

From the Editor

This is the last edition of HUFF for the year. I hope you have enjoyed the articles and continue to support OzHPV throughout 2003.

HUFF and the OzHPV Web site has been my major contribution to OzHPV since the start of 1999. I can't say it's an easy job and does take quite a lot of time but I do enjoy the work and it keeps me in touch with HPV's more than I would normally do. Each year the other roles in OzHPV EG Secretary tend to change and some have to change through our constitution EG President every 2 years bringing in a fresh outlook on the job. What I'm getting to is there possibly isn't too many keen on these roles media roles so I'm offering myself for re-election for HUFF and the Web site. If anyone else wants to give the job/s a go feel free to put yourself forward as I don't see this as MY job.

I would particularly like to thank Bernard Weir for his contribution to HUFF throughout this year. Bernard has copied all the printed versions for us free of charge freeing up some of the OzHPV finances for other worthy tasks.

Damien Harken too, as secretary has been excellent to work with and we have achieved HUFF mailings pretty well on-time for all editions.

Keep in mind it costs the least to OzHPV and is easiest to administer if members choose to receive HUFF by email attachment. We're willing to continue to cater for those without computer access through the printed version though but these miss out on the color pictures and speedy delivery.

Timothy Smith
tstrike@ihpva.org

Tri-Sled Sorcerer project – *A work in progress...*

Well here I am nearly two and half years after starting this development. So far I've build two patterns, two sets of moulds and 4 prototypes. I would have to say I feel as if I'm getting somewhere...finally. Not only has the latest model proven to be more practical than all predecessors, but it is faster than all of my old coreflute racing streamliners (I've build 11 of them so far). Below is my original design premise

Sorcerer HPV Design premise

Light weight, fast and practical Streamlined HPV suitable for Australian conditions.

Specific Considerations:

- * Shape is to be adaptable to conditions. Both head in and head out configurations are to be achievable in the one machine so that daily changes can be made to suite weather.
- * Shape will offer weather protection and a 'real' aerodynamic advantage.
- * Provision for around 60-100 litres of cargo space shall be afforded
- * Ground clearance shall be sufficient to clear most suburban conditions. Construction such that minor bottoming outs are tolerable.
- * Good all round visibility and functional rear vision.
- * Turning circle shall be reasonable and a reversing action shall be possible.
- * An attractive appearance that non-HPV enthusiasts will admire.

Project Start Date: 2nd May 2000

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Rather than bore you all with specific details, I thought I would take you though an anthology of the development to date with photos and descriptions.



First a Cad drawing was made of the proposed shape. This was translated onto polyurethane foam sheet and bonded together on a steel datum frame. Just imagine taking to the final shape with a giant bread slicer and then gluing it back together....



This was then form sanded to the shape desired and covered in a sandable hard top layer. Using a wide range of sanding boards, it is then worked into the final shape and polished to a moldable surface.

Fibreglass 'female' molds are then taken of this 'pattern' which are used to make the actual fairing.

Hundreds of hours work later; here is the first fairing out....



After racing this one at the AIPP 2001 a number of dimensional improvements were sighted and after the construction of a second machine (which attended the OzHPV challenge at Werribee) and further testing, a new shape was inevitable.



Pictured below are mark I and mark 2 shapes positioned side by side.



Dimensional changes made:

- * Length shortened to 2680mm from 2900mm.
- * Head section narrowed by 40mm.
- * Body height reduced by 35mm.
- * Front body hight reduced by 110mm.
- * Tail brought in to a 10mm fin as apposed to 50mm.
- * Front floor angle increased by 4 degrees for curb clearance.



geometry changes have been made so that it suites the fairings clearances.

The new machine has proven to be very successful. Major improvements have been made in nearly all key areas. Visibility with the hatch on is now quite good. Ground clearance is at 95mm with

Pictured is the finished mark 2 plug after many hours of polishing. As you can see, greater investment was made into surface finish with the newer pattern.

the same centre of gravity as the old model. Turning circle and crosswind stability are much improved. Structural integrity of the shell is now much better and fairing weight is still around 8kg like the old one.



Side developments that have made the new Sorcerer possible

Windshields

The first windshields for the mark one were very ordinary (I made them in my mums oven!) suffering from wavy distortion. I've now developed a large vacuum forming oven and mold box. As a result I can make Polycarbonate windshields up to 2 meters in size with very little tooling up so that should future applications come up I can make them to order. The latest shields are fantastic, when they're new you forget they're even in front of you, which makes the whole riding experience feel like a video game.

