AeroMarine Research
TBPNews - Performance Report

~~~~~~
TBPNews #143- Aug 24 2011
~~~~~~
>>>> **Tunnel Boat Performance News** >>>>>> (over 5000 members!)
==========

In this issue:

********** TBPNews **********

Check out review of Jimboat's 13th Ed. "Secrets of Tunnel Boat Design" book in the last HotBoat magazine printed!

1) Cigarette - The legend scales even greater heights

There are high-performance boats - There are muscle boats - And there is Cigarette

Cigarette Racing Team is arguably the best-known name worldwide in the field of fast boats. Established 42-years ago by the late Don Aronow, the so-called 'Godfather' of offshore powerboat racing, the Cigarette Racing Team has lifted its game to an even loftier level since being acquired by its current owner and CEO Skip Braver in 2002.

At the 2010 Miami International Boat Show was one of the company's latest creations, the fabulous Cigarette 46' Rider inspired by the equally fabulous Mercedes-Benz SLS AMG 'Gullwing' wing coupe'. For those who may not be aware, AMG is a wholly-owned Mercedes-Benz subsidiary specializing in high-performance cars. The letters stand for the surnames of the two men Hans Werner Aufrecht and Erhard Melcher who, in 1967, established a racing engine forge at Grisbach, near Stuttgart., hence A (Aufrecht) M (Melcher) and G (Grisbach).

Simply put, the Cigarette 46 Rider was inspired by the superb AMG gull wing, a recreation, if you will, of the legendary 300SL Gullwing of 1954, in its time the world's fastest production car. According to Cigarette's Skip Braver the idea to enhance one of the company's most desirable models in AMG style stemmed from mutual respect and joint product admiration.

The Cigarette features hand-applied AMG 'Alubeam' silver paintwork (as used on the coupe'), a process exclusive to AMG which covers the surface like a metallic skin. It targets light reflections which further emphasizes exterior character lines and design details that make the boat such a standout.

From the propulsion system to the rigging, the Cigarette AMG Rider serves as a virtual 'technology showcase' for Cigarette Racing Team with more than 100 innovations incorporated. A 'clean sheet' approach was taken to build this incredible boat. Needless to say, it's far more than just a 'pretty face' it's an eye-watering performer thanks to a pair of Mercury Racing's 1350hp stern drive engines. These dual 552 cubic inch, V8 engines deliver their maximum 'grunt' at 6500 rpm and give the Cigarette AMG Rider better than 130mph (210km/hr). A pair of Mercury stainless steel propellers, 17.5 inch diameter, 34 inch pitch, transmit the power to the water.

Check out more at: powerboat-world.com and cigaretteracing.com

********** TBPNews ********** [return to top]

2) Miss Canada IV race boat celebrated at homecoming

She may be more than 60 years old, but Miss Canada IV proved she can still turn heads. In front of the Muskoka Boat & Heritage Centre in Gravenhurst on Saturday, a crowd gathered to welcome home Miss Canada IV.

One of the fastest boats of her day, the Greavette-built wooden race boat spent the past 21 years on display at a museum in Ingersoll before returning home to Muskoka. Jamie Smith, a member of the Miss Canada IV restoration team, welcomed the crowd from the back of a trailer next to the 35-foot vessel.

Smith explained that Miss Canada IV competed for the Harmsworth Trophy in 1949 and 1950, the highest accolade in powerboat racing. "Although victory eluded this magnificent boat on both occasions, she focused the boating world's attention on Canada, the two Ontario towns that gave her life, and husband and wife Harold and Lorna Wilson … that raced her," said Smith.

The Wilsons, who are from Ingersoll, but had been cottaging in Muskoka since 1925, attempted to break the water speed record in 1950 near Picton. While the boat easily eclipsed the previous record of 160 mph and became the first boat to travel 200 mph, the record didn't count because the transmission failed just 100 yards shy of the finish line.

