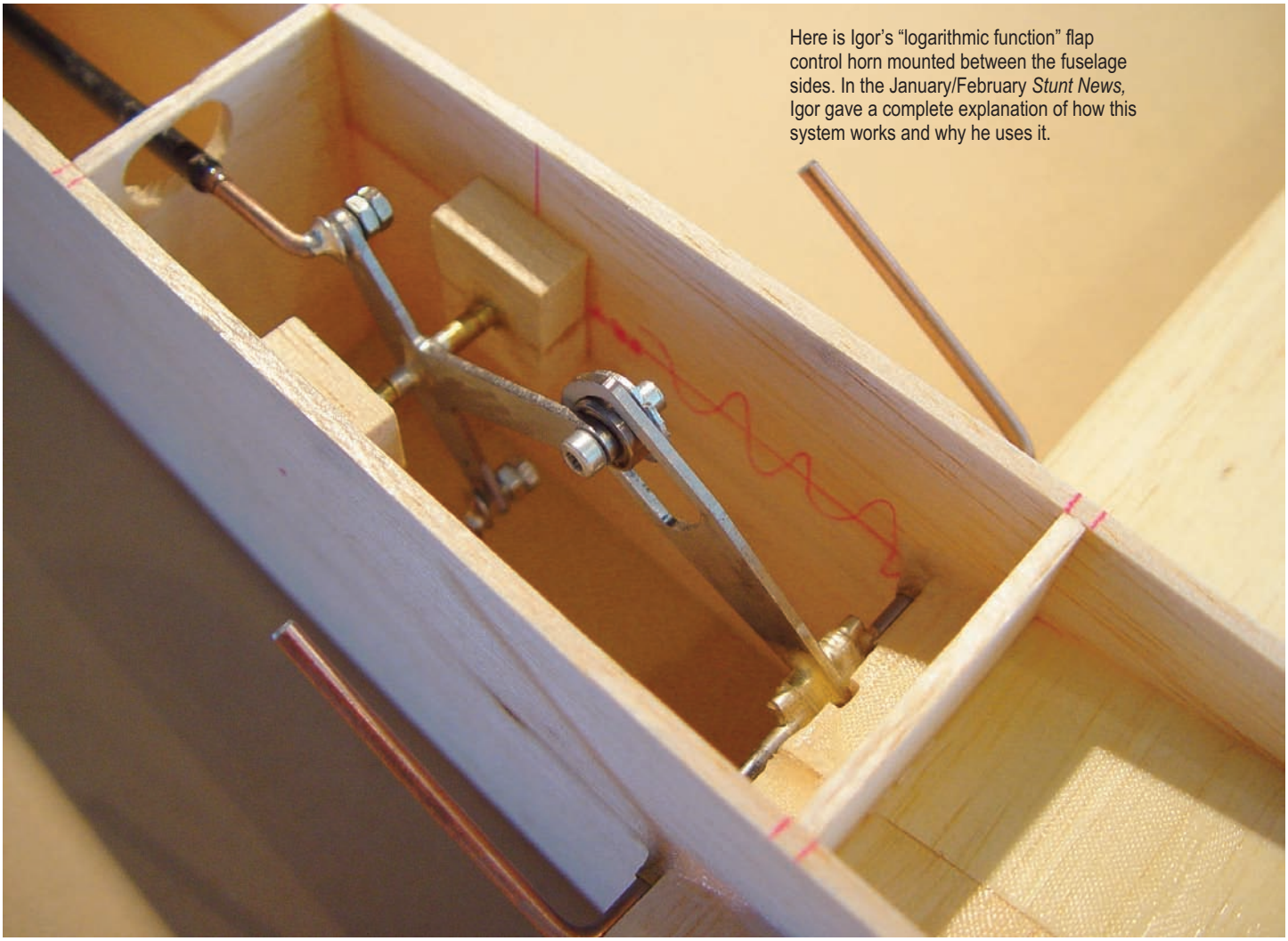
The fuselage is built in the classic method, directly on the wing in a building jig made from polystyrene. First I construct the fuselage sides and the formers from 3mm balsa. The wing itself has equal panel lengths, but it is installed in the fuselage shifted 10mm to the inboard side so that the inner wing panel is 20mm (.780 inch) longer than outer panel. The open top and bottom of fuselage allows enough space to install the entire control system, including my logarithmic device to operate the flaps.