.... If you look closely you can see my ugly mug taking the photo!!!

Next molds were taken from it as per mark I.



The first new fairing and frame to be fitted inside. Frame is structurally similar to our new Gizmo model although some

Carbon Fibre seat.

Early hard seats for our machines were made out of Aluminium but we found that they were:

- a) lacking hold around the pelvis which made cornering a little uneasy and
- b) prone to inducing pressure points on some riders after extended rides.

We needed a hard seat due to the tight clearances inside a fairing so we opted to produce a mold to make them in carbon fibre. The advantage being that we could put 3D contours in it and eliminate the pressure points. The first mold (seat on orange trike at Werrabee meet) was not quite right having some lay up difficulties and also some minor comfort problems. We produced a new mold early this year and appear to have eliminated the difficulties. Our riders at the AIPP 24 hour remarked on how comfortable it was even after extended time inside the fairing.

The Ride:

I'm shore that all of you who ride recumbents on a daily basis are plagued with questions from bystanders like; how fast does it go? Is it comfortable?

Well riding a faired HPV takes this to a whole new level. Even people who ride recumbents ask predictable questions. So heres some discussion of my views and experience of riding fully faired machines.

Heat and Breathing

The biggest question about HPV's is the heat and yes, of course it's hotter inside a fairing. The common mistake a first time rider makes is jump in and scream down the road to answer the biting question, how fast does it go. They blow their stack and get out remarking about how it's too hot and needs ventilation. Ventilating the fairing to a level that would satisfy this request would forfeit most of the advantage on offer, and therefore deem the shell payload (for the most part), a common mistake.

The reality is that if things are right, the rider was getting a little more than enough air for essential cooling and breathing, but not enough for momentarily flat out aerobic pedalling. A restriction he/she may not be familiar with at first.

Riding in a Full Fairing is much different to ridding a normal recumbent as a recumbent is to riding a conventional bike. Your speed and endurance are governed by thermoregulation and breathing to a greater extent. Undisciplined sudden increases in pedalling output can result in a build-up body (fairing) heat that cannot be dissipated quickly. This in turn leads to the claustrophobic discomfort than makes you want to get out.

A good aerodynamic fairing will see markable increases in speed even with a possible decrease in rider efficiencies due to conditions. High-end sprints are possible through careful use of incoming air. You base your acceleration not just on how

your legs feel but how the cabin air feels... It all sound rather complicated the way I've explained it but it really is not difficult to pick up. The main thing is not to pedal really hard at low speed when there is no cabin airflow to fund it.

At this point I will add that in a every day commute where there are intersections and short steep hills the head out configuration is going to be the much more likely choice. But say you want to do a fast day ride or light tour on open road with few stops and starts, you would be far better off with the hatch on as keeping cabin airflow up will be easy.

Hills

Probably a tender subject when it comes to fairings. The one place where all hpv's (faired or otherwise) are equal is a standing start at the bottom of a steep rise. Weight and power are the primary influences here and the best fairing is as good as a pannier full of groceries. Due to weight, a faired machine will come up second best if speeds are very low. But if you consider the proportion of journeys that require a machine to excel in this criterion over all others then this negative point is not so dire. That said I believe a faired machine needs to be at least under 24kg for it to perform at an acceptable level.

One of the best things about fairings is the remarkable conservation of momentum. You can roll for literally kilometres on the runoff from one downhill. This is often overlooked when discussing hill climbing and HPV's. What comes up must come down and the much-improved aerodynamics means you translate the potential energy of the decent into motion much more effectively. One of my favourite roads to go testing on is a windy coastal esplanade nearby. Besides being a nice place to ride it is a smooth road that undulates up and down with a few challenging climes. In the fairing the climbs feel like 'little bumps in the road' due to the speed accumulated and saved from the previous descent. Speed is both faster and more consistent than if you were to be riding same road on a conventional trike.

As with all HPV's, weight is always going to be and area for constant improvement but I feel that my latest models are at the point where they perform better on both flat and hilly roads.

AIPP 2002

I aimed to have the new model developed and ready for this event having had some time away from it after the mark ones. I had the first mark 2 machine ready less than a day before we had to leave for Adelaide (late as always) and indeed was working on it right through the night before the event. I'd done no testing and had incorporated a bucket load of new ideas and theories. Have no idea what 'could' go wrong is very



unsettling at a 24 hour race as once the race starts you get no time to look at it in detail. As it happened we had an almost perfect run with a damaged wheel due to a collision being the only real damage worth mentioning. We won the race quite comfortably and managed to cover 860km in the 24 hours.