Filmmakers also captured the proceedings for a docudrama, Harold and Lorna, which explores the boat's unique history. The new owner of Miss Canada IV is Bobby Genovese, a business entrepreneur originally from northern Ontario who now lives in Bermuda where he operates BG Capital Group. Genovese also owns a cottage on Lake Rosseau, which will eventually be home to both the Miss Canada III and Miss Canada IV. Genovese said he expects it to take at least a year to restore Miss Canada IV to her former glory. The restoration team is currently on the hunt for the 3,000 hp Rolls-Royce Griffon engine that originally powered the craft. The restoration will take place at Tom Adams' shop in Port Carling. Genovese wouldn't reveal exactly how much he paid for the craft, except to say it was in excess of $1 million. He expects to put another $1 million into Miss Canada IV to have her fully restored.

Check out more at cottagecountrynow.ca

********** TBPNews ********** [return to top]

3) Great Powerboat Videos

Check out these great videos....

.....OMC Rotary Outboard Video

.....Jet Boat Racing Crash

.....

[ed note: see also Jimboat's exclusive interview in RaceBoat International magazine, with Shaun Torrente, the newest up-and-coming star of 2011 F1 H20 World Championship circuit, Shaun Torrente together with his Crew Chief Ted Gryguc].

********** TBPNews ********** [return to top]

4) FEATURE: "Why Does a "Pad" Make a Vee-hull Faster?"

[excerpts from Jim Russell's full article "The Bottom Line"]

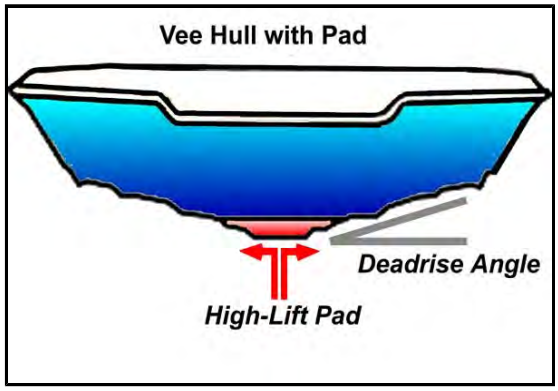
The V-bottom is the most common design of hull in modern performance powerboats. A shallow V design will generally produce more hull Lift and consequently, a corresponding increase in ultimate boat speed. The shallow V, however, is generally not as desirable for running in heavy waves, as it tends to cause the boat to "skip" across the waves, causes a rougher ride, and in extreme cases, a loss of control.

The deeper "V-bottom" boat is the most common of present-day performance Vee hull designs. This design offers a good ride in rough water as the "V-shaped" bottom softens the up-and-down movement (pounding, rough ride in heavy waves). The degree of the angle of the "V" is called "deadrise."

Some "V"-hulls have an additional flat aft surface called a "Pad." This Pad allows a more efficient planing surface aft and an increase in top speed. There is a corresponding sacrifice of some ride softness but with this modified Vee-type hull design, super-fast speeds are achievable!

Pad Design - The Pad is a relatively flat planing surface added to the aftmost section of a Vee hull. The Pad usually extends sufficiently forward so that the transition from the Vee to the flat running surface is gradual.. This smoothes out pounding through heavier waves and more gradually transfers lifting load to the Pad as the hull accelerates. Some high-performance Pad-Vee designs extend the flat Pad to the front of the hull bottom with the intention of initiating planing on the flat Pad surface as early as possible – and tolerate a rougher ride in heavy water conditions.

The Pad Vee has several performance advantages:



Balancing Act - the high-performance Vee-bottom can be a real challenge to drive at high speed. Deeper Vees (15° – 20°deadrise) must be balanced on a thin keel edge, often exhibiting an unsettling lateral instability, as it "rocks" from side to side. The Pad provides a somewhat wider platform on which the hull will ride – making it easier to balance at higher speeds. Admittedly, some drivers will argue that the "balancing act" with a Pad-Vee hull can generate an even more dramatic ride – particularly at speeds around the transition from Vee hull surfaces to riding solely on the balanced Pad. The hull can ride smoothly when balanced on the flat Pad, but when the hull "falls off" the Pad, rocking to one side or the other side, the effect is more dramatic, to be sure. (*Ed. Note - AR performance hull software can predict when this 'Pad-walk' instability will occur*)

High Lift - The flat Pad generates much more efficient Lift than the Veed bottom shape. Theory of hydrodynamics dictates that a steeper angle of Vee (for example 20 degrees) or "deadrise", creates less Lift than a shallow angle of Vee (say, 10 degrees). The extreme case of the completely flat Pad that has a zero (0 degrees) deadrise creates very high Lift for it's small wetted surface area. The result of this "extra Lift" is a dramatically reduced hydrodynamic Drag. Less Drag means more speed!

