

THE OFFICIAL BRAG® COMMUNICATIONS SOURCE

VOL 6.5 SEPTEMBER/OCTOBER 2006

# FUEL

WICKEDLY **TWISTED**

# FUELL

contents

VOL 6.5 SEPTEMBER/OCTOBER 2006

**ABOUT THE COVER/ABOVE:**  
BRAG members explore twisted California back roads during the "Ride to the Races" Wicked Twisty Tour on June 18.

Photography: Nathan Harrmann



Peggy S. Utphall » Editor  
Peggy Lamb » Director, Rider Groups

GS Design, Inc. » Design and Production

**WE CARE ABOUT YOU!** Ride safely, respectfully, and within the limits of the law and your abilities. Always wear an approved helmet, proper eyewear and protective clothing, and insist your passenger does too. Never ride while under the influence of alcohol or drugs. Know your Buell® motorcycle, and read and understand your owner's manual from cover to cover.

*FUELL* is mailed prior to the first week of the issue date. Due to various circumstances, some information in this issue is subject to change. Buell, BRAG, *FUELL*, Buell and BRAG logos, and the *FUELL* masthead are registered trademarks of the Buell Motorcycle Company. No part of this publication may be reproduced for any reason without written consent from the editor.

All member submissions become property of Buell Motorcycle Company and will not be returned. Member submissions may be published in *FUELL*. Buell Riders Adventure Group reserves the right to edit member stories for content, length, and clarity.

©2006 Buell Motorcycle Company. All Rights Reserved.

## 4 Turning Up the Heat

Things heat up for Buell® racer Jeremy McWilliams at Laguna Seca, while Bryan Bemisderfer and Dave Estok storm ahead of their Thunderbike Class competition.

## 7 Buell Factory News

## 8 A Few Laps with Mark Bernard

Mark Bernard has found a nice medium between conventional family life and the adrenalized life of a racer. His secret: a girlfriend as his crew chief and four kids who love to cheer.

## 10 From the Ground Up

Erik Buell retraces the origins of the Trilogy of Tech™ and sheds light upon the formula that sets Buell motorcycles apart.

## 14 On Fire!

An unpredictable wildfire forced Buellers down an alternate route through Angeles National Forest, making the first Wicked Twisty Tour even hotter than expected.

## 16 Streetfighters

Something that's been on my mind a lot lately has little to do with Buell, per se. Or maybe it does. You be the judge.

What I've been thinking about is, how do we get more people to ride motorcycles? A motorcycle is such a superior form of transportation, in so many ways, to a car. It uses less gas. It takes much less energy and resources to make one. A motorcycle is very *green* in that regard. And it takes up less space on the road and to park than a car. As far as I'm concerned, lane-splitting should be legal everywhere, just from a traffic-flow efficiency standpoint.

Historically, societies have turned to motorcycles when their economies get tough, like in Europe after WWII, for example. They're cheaper to make, to buy, and to use than cars. So why don't more people do it by choice? How can we encourage more people to ride motorcycles?

Tell you what: How about if we here in East Troy keep looking for ways to make motorcycles that are innovative, affordable, and flat-out fun to ride – and you keep riding them, and encouraging your friends to ride them, too? That way, we can all keep doing what we love to do while helping improve the world – two wheels (and two cylinders) at a time.

It's the least we can do, don't you think?

Erik Buell

# turning up the heat



## AMA FORMULA XTREME

### McWilliams, Buell® XBRR™ Crack Top 10 at Laguna

It was hot that day, race fans. No two ways about it. Hot enough, you might say, to melt the smile off an umbrella girl, if you're one to notice such things.

"It was the hottest race I've ever attended," remarked Buell Racing Manager Henry Duga, referring to the air temperature, not the shade-providers. "One of our tire guys measured the track temperature at 129 degrees. And that was only at Noon."

But long after everyone finally cools off, Buell fans will remember that day at Mazda Raceway Laguna Seca for the fine performance turned in by Jeremy McWilliams, riding a Buell XBRR for Warr's of London Harley-Davidson/Buell (Great Britain) and Buell Motorcycle Company. After a disappointing qualifying session that put him in the 15th spot (he completed practice with the seventh best lap time), McWilliams battled hard to grab an eighth-place finish in the 15-lap race. It was the first top-10 finish for the XBRR in a race at the National level.

"We made a few mistakes in Jeremy's setup for qualifying," said Steve Anderson, Buell Platform Director, "but the team got the bike back on the pace for the race, and that's what mattered. Jeremy was able to move up quickly at the start."

Very quickly, in fact. On just the first lap on the 2.24-mile road course, McWilliams darted from 15th position all the way up to ninth. He moved up to the seventh spot on lap four, before dropping to eighth on lap 11 and finishing in that position.

It should be noted that the practice schedule for the race was significantly shortened, due to earlier weather conditions. It was also the first time in years McWilliams had ridden on the legendary California track.