The top and bottom of the fuselage is finished off with hollowed turtle decks that are made from balsa blocks. The removable motor cowl is attached using rare earth magnets. The last items to install are the rudder fins on the top and bottom of the fuselage. The rudder fins are made from 10mm (.393 inch) balsa.

The fuselage is then covered with thin paper and receives a coat of dope and sanding.

Doping, colors, and finishing

The finish is also classic. At this point I apply six coats of dope and carefully sand the model smooth. The colors that I use are acrylic automotive paint. The color scheme has three colors, and all of them are applied using masking foils that were designed

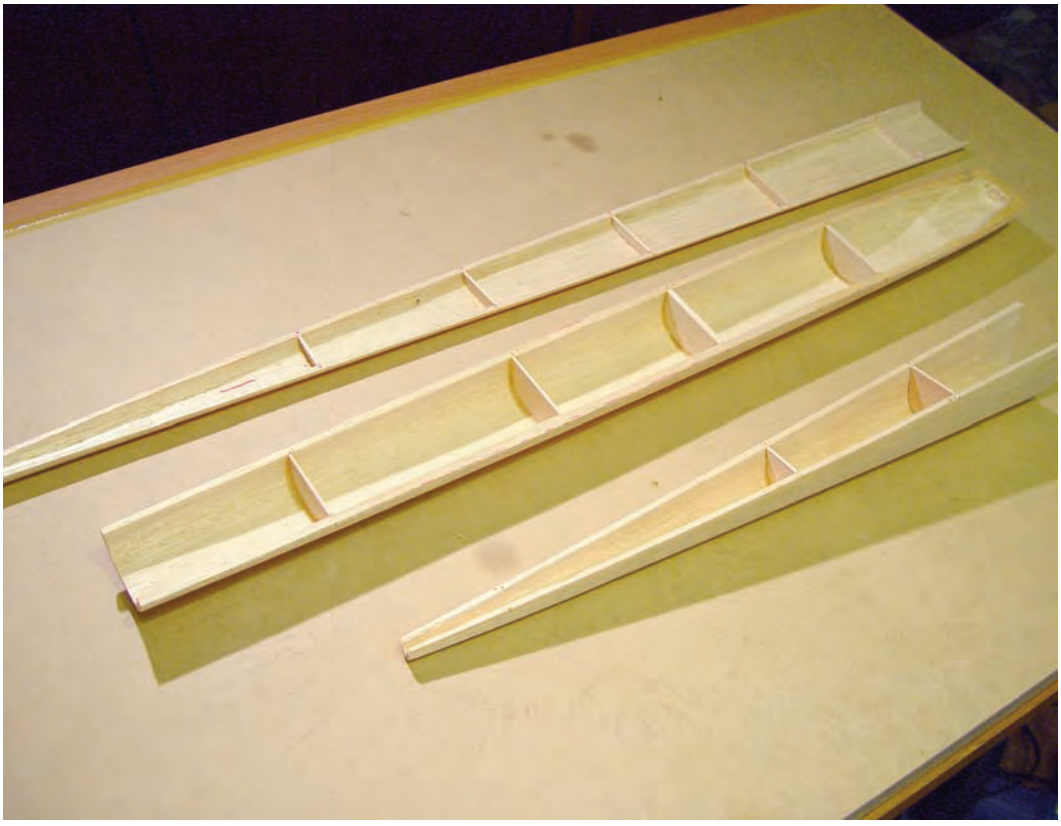


Here is Igor's "logarithmic function" flap control horn mounted between the fuselage sides. In the January/February *Stunt News,* Igor gave a complete explanation of how this system works and why he uses it.