Transition Lift - During acceleration mode, the Pad Vee hull gets Lift from the Vee-hull sections as well as the flat Pad section. It needs this entire lifting surface to Lift the weight of the hull at lower velocities . As speed increases, so does the Lift, and the amount of wetted surface required to Lift the weight of the boat is reduced. As the speed increases further the required Lift is generated largely by the flat (more efficient) Pad and less by the Vee (more drag) surfaces. Eventually, the hull reaches a velocity where the "Pad" alone can generate sufficient Lift to float the hulls entire weight. Experienced Pad-Vee drivers will recognize the "pop" that occurs when the hull reaches that special velocity where the hull "breaks" away from the Veed lifting surfaces and rides on the Pad alone. (*Ed. Note - AR performance hull software can predict when this 'break-away' to Pad support will occur*)

Less Trim - Because the Pad is a more efficient lifting surface, the angle of attack required to generate weight-balancing Lift, is less than it would be if the Lift were generated by a higher deadrise Veed hull surface. This lower angle of attack makes the setup and operation of the boat more stable. When the "pop" occurs (Lift transition from Veed surfaces to Pad surface only), some hulls will noticeably "nose-down" to a lower angle of attack, due to the more efficient Lift generated by the Pad.

Setup is important - particularly weight distribution, because the boat must balance on the Pad. Since we have to balance the hull on only a narrow Pad at high speed, there will always be some tendency for the hull to "fall off" to the unbalanced (heavier) side of the boat. Fuel tank, oil tank, battery and even passenger location can be adjusted to help balance the running setup and help stability of the hull at high speed.

Less Drag = More Speed - All the Lift of the hull must counterbalance the total weight of the hull. Think of it this way – not enough Lift and the boat sinks – too much and the boat flies! So just the right amount of Lift is pretty important. This Lift is created by the forces generated by the wetted surfaces (hull bottom), planing on the water surface. But with that Lift, comes some Drag - and that Drag must be offset by engine thrust – horsepower. So more Drag means more horsepower required to achieve the same speed.

If we consider the example of a high-performance deep Vee hull, we will see how the addition of a Pad can increase speed.

A 1700lb hull with a 20-degree deadrise Vee hull design could achieve 90 mph. The drag generated by the creation of Lift would be about 1135lbs. The same 1700lb hull with a 12" wide flat Pad would generate less Drag because of the better efficiency of the Pad design - and this reduced Drag represents nearly +60 hp! So, our example can achieve the same speed for less power, less fuel consumption. Alternatively, speed-hungry powerboaters could take advantage of our full power capability and turn that efficiency into more speed!

There is much that can be done to optimize the Pad design. Performance powerboat designers consider hydrodynamic Lift & Drag of the running surfaces as well as the aerodynamic Lift & Drag of the hull design and optimize with power available. Dynamic stability is affected by the delicate relationship of all of these forces at various speeds. It's a tricky balance of design issues, but for a high-speed Vee hull design - a Vee-Pad can result in more speed!

Get *Jim Russell's* full article *"The Bottom Line"*.

See more Performance Articles at: http://www.aeromarineresearch.com/articles.html

[Note: Do you have any of your own questions on performance hull design? Send your question or story to** Jimboat@aeromarineresearch.com **]

********** TBPNews ********** [return to top]

5) UIM European GT15 Championship 2011 in Estonia

UIM European GT15 Championship 2011 was held at Lake Viljandi in Estonia between 15th and 17th July 2011.