"A top-10 finish at an AMA National event, with very little setup and practice time is a great result for this young effort," said Erik Buell. "We're learning quickly, and the XBRR is gaining performance and reliability – a trend that will continue as we and our dealer teams keep the effort high."



Photography: Brian J. Nelson

Also riding a Buell XBRR in the Formula Xtreme National was Classic H-D/Buell-Millville H-D/Buell-Innovative Motorcycle Research rider Mike Hale, who qualified 27th. Unfortunately, Hale was forced to retire after the warm-up lap due to an oil leak caused by some frantic last-minute mechanical changes.

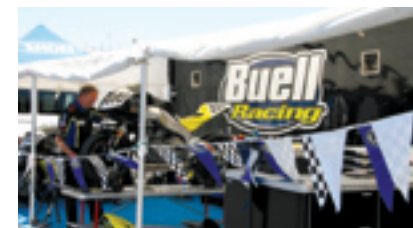
"A lot of credit should go to everyone involved in the Buell efforts here," Duga said. "Everyone worked exceptionally hard, with some very late nights and extremely hot conditions."

Hot, to be sure. But not hot enough to melt the smiles off a confident group of Buell dealership racing teams.

#### UPDATE: Another Top 10 for XBRR

At press time, news broke that Deeley H-D/Buell Canada rider Steve Crevier grabbed a ninth place finish in Round 8 of the AMA Formula Xtreme Championship, August 5, at the Mid-Ohio Sports Car Course in Lexington, Ohio. After qualifying 19th, he worked his way through the field on his XBRR and held off three other riders down the stretch to take ninth. Mike Hale, riding an XBRR for the Classic H-D/Buell-Millville H-D/Buell-Innovative Motorcycle Research team, qualified 18th and finished 17th.

*Hot temperatures, cool bikes, and geat racing highlighted AMA Superbike weekend at Laguna Seca.*



Continued ...



Photography: www.superbikepics.com

## ASRA THUNDERBIKE

# Buell® Riders Pull Away in Thunderbike Class

Despite a somewhat slow start this season, Buell riders have once again established themselves as the ones to beat in ASRA Thunderbike. With five of eight races completed, Harley-Davidson/Buell of Frederick rider Bryan Bemisderfer (135 points) and Veatch Motorsports rider Dave Estok (125) are putting some distance between themselves and BMW rider Nate Kern (108), the early season leader.

At Heartland Park (Topeka, Kansas) on June 18, Estok dominated the field, riding his Buell Firebolt® XB12R to the pole position, then leading every lap en route to victory. Ed Key finished second on a Suzuki, followed by Blue Springs H-D/Buell rider Walt Sipp, also on a Buell Firebolt.

While Estok rode to the convincing win, a fierce battle for second took place behind him. Bemisderfer, Kern, Key, and Hal's H-D/Buell-Hal's Speed Shop rider Dan Bilansky all swapped positions for much of the race. Bemisderfer's ride was the most exciting, as he overcooked Turn 1 on the second lap and left the course, then battled back to rejoin the group racing for second. On the ninth lap, he crashed out of second place at the entrance to the backstretch chicane, but picked up his bike and still managed to finish the race in fifth.

Kern and Bilansky dropped out with mechanical problems (on laps seven and eight, respectively), allowing Key and Sipp to grab the final two podium spots. Hal's Speed Shop/Spyder Leatherworks.com rider Paul James rode a Buell Firebolt to fourth.

"All the action was behind me today," Estok said. "After the first lap, I just put my head down, and when I finally looked back, nobody was there. I really want to win this championship for Veatch Motorsports. And I feel like we've got some momentum going into VIR."

And while the momentum may have been in his favor, track conditions at Virginia International Raceway the following weekend were not. Lots of rain gave an unusual edge to Bemisderfer, who managed to snag a very dramatic come-from-behind win.

Estok, the defending National Thunderbike champion qualified first, but heavy rains on race day made race conditions extremely challenging. Kern and Bilansky crashed out early – on laps two and three, respectively – and were unable to return to the race. Bemisderfer, riding in third place behind Estok and Bilansky at the

time, rolled off the course in the first turn of lap two. He kept the rubber side down, but lost significant time and spent the next six laps playing catch-up.

"I was really going pretty slowly when I left the track," he said. "I just didn't have confidence I could make the corner and decided to play it safe."

From there, Bemisderfer really put his weight into things – literally – passing Estok on the last turn of the race to take the checkered flag.

"I could tell I was gaining on him in every turn," he explained, "but I wasn't really close enough to try and pass him until the last half of the last lap. I planned to make a move on the last corner because I'm quite a bit heavier than David, and on this wet track I was getting better traction on my rear tire. I thought I could get a little drive on him there and make the pass, and that's just how it worked out."

Arnold Hastings, riding a Suzuki SV650, placed a distant third, while Buell riders Sipp, Sam Rozynski (Sound Waves/Hal's Speed Shop), James Delk, Jr. (Roanoke Valley Harley-Davidson/Buell); and Anthony Caligiuri (Liberty Harley-Davidson/Buell) finished fourth through seventh.