I'd like to mention how much I appreciated the team of people behind me and made this race such a great success. Well-done guys!!!

I personally dedicated the race to my uncle Bob who past away earlier this year and was a great inspiration to me.

Time and funds permitting, I'll be working on the more everyday stuff in the near future to make the machine more road suitable. Key areas include rear vision mirrors, gear range, hatch mounting system, luggage compartment etc. I would say that they will be at a producible stage in the foreseeable future.



Ben Goodall
 Tri-Sled Human Powered Vehicles
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 Phone (03) 59810337
<http://www.trisled.com.au>



2002 Greenspeed OzHPV Challenge

Just an update on the Challenge which is not too far away.

Camping will be available at the site as for previous Canberra events for Friday and Saturday nights.

The local Scouts are going to run a food stall during Saturday and Sunday and will be putting on a BBQ meal Saturday night.

Any manufacturers that would still like to be involved in the trade displays and haven't already contacted me, should do so shortly if they want a tent to display in.

Good news in regards to sponsorship.

- * Greenspeed \$1,000
- * MR Components \$250
- * Velocity \$250 (in rims and water bottles)
- * Canberra Tradies \$150
- * Flying Furniture Carbon Fibre M5 (just kidding - some little bits and pieces).

Looking forward to a good weekend.

Peter Heal - heal@cyberone.com.au

HPV event - What about Tasmania

We don't have a very active HPV scene here in Tasmania but that is not to say it's dead. Have a look through our Web site at <http://sunsite.anu.edu.au/community/ozhpv/tas/index.htm> and you'll see there are quite a few interested but we tend to not mix much with others and have limited events.

I've been thinking for quite a while how good it would be to have something we could invite HPV'ers from the North Island (that's the Australian mainland) to, especially as Tasmania is such a treasured holiday destination for many. What do you think? Would anyone be keen to come over to Tas for some sort of activity? I'm not thinking of a race (although it could be) but maybe a weekend doing a few rides and other activities around the State. When not in peak season cars and bikes on the ferries are free and it's possible we could find billeted accommodation along with camping if preferred. How about it? In any case our family is happy to put up anyone touring round the State so feel free to give us a call if you head over to the Apple Isle.

Timothy Smith - tstrike@ihpva.org

Notice of OzHPV Annual General Meeting & call for nominations

The 2002 annual general meeting of OzHPV Incorporated will be held on 2 November, during the Greenspeed OzHPV Challenge 2002, at the track.

Agenda:

- Presidents Report – Jeremy Lawrence (page 8)
- Secretary's Report – Damian Harkin
- Treasurer's Report – Jeremy Lawrence
 - see attached financial statement for 2001-2002 (page 7)
 - Motion to accept financial statement
- IHPVA representative report – Ian Humphries
- Website & HUFF report – Tim Smith (page 1)
- Motion to accept financial statements for years 1997-1998, 1998-1999, 1999-2000 & 2000-2001 - Peter Heal
- Motion to formalise OzHPV accounting – Jeremy Lawrence
 - Expenditure approved by council meeting
 - Email meeting of council is OK to approve expenditure
 - Large items (council to decide) to be discussed at AGM
 - Treasurer has one cheque book, president keeps other for emergencies
 - All cheques signed by Treasurer, mailed to 2nd council member for cross signing, who forwards to payee
 - Deposit slips (eg membership subscriptions, or after events) to be completed and mailed to Treasurer within 1 week
- Motion to re-assign signature authority – Jeremy Lawrence
 - New treasurer to take AGM minutes to bank
 - Erase all old signature authority
 - Three new signatures include newly elected president, secretary, treasurer
- Motion to formalise funding of events – Jeremy Lawrence
 - Event organiser to submit budget to council (can be rough)
 - Council approves (I don't think we've ever knocked one back)
 - Treasurer to forward working funds to organiser (eg \$500)
 - Larger cheques direct to payees (eg track hire, scouts)
 - After event, organiser deposits remainder, forwards deposit slip and final budget to Treasurer
- Motion to obtain assets (spend OzHPV money) – Steve Nurse
 - That OzHPV spend approximately \$500 to purchase up-to-date software in used for the production of Huff. (Suggestion by Tim Smith, supported by Damian Harkin)
 - That OzHPV allocate \$1000 for the purchase of publicity materials ie banners / business cards. This budget should provide a banner or folding corflute sign for each of the states / regions with an active HPV group: Melbourne, Sydney, Canberra, Brisbane, Perth, Albury, Tasmania. With next years challenge to be held in Melbourne, the Melbourne mob could put forward a proposal for spending the money to the internet discussion group, and have all the materials ready for distribution and use at the Broadford Challenge.
- Final call for nominations for office bearers: Jeremy Lawrence -
 - President
 - Secretary
 - Treasurer
 - IHPVA Rep
 - HUFF Editor
 - Website Editor
 - State reps