Eleven year old Ben Jelf from Maidstone, Kent has done it again clinching the title of GT15 European Champion at the inaugural UIM European GT15 Championship. The British youngster who was crowned UIM 2011 World GT15 Champion at his home club of Stewartby in June, making him one of Britain's youngest ever world powerboat racing champions, knew that the competition in Estonia would be fierce as the top boats in Europe came to challenge for the title.

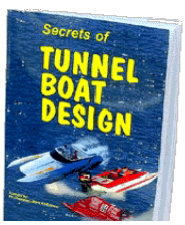
Competitors from Sweden and Estonia joined the Brit to lay claim to the title in the GT15 European Championship in which the best three results from the four heat event would count. With qualifying out of the way Ben had his sights firmly on the top spot, as he took pole position with a 1.12 second lead on his closest rival Matthias Agur of Estonia. By the end of the first days racing Ben was in a strong position in the championship taking two first places in the heats despite being overtaken in the second heat by Sweden's Morgan Jernfast and having to battle hard to reclaim his lead and take the win. As Sunday dawned it was back to business where one more win would see Ben dominate the competition and take the European Title. As the third heat got underway Ben got a fantastic start and took the lead which he held to the finish, securing the win and with it the European Title.

Despite already securing the championship Ben decided to take to the water for the final heat and took a clean sweep of wins just to confirm the title. Sweden's Morgan Jernfast took the silver European medal with Estonia's Matthias Agur taking the Bronze to complete the Podium. On securing his first European title Ben commented: 'I'm really happy to have won the European title, I knew I was in with a chance after winning the World championship, but there's some strong competitors in Europe so I knew it wouldn't be easy, I'd have to race hard and we'd be pushing each other all the way.'

See more at: sail-world.com and rya.org.uk

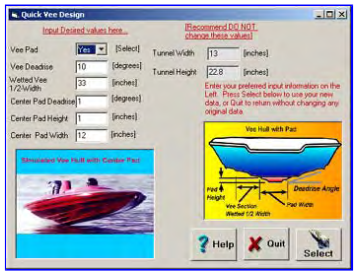
********** TBPNews ********** [return to top]

6) "Secrets of Tunnel Boat Design" book & TBDP/VBDP V7.13 software!



TBDP/VBDP© - BIG NEW FEATURES...YOU ASKED FOR IT...NOW TBDP© HAS IT!....
*** Full Vee Hull and Vee-Pad hull performance analysis (included in one software package!)
*** New aerodynamic algorithms.
*** Porpoise Analysis - We have developed a new analysis tool! XPorpoise is an engineering tool developed by AR that predicts your hull's inherent susceptibility to porpoising...and shows how to fix it!
*** *User Picture import* - right onto your TBDP© data input screen!
*** OEM Motor database, with over 960+ OEM engine specs!

*** Centerpod Wangle input - now you have the ability to represent a special trim angle of the hull CenterPod that is different than the angle of the Sponsons.



*** NEW USER picture import feature.
*** New CG import feature.
*** Dozens of NEW features - including VEE HULL DESIGN software INCLUDED.
*** NEW - Now can select Inside Spray Rails or Outer Spray Rails or BOTH. NOW input measured Static CG of boat hull if desired (otherwise TBDP© will calculate for you).
*** NEW - 'Rate-of-Change' performance analysis!
*** Free Expert Analysis Reports (4) included shows how you can apply expertise to your design/setup.

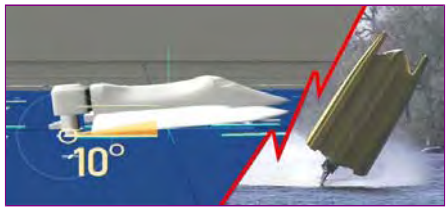
...AND Lots more new great Features in V7.13 TBDP© software!

...check out the new TBDP© software V7.13 at: aeromarineresearch.com

********** TBPNews ********** [return to top]

7) Powerboat Racing on TV

*** **"*Thrill Zone: Extreme Powerboats*"** - National Geographic powerboat show.



Author ***Jim Russell*** (Jimboat) is powerboat design technical consultant on a new National Geographic special for "Thrill Zone" series...