With three races remaining in the Thunderbike season, anything can still happen, said Buell Racing Manager Henry Duga, though it looks like it's Bemisderfer's and Estok's to lose.

"Race fans can look for an exciting championship run in the final three Thunderbike races," he said. "I hope that BRAG® members will come out and support our guys – and may the best man win. No matter what happens, it's going to be fun to watch."

## THUNDERBIKE STANDINGS

(through Round 5 of 8)

1	135 points	Bryan Bemisderfer (H-D/Buell of Frederick)
2	125 points	Dave Estok (Veatch Motorsports)
3	108 points	Nate Kern (BMW)
4	100 points	Sam Rozynski (Sound Waves/Hal's Speed Shop)
5	99 points	Dan Bilansky (Hal's Speed Shop)

## CANADIAN THUNDER

# James Clings to Slim Lead in Drive for Five

In a doubleheader staged July 15 and 16 at Mosport International Raceway in Bowmanville, Ontario, Buell rider Darren James took second place in rounds four and five in the Canadian Thunder series, finishing behind BMW rider Oliver Jarvis in each case. Buell rider Brett McCormick finished third and fourth, respectively, in the two races.

With two rounds remaining in the season championship, James, shooting for his fifth straight Canadian Thunder title, maintains a narrow points lead (223 to 216) over Oliver. McCormick is still within striking distance in third, with 200 points.

## BUELL® DEMO FLEETS

Demo rides give you the chance to test ride any number of Harley-Davidson® or Buell motorcycles. Rides are free. Participants must bring a valid motorcycle license, sign a release form, wear closed-toe shoes with a heel strap, and wear a helmet that meets D.O.T. requirements and eye protection. Buell demo riders must also wear long pants and a full-face helmet. Demo fleets listed below are Buell motorcycles only. Check out [www.buell.com](http://www.buell.com) for the most up-to-date schedules. Schedule is subject to change.

### CORPORATE

DATES	EVENT	LOCATION
October 19-21	Biketoberfest	Daytona Beach, FL

### DEALER

DATES	EVENT	LOCATION
September 9-10	H-D/Buell of Lakeland	Lakeland, FL
September 9-10	Peterson's H-D/Buell	Miami, FL
September 23-24	Jim's H-D/Buell	St. Petersburg, FL
October 7-8	Fletchers H-D/Buell	Clearwater, FL
October 27-28	H-D/Buell of New Orleans	Matairie, LA

## INTERNATIONAL MOTORCYCLE SHOWS®

If you're interested in the past, present, or future of motorcycling, you'll want to catch one of *Cycle World's* International Motorcycle Shows. You'll be able to check out everything from the large collection of vintage motorcycles to the new and improved lineup of 2007 Buell and Harley-Davidson motorcycles.

Schedule is subject to change. For more information, call the IMS InfoLine at 800-331-5706 or check out [www.motorcycleshows.com](http://www.motorcycleshows.com).

DATES	LOCATION	CITY
November 3-5, 2006	Cardinals Stadium	Glendale, AZ
November 10-12, 2006	Reliant Park	Houston, TX
November 17-19, 2006	Fort Worth Convention Center	Fort Worth, TX
December 1-3, 2006	Qwest Events Center	Seattle, WA
December 8-10, 2006	Long Beach Convention Center	Long Beach, CA
December 15-17, 2006	San Mateo County Expo Center	San Mateo, CA
January 5-7, 2007	Rock Financial Showplace	Novi, MI
January 12-14, 2007	Washington Convention Center	Washington DC
January 19-21, 2007	Jacob K. Javits Convention Center	New York, NY
January 26-28, 2007	International Exposition Center	Cleveland, OH
February 2-4, 2007	Minneapolis Convention Center	Minneapolis, MN
February 9-11, 2007	Donald E. Stephens Convention Center	Chicago, IL
February 23-25, 2007	Georgia World Congress Center	Atlanta, GA

## GET OFF THE BEATEN PATH (WHILE STAYING IN STYLE)

Blazing your own trail in today's run-of-the-mill motorcycle market can often be difficult. But Buell has made it easy with the new Camo paint set for Ulysses™ models.

"After listening to customers' requests for a paint option that stood out without being obnoxious, the Buell team decided on a camouflage pattern," explains Buell P&A Manager-Operations Bruce Champion. "We felt that camouflage was perfect for any rider who wants to blend in with nature or stand out on the boulevard."

The paint set is sold in individual pieces so you can decide to customize as much or as little of your bike as you please. And to ensure your "attitude statement" stays in mint condition, the graphics – applied with a special "hydrographic" process – are coated with a protective clear coat. Pieces currently available include:

- Windscreen (P/N: 58884-07YCKZ)
- Intake Cover (P/N: 29738-07YCKZ)
- Hand Wind Deflectors – Left/Right (P/N: 59106-07YCKZ)
- Passenger Grab Handle – Left/Right (P/N: 52250-07YCKZ)

For more information on how you can enhance your Ulysses' wild spirit, visit your local Buell dealer or ride into [www.buell.com](http://www.buell.com).