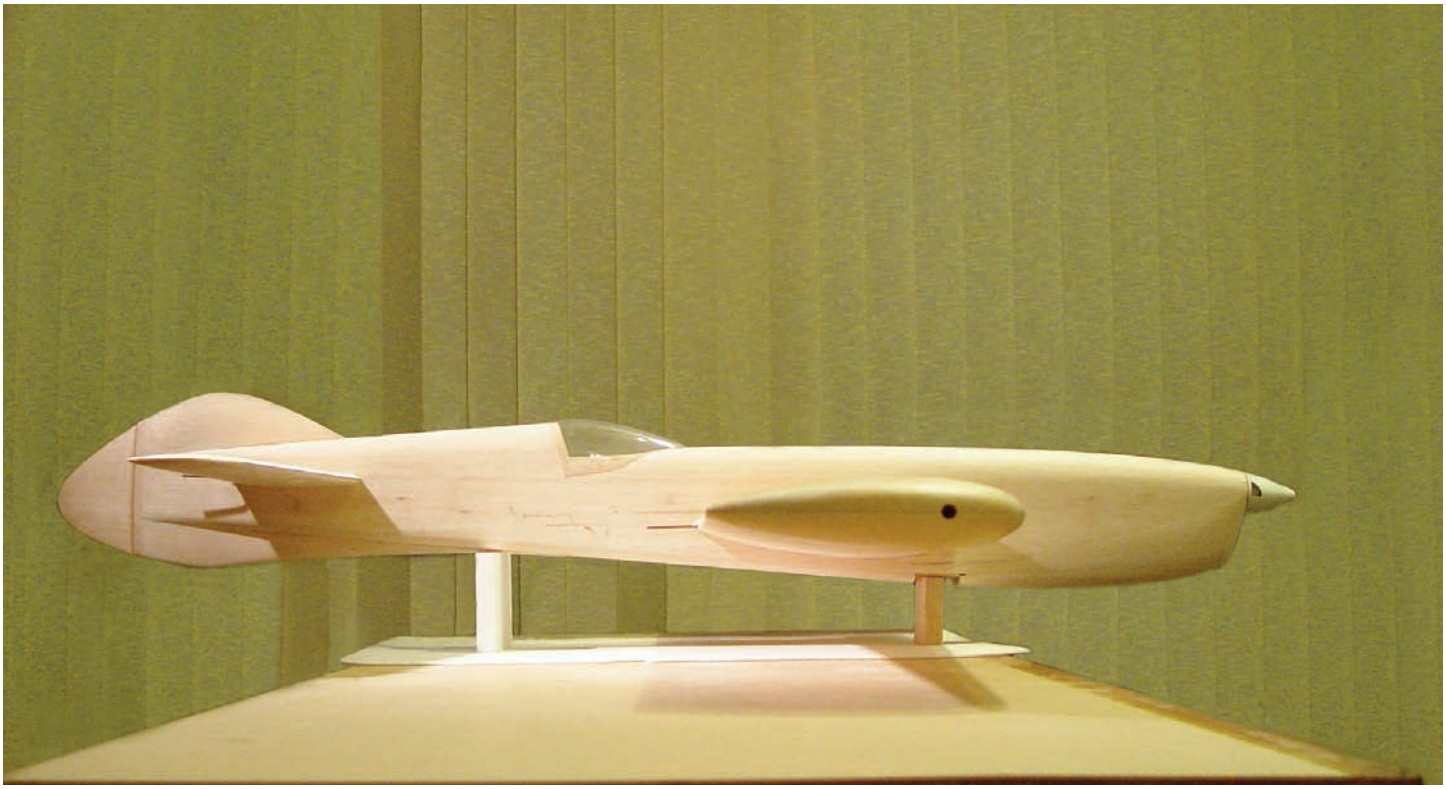
in a drawing program, cut on a foil cutter, and then applied to the model and sprayed. The letters are also done in a drawing program and cut from decorative color foils.

Power train

The Max Bee is powered by AXI 2826/13 that was made specifically for CL Stunt. The ESC is a Jeti Spin 66, the prop is a carbon 11 x 5 3-blade, and the battery is a 6-cell 2600mAh 25C unit. The timer is of my own design and constructed with an accelerometer function that simulates a glow-type 4-2-4 break. The final weight is 1750g *(63 ounces—Ed.)* SN



While many have switched to molded fuselage top and bottom shells, Igor still prefers the carved and hollowed-block method. Its labor intensive, but it is still a very effective method to achieve great fuselage shapes!



Above: The side view of the Max Bee framework reveals a very curvaceous profile. Note the unusual airfoil shape and the long nose length. There are a lot of original ideas in this model!

Below: Style, form and function come together in this World Championship winning design. Get used to seeing this ship at or near the top of the standings for years to come!