Details at: (channel.nationalgeographic.com)

check out more at AR's website! aeromarineresearch.com/NatGeo_thrill-zone.html

***** "*Powerboat SuperLeague*"** Series - Check out show schedule at AmericaOne.com
***** "*IHBA Lucas Oil Drag Boat Racing*"** Series on SPEED TV - Check next show at speedtv.com
*** ***"War On Water"* TV Show"** on The Water Channel - Check it out at: www.waterchannel.com;
*** **"*Boats on TV*"** - See at: www.boatson.tv
***** ***"American Powerboat Television"*** on The Water Channel - *See*: americanpowerboat.tv
*** **"*Honda Formula 4-Stroke Powerboat Series*"** - Check it out at: www.f4sa.co.uk

********** TBPNews ********** [return to top]

8) Jimboat's Feature Articles

NEW Jimboat Article Announcement! - Author Jim Russell writes in RIB magazine!

Jimboat interviews the newest up-and-coming star of 2011 F1 H20 World Championship circuit, Shaun Torrente together with his Crew Chief Ted Gryguc.

Jimboat details the speed secrets of 'Vee pad design', vee hull design and performance powerboat design

Jimboat explains 'Gearcase & Propeller BlowOut' (RIB magazine April 2011 issue)

Jimboat explains 'How Trim Angle and engine height affects performance' (RIB magazine Jan 2011 issue)

Jimboat explains 'Chine Walking' (RIB magazine Dec 2010 issue)

[Jimboat writes Feature articles in HotBoat, Family&Performance Boating, Performance Powerboat, RIB magazine, World of Powerboats, RaceBoat International, SEA Yachting, Extreme Boats magazines].

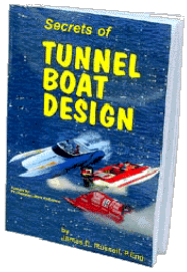
- Tunnel Vision - 'How Do Tunnel Boats Fly?' - HB Nov/Dec 2008
- 'Why Do Boats Create Rooster Tails?' - HB-August 2008
- 'What a Blow Out!' - "Gearcase & Propeller Blowout- Why it Happens & How to Fix it" - HB-June 2008
- 'Walk on the Wild Side' - "Chine Walk - Why it happens & How to Fix it" - HB-Jan 2008

- 'Hump Zone' - "Why does your Boat Porpoise?" - HB-April 2007
- 'The Bottom Line'-"Why does a Pad make a Vee Hull faster?" - F&PB-Sept 2005
- "10 Smokin' Speed Secrets Revealed..." - HB-Feb2005
- "Winterizing your Performance Outboard" - F&PB-Jan2005
- "What a Drag" - 'Trim Angle & Engine Height Can Reduce Drag and Increase Speed' - HB-Sept2004
- "10 Safety Tips" - 'Ten Safety Ideas for High Performance Go-Fast Boats' - HB-Aug2004
- "Flight Path" - 'Where does Lift Come From?' - HB-April2004
- "Rocket Science" - 'How To Increase Your Hull's Design Speed With Aerodynamics' - World of Powerboats-Winter2004
- "Tunnel Vision" - 'What Factors Influence Tunnel Hull Performance' - Extreme Boats-April2003
- "Step-by-Step" - 'Step Design in Powerboats' - TBPNews #88, October 2005

********** TBPNews ********** [return to top]

See you next time!
/Jimboat
>>>>>>>>>>>>>>>>>>>>>

Let us know ideas you have, requests for articles, questions or comments on TBPNews. Send comments to TBPNews@aeromarineresearch.com
>>



Get your full, illustrated, *13th edition* copy of the world acclaimed "Secrets of Tunnel Boat Design" book; "History of Tunnel Boat Design" book, "Secrets of Propeller Design" book, the "Tunnel Boat Design" software
for tunnel and high-performance Vee-hull design, and "PropWorks2" software for speed prediction and propeller
selection at the AeroMarine Research web site: http://www.aeromarineresearch.com