# A FEW LAPS WITH MARK BERNARD



Photography: Mike's Photography

## MOVING RIGHT ALONG

Putting down your faithful companion, one that has been with you for years, through thick and thin, is never an easy decision. But it's true what they say: When it's time, they have a way of telling you.

"Last time out, the old girl let me know she'd had enough," says Mark Bernard, recalling the day he knew it was time to let go. "I think it's a broken piston," he explained, though he hadn't had a chance yet to perform a proper post-mortem.

He'll waste no time mourning his beloved 1999 Buell® Cyclone® M2, however, a bike he bought in 2001. Sure, it served him well for more than five seasons: In 2005, he rode it to three amateur regional CCS championships (out of five he campaigned in) at Blackhawk Farms Raceway in South Beloit, Illinois. But it's time to move on.

Because there's no better excuse to get a new bike than the demise of an old one. So Mark quickly found a new ride: a 2004 Firebolt® XB12R he purchased from Richie Morris Racing. The changeover has put a bit of a crimp in his 2006 season – he'll need time to get the new ride properly dialed in (not to mention put together). But it has him plenty fired up about next year.

Early indications are that the bike will be much faster than the

M2. In its first weekend of real racing, with some suspension and mapping issues yet to be worked out, Mark was able to ride the XB to within a quarter-second of his fastest laps from 2005. With a little more seat time, he's confident he'll be ready to "come out of the box kicking and screaming" in 2007.

"I brought that bike home in three boxes and a barrel," he says. "I started working on it on Easter Sunday and was finished by early June."

He could have finished it a lot quicker, of course, were it not for a few minor details: like family and a full-time job. When he's not racing and working on his motorcycle, Mark puts in 40-plus hours a week at Daimler-Chrysler, where he's worked for 27 years. At 45, Mark has two teenage daughters (Karly, 17, and Jamie, 15) to look after – and a girlfriend, Becky, with a 16-year-old daughter (Victoria) and 11-year-old son (Bradley) of her own.

"We're like two kids and one dog away from being the Brady Bunch at our house!" he says.

It's easy to imagine that things get pretty hectic at times. It helps, however, that Becky is also his crew chief.

"Oh, yeah, she's very involved," Mark says. "I do most of the work on the bike, but she helps me change tires, gets the tire warm-

ers on, keeps track of all my grid positions, does my lap times, and keeps me focused. She keeps a computer database for making sure we get the pre-race checks done. And she's also involved in the XB project, helping out with the mapping and computer work with that. I couldn't do it without her!"

Becky is not the only member of the clan to get involved with the racing, either. All the kids enjoy attending the races and help out where they can. Karly helped design the paint job for the new bike, and both Bradley and Jamie are interested in breaking into the sport at some point.

Work, racing, school, and working on the bike keep everyone very busy. But in those few spare moments they manage to steal away, Mark and Becky enjoy riding together: He on his 1994 Harley-Davidson® Softail® Custom (his other first love); she on her 2003 Sportster® Hugger. ("It's Gun Metal Pearl," Mark emphasizes. "If I told you it was blue, she'd shoot me!")

Though he's been a rider on and off for most of his life (he stopped for a while while he was married, then took it up again following his divorce), he's only been racing since 1999. He took an interest in the sport after watching Karl Kegel, a veteran racer and H-D/Buell dealer, and others race at Blackhawk Farms.

### FAST FACTS

Age: 45

Residence: Rockford, Illinois

Started Riding: Age 6

Started Racing: 1999 (age 39)

First Street Bike: 1977 Honda CB750K

Current Street Bike:

1994 Harley-Davidson Softail Custom

First Race Bike:

1995 Harley-Davidson Sportster XL883

Current Race Bike: 2004 Buell Firebolt XB12R

Home Track: Blackhawk Farms

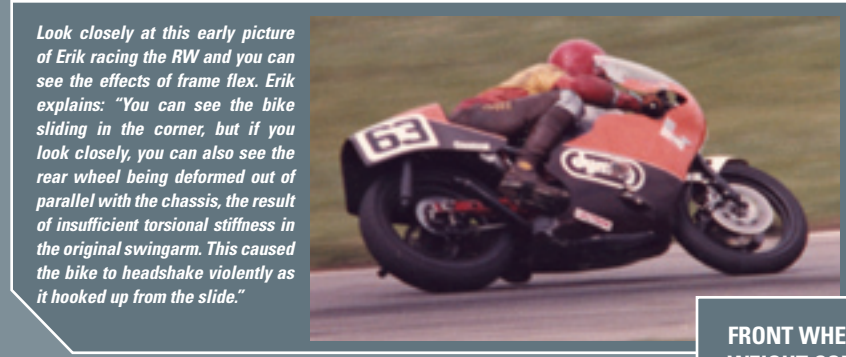
Home Dealer/Sponsor:

Kegel Harley-Davidson/Buell

Quote: "Buell is like one big family. We Buell riders do everything we can to look out for each other and help each other out."