Financial Statement

01 to 30-6-2002

	2002	2001
Balance Sheet 1-7-2001 to 30-6-2002		
ASSETS		
Cash at Bank Account		
67 638-2698 @ 1/7/01	3,687.26	2363.91
68 638-2698 @ 30/6/02	4,429.29	3,687.26
TOTAL ASSETS	4,429.29	3,687.26
LIABILITIES & EQUITY		
LIABILITIES	0.00	0.00
EQUITY	4,429.29	3,687.26
TOTAL LIABILITIES & EQUITY	4,429.29	3,687.26
Profit & Loss Statement 1-7-2001 to 30-6-2002		
INCOME		
Interest Bank A/C	0.99	2.61
Refunded bank fees	287.00	0.00
Membership	1,145.00	1,049.96
OzHPV Challenge entries & sponsorsh	2,963.00	3,215.99
TOTAL INCOME	4,395.00	4,265.95
EXPENDITURE		
ACT Registrar General	200.00	0.00
Bank charges & Fees	518.00	0.00
Govt Charges & tax	27.16	13.12
Insurance	757.94	566.52
Stationary, Printing, Postage, Courier	305.56	333.45
Equipment	270.00	148.18
Challenge expenses	825.30	1,881.33
Refund Govt Grant to produce video	750.00	0.00
TOTAL EXPENDITURE	3,653.96	2942.60
TOTAL INCOME - EXPENDITURE	741.04	1,323.35

Notes:

Large bank fees (\$231) caused by order of reprinted bank statements. Bank mistakenly double charged us, and fees were refunded.

Expenditure on Registrar general was for three years worth of fees to maintain incorporation status (we hadn't sent in the paperwork for three years running)

Expenditure on video grant was because we didn't actually make the video. We received the grant in 1998

Presidents Report - OzHPV Annual General Meeting, 2 Nov 2002

Since the last AGM:

- * OzHPV's incorporation status has been reinstated (\$200, and thanks Peter Heal)
- * Misplaced bank statements replaced with reprints from bank (\$231)
- * Insurance cover increased to \$10M Public Liability (from \$5M) & \$1M Professional Indemnity (annual premium \$1252, last year \$750)
- * Timing gear purchased from Greenspeed (\$270)
- * Returned a Government grant (\$750) to produce a video (that we didn't make)

Problems with OzHPV include:

- * tracking of income/expenses
- * unclear who has authority to sign cheques
- * unclear procedure for getting approval to purchase assets
- * unclear procedure to provide working funds to event organisers (eg Challenge)

I hope to get these problems sorted out at the AGM (see agenda items)

Good things with OzHPV include:

- * excellent website & HUFF (thanks Tim Smith)
- * financially stable
- * memberships stable
- * good fun

Coming Events

Greenspeed OzHPV Challenge

November 2nd & 3rd - 2002: This is Canberra's chance to bring the Challenge back home (for this year anyway) The weekend will follow the tried and tested format of past challenges held at the . Sutton Rd course. For more details contact Peter Heal Ph 02 62884103 heal@cyberone.com.au

The Velofest

7th November, 2002 - By the organisers of the Adelaide International Pedal Prix. <http://www.pedalprix.com.au/>

The Australian International Pedal Prix

3 Hour Pedal Prix at Festival of Cycling, Bonython Park, Adelaide.
Contact PO Box 524, Brighton, 5048, <http://www.pedalprix.com.au/>

RACV Maryborough Energy Breakthrough

November 21st, 22nd, 23rd and 24th. Contact Martin Mark on 03 54 610 621, Po Box 194, Maryborough 3465, Ph 03 94890855, Fax 03 94821044, voxbandi@vicnet.net.au <http://avoca.vicnet.net.au/~energybr/>

2003 Greenspeed OzHPV Challenge

March 1-2 2003 - Broadford, Victoria. <http://sunsite.anu.edu.au/community/ozhpv/2003challenge.htm>

If this Newsletter cannot be delivered please return to:
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