# FROM THE GROUND UP: THE ORIGINS OF THE TRILOGY OF TECH™



Look closely at this early picture of Erik racing the RW and you can see the effects of frame flex. Erik explains: "You can see the bike sliding in the corner, but if you look closely, you can also see the rear wheel being deformed out of parallel with the chassis, the result of insufficient torsional stiffness in the original swingarm. This caused the bike to headshake violently as it hooked up from the slide."

Collectively, they are known as the Trilogy of Tech — the cornerstones upon which all Buell® motorcycles are designed and built. The concepts themselves are relatively simple. But incorporating these principles into motorcycle designs that are powerful, practical, and affordable requires generous portions of genuine ingenuity.

FUELL® magazine asked Erik Buell recently to reflect on the origins of the Trilogy of Tech and how these concepts have been engineered to become part of the Buell DNA.

**FUELL: So is the Trilogy of Tech something that came directly from your brain – or something that sort of grew from the ground up?**

Erik Buell: A little of both, I think. The focus on specific areas to work on initially came from me, but the idea of "formalizing" it into a sort of belief system was a little more organic. Back in the old days, when we were working with all these young engineers, whenever we were working on a new design, I'd keep coming back to those three things: "Pay attention to this, pay attention to that!" And that's kind of how the word got out. The thought was, if Erik's always talking about these three damn things, they must be pretty important.

**Where did the concepts themselves come from?**

They really grew out of trying to make a motorcycle that's an extension of the rider, that's one piece with you. So when you're riding it you can forget you're riding it because it takes very minimal effort.

Ironically, even though the Trilogy of Tech is all about cornering and handling, it really all started with engine characteristics.

I learned from my racing experience that bikes with certain engines were easier to ride – and you looked forward to riding them – because of their power characteristics. On the racetrack, you have to compromise the characteristics of the engine in order to get the highest top speed. So you wind up riding motorcycles that are not very fun, because that's what gets you the fastest lap time on a completely controlled closed-circuit track. Very, very different from the street.

The first motorcycle I designed, the original RW, is actually a good example of the problems in racing. It was about 160 horsepower and 300 pounds, with a very narrow powerband. It was fast but very violent to ride. It was almost unrideable. But I knew I needed that level of power to beat factory bikes. So when I went to build a street bike I started looking first for the right powerband and realized that the Harley-Davidson® engine delivered what I was looking for: torquey, smooth, controllable power. It led me to think, "Okay, now I have the right engine characteristics, what about the chassis?"

**So ... what about the chassis?**

I think the real learning for me started with the wheels – unsprung weight. One of the things I learned racing my [Yamaha] TZ750 and 900 Ducati is that installing lighter magnesium wheels made a bigger difference in lap times than you would expect, just from the weight reduction. If you took, say, four pounds off of each wheel, that's only eight pounds off the motorcycle. If you just do the calculations of what difference that weight loss would make in getting the bike from Point A to Point B, it's miniscule. But on the track it made a very significant difference. And I realized it was because the corner speeds were higher. I could also brake deeper because the lighter wheel would stay on the ground better and not lose traction.

So we are always looking for ways to decrease the weight of the wheel, lower fork, and brake assemblies. In 1991, for instance, we were the first to put inverted front forks on a production motorcycle. And we used a six-piston caliper on the biggest possible single conventional disc.

Now, on Buell XB models today, the wheels are aluminum instead of magnesium for durability, but the ZTL™ (Zero Torsional Load™) front wheel/braking system makes an assembly with lower unsprung weight than even conventional high-end race systems using magnesium wheels. By mounting the brake rotor on the perimeter – the rim – instead of on the hub, we eliminate the torsional load on the front wheel. This means we can make front spokes thinner and lighter. The added braking leverage of the huge diameter ISO rotor means we can get by with a single brake, further reducing the unsprung weight.

**FRONT WHEEL / BRAKE ASSEMBLY WEIGHT COMPARISON**

COMPONENT	Competitive Supersport 600	Buell® Firebolt® XB12R
Wheel	10.25 lbs.	8.84 lbs.
Rotors	6.72 lbs.	3.56 lbs.
Tire	9.16 lbs.	8.87 lbs.
Calipers	4.16 lbs.	2.66 lbs.
Axle and Spacers	0.97 lbs.	0.66 lbs.
<b>Total</b>	<b>31.26 lbs.</b>	<b>24.50 lbs.</b>

**Is that where it all started then, with lower unsprung weight?**

I'd have to say that what comes first in the design process for a bike is mass centralization. I had been doing a number of things with the RW to make it rideable, because the Square Four rotary valve two-stroke engine was so violent. I had been working, working, moving things around trying to make it handle better because I had to in order to stay on it! And I was learning about mass centralization in the process. Of course, I had mag wheels, but now I was trying to harness so much power that I was looking at everything.

So the first thing I set out to do in 1985, when designing an all-new sportbike chassis around the Harley® engine, was get the mass of it as close to the center as possible. I also knew I had to mount it as far forward as possible, as it is a very long engine. Now remember, this is in the barn in 1985! I took two sheets of plywood, hinged together to another board, and folded them up to 55 degrees from the ground plane – the amount of lean angle I was shooting for – and set the motor in it. And then I offset it to get the crankshaft on the centerline because I was going to rubber mount it. That gave me the engine as low as possible with the maximum lean angle: the engine touching the ground at 55 degrees at full suspension compression. That's how I knew how low I could mount the engine and still achieve the desired lean angle.

So I started drawing a chassis around that, and I looked at it and said, "Jeez, I got a big gap underneath this motor. A big empty space. Don't let that go to waste!" Another thing I learned in playing around with the Square Four was that where I put the exhaust pipes made a big difference in handling, so I decided to put the muffler underneath the engine. And when I got that figured out, there was still room, so

*Continued ...*

**FRAME RIGIDITY:**

Keeping the frame from flexing, in order to better keep the motorcycle's wheels in line with one another

**MASS CENTRALIZATION:**

Keeping the motorcycle's weight concentrated, as much as possible, low and toward the center of the frame

**LOW UNSPRUNG WEIGHT:**

Keeping everything not supported by the springs (primarily the wheels and brakes) as light as possible

## FROM THE GROUND UP

**UNDERSTANDING MASS DISTRIBUTION**

Take two dumbbells, hold them close to your body and then twist from side to side. Now, try the same exercise with your arms extended. You'll find turning and stopping is much easier with the weight closer to your body. So where do you want your exhaust cans mounted again?

**UNIPLANAR ISOLATION MOUNTING SYSTEM**

Using two rubber isolators (shown in blue) to reduce unwanted vibration and three tie-bars (shown in red) to inhibit lateral movement, the Uniplanar™ Isolation Mounting System decreases rider fatigue while contributing to chassis torsional and lateral rigidity for improved handling.

I put the shock in underneath there, too. That's literally how it came to pass, because I was trying to package everything as efficiently as possible.

And then I worked outward from there, trying to figure out how best to put the heavier parts in the middle and the lighter parts on the ends, juggling pieces around. I've heard people say, "Why don't you put the muffler in the tail and lower the motor, because the motor's heavier than the muffler?" Well, because it can't go down! The clutch packet will drag on the ground if you lean it over. That's the determining factor in that case.

There are other constraints, as well. For example, "Part X" may need to be cooler or something, so it can't be mounted right behind the rear cylinder because it needs some air flow, things like that. But you're always working toward the idea that you never have to think about the motorcycle; it becomes a part of your body. Mass centralization is a key part of that.

**That leaves frame rigidity.**

Yes, and that's a different sort of animal than unsprung weight and mass centralization. But it still works toward the same goal: building a bike that becomes a part of you and is easy to ride. And if you think of it that way, as the bike being a part of you ... look at downhill skiers. They tuck everything in as tightly to the center of their bodies as possible, only flicking out a pole as absolutely necessary. When you see a skier start flapping his arms around and his skis are no longer running parallel, then you're seeing a loss of control. Likewise, on a motorcycle, the *wheels* can't be flexing and flopping around. The better they stay in a straight line, on the same plane with one another, the better they'll stay where you put them and connect the rider to the road.

This was an area I worked with a lot on the RW, because it was so ... well, for one thing, frame design was generally pretty atrocious back then. Small tubes, thin walls ... so when you applied a lot of horsepower it really showed through. And the bigger and stickier the tires get, the bigger factor it becomes. Frankly, today's street tires are

better than the racing tires we had back then. So it's a more important concept today than ever.

When the tires really want to stick to the ground and you want to flick the bike from one side to the other and you're trying to make that whole mass change direction ... you put a whole lot of force into the tire, and the tire gives the force back – that is, it doesn't slide – what's going to happen? That thing can flex! A chassis that flexes is like a big spring. It affects the feel of the motorcycle and makes it harder to hold your line in a turn. And when the tires go from high traction to slip, that giant spring unwinds and tosses the bike around in ways you, the rider, were not intending!

So what I was primarily looking for in those early days were ways to increase the *torsional rigidity* of the frame. Lateral rigidity is not as big a deal. You can let the wheel plane flex laterally in relation to the chassis centerline plane a little bit without much effect – at least as long as this flex is damped, which is a whole other topic. But when the plane of the wheels starts flexing torsionally, twisting, it starts causing problems.

I was looking for a lot of "vertical section" to the frame, spaced as wide as possible to use this section for torsional rigidity. The old tube frame Buells had a lot of triangulation and cross-bracing to achieve that. And that worked pretty well, but it kind of got in the way of stuff. So I started thinking about this big *beam* frame – and that gets in the way of different things. *But* ... since we were doing a downdraft engine, we didn't have the carburetor sticking out through the side, so that helped. And I also looked at this as an opportunity to do the fuel-in-the-frame on the XB models, an idea I had been thinking about for years. [Erik built the first fuel-in-the-frame prototype in 1988.]

There are some other inherent neat things about the beam frame. Aluminum is better damped than steel, so an aluminum frame – if it's strong and stiff enough, which ours clearly is – is kind of dead. It doesn't have a lot of springiness to it. But it has lots of issues if you

What it all really comes down to is the "quality of ownership." That is, the feel of the bike, building a machine that becomes a part of you, that a rider can fall in love with.

build a tubular frame with it. For instance, it doesn't like the notch factors of multiple welded joints, and its stiffness-to-weight only gets an advantage over steel when you have lots of section. A beam frame suits this material's characteristics well. And then you coat the inside of it with a special layer to protect it, and that dampens it further. When you fill it with fuel it damps it way, way further, so it's totally damped, isn't it?!

**So the fuel-in-the-frame design provides both mass centralization and frame rigidity?**

Yes. Those two big beams keep the weight of the fuel lower than with a conventional tank, while also providing exceptional frame rigidity.

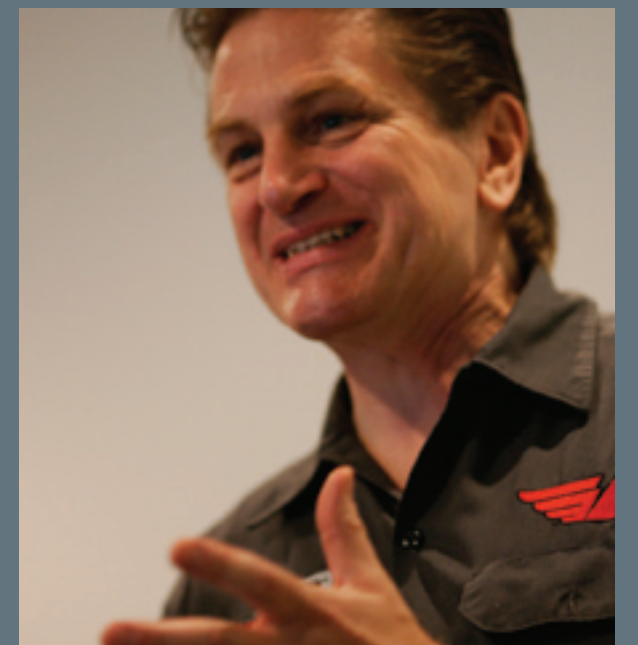
**It sounds like some of these concepts, like the fuel-in-the-frame, were "in the works" many years ago but didn't find their way onto a production motorcycle until 2002, with the introduction of the first XB model, the Firebolt® XB9R. Why is that?**

Because it takes a long time to make these ideas feasible – and bulletproof. Like the ZTL™ brake system. I wanted to do that for a long time. But how? I was building lightweight aluminum discs for racing ISO systems back in 1983. It's easy to make things lighter, but much harder to make them light and *strong and durable*. We also want to make them affordable. So once we have a concept with all the bugs out of it from a *performance* perspective, we then have to figure out how to do it on a bike that people can afford.

Which is tough. Historically, we've been a very small company, so we have to focus on developing *key* changes, and by that I mean it's gotta be something that we're going to stick with for a long time. So we work on big concepts a lot. And then, once a dramatic new design is in production, we go to refining all the little stuff that we find out from the field and taking it to new derivatives based on customer feedback.

**Do you feel pressure to keep coming up with new breakthroughs?**

No, no pressure. At the moment, we have a number of breakthroughs that are truly ... that nobody else is even close to. The competition has just started doing underslung mufflers – and I sometimes wonder what took them so long! Nobody's doing fuel-in-the-frame, nobody's doing anything like the ZTL system yet – but both of these systems have proven themselves to work extremely well.

**FLICK IT GOOD!**

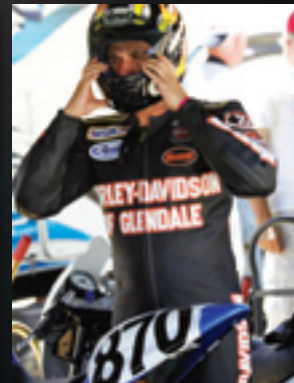
*I remember when racing the 900SS at Sears Point (the SS was long and flexy, but with a predictable engine), I actually got to my fastest lap times by sliding the bike into the S's, then chopping power and upshifting to get the chassis springback to buck or high-side me into the next S! On a racetrack, with planning, you can deal with it – but it was at the highest ability level, believe me! And I remember a bunch of Ducati owners coming by and saying "You really are fast, but it is so ugly to watch!" They shoulda been on it! But when you're a racer you'll ride anything for enough money, even though it's not always fun.*

The only pressure we maybe feel is the pressure we put on ourselves. We're very motivated to come up with new concepts because it's fun! It's fun to invent stuff where people go, "Wow, what are you doing?!" Right now we're thinking about and working on things that we're going to be doing five years from now, 10 years from now, and beyond. And when that time comes, it's going to be very exciting.

**Final question: If there was a fourth component to the Trilogy of Tech,™ what would it be?**

Hmm ... the "*Quadrogy* of Tech" doesn't really roll off the tongue very well, does it? But I'd have to say engine characteristics, controllable power. Which, as we talked about, is really what everything else sprang from. That, as much as anything else, is what gives the riding experience that *intuitive* feel.

What it all really comes down to is the "quality of ownership." That is, the feel of the bike, building a machine that becomes a part of you, that a rider can fall in love with. Ironically, that's what the Trilogy of Tech is all about – it's about feelings! I always say, "If you've got three or four bikes in the garage, which one do you head for first when you walk in? Which is your favorite bike to *ride*?" I want it to be ours. That's the bottom line.



# TWISTED, WICKED, AND YOU!

You never know when the Wicked Twisty Tour might storm through your area – so keep your ride at the ready with tires fully scrubbed in. Here are details for the next event!

#### ENCHANTED TWISTIES

Friday, September 29-Sunday, October 1  
Zia Thunder BRAG Club  
Santa Fe Harley-Davidson/Buell, New Mexico

#### THE LOWDOWN

Three days of riding in and around the amazing Santa Fe, New Mexico area

#### TWISTED HIGHLIGHTS

Carson and Santa Fe National Forests, Taos River Canyon, the "Enchanted Circle," and more

#### EXTRA TWISTED

Optional off-pavement and fire road loops for Ulysses™ riders

#### FEE

\$40 for BRAG® members;  
\$50 for non-members

#### INCLUDES

Event T-shirt, ride maps, Friday lunch, Saturday and Sunday breakfasts, and a Saturday night banquet with awards

#### CONTACT

Murrae Haynes at 505-471-3808,  
mhaynes@ridenow.com; or John Del Valle  
at 505-471-3808, jdelvalle@ridenow.com

#### TO REGISTER

Visit [www.santafeharley.com](http://www.santafeharley.com)

# ON FIRE!

## WICKED TWISTY TOUR BURNS THROUGH SOUTHERN CALIFORNIA

Is there a better way to honor dear ol' Dad on Father's Day than meeting up with a group of riders and ripping through some curves in a national forest on the way to a motorcycle race? Probably not, so that's what happened when Harley-Davidson/Buell of Glendale sponsored the Ride to the Races, June 18. All assembled at the dealership early that morning, enjoyed coffee and doughnuts, split into ride groups, and headed for the Angeles National Forest. Brush fires forced an alternate route, but there is no lack of serpentine roads in the forest, so the change in plans hardly mattered.

A great day only got better. Besides seeing a spectacular race, participants were welcomed into the pit area at Willow Springs International Motorsports Park by the Harley-Davidson/Buell of Glendale race team to meet and talk with the racers and crew. Their enthusiasm for racing and Buell® was positively infectious. After the races, the Glendale team got together with racers and fans for one last cheer to wrap up the afternoon, and then it was back on the bikes and through the forest again. The final stop was to share pizza, and lots of racing and road stories. Definitely one mother, er, that is, father of a day.



Photography: Nathan Harrmann





# STREETFIGHTERS



**STREETFIGHTER** RICHARD BALLERSTEIN  
**HOME BASE** EAU CLAIRE, WISCONSIN  
**MACHINE** 2002 BLAST®

I won first place in the mileage contest my local H.O.G.® chapter sponsored for the summer of 2005. Between May and mid-September, I logged a total of 10,121 miles – 3,380 of which were logged on a trip I took to visit my son in Almagordo, New Mexico. My bike ran superbly, even loaded down with camping gear, a one-gallon gas can, and the usual long-trip necessities.

I made the homebound leg of the trip from Guymon, Oklahoma (1,118 miles) in 22 hours and 33 minutes – yes, on a Buell® Blast! Thanks in large part to the easygoing nature of the Blast, last year was by far the most enjoyable of my 37 years of motorcycling. With the odometer having rolled over to 38,629 miles, I have nothing but more miles to look forward to in the future!



**STREETFIGHTER** TROY HRDINA  
**HOME BASE** SCHOFIELD, WISCONSIN  
**MACHINE** 2002 CYCLONE® M2 LOW

The best thing about owning a Buell is, well ... owning a Buell. This bike turns heads everywhere I go. When diehard Harley® riders stop to check it out – guys who normally wouldn't give a sportbike a glance – they inevitably end up on my Cyclone asking questions like, *Would you ever consider selling it?* I guess this shouldn't surprise me considering my bike is kind of a tribute to Harley-Davidson with all the customization I've done.

The original owner switched the standard gray bodywork for all black, and I have since made a few modifications: polished stainless steel headers, polished swingarm, chrome cam case, chrome primary case, custom tank bra, complete orange lighting kit, tinted lens cover, and Pegasus head bolt covers, not to mention numerous decals and more! Yeah, nothing beats the look – or the sound – of a Buell!

**IF YOU ARE A BRAG® MEMBER, SEND IN YOUR PHOTO AND TWO TO THREE PARAGRAPHS ABOUT YOURSELF, YOUR BUELL® MOTORCYCLE, AND WHY YOU'RE "OUT ON THE STREET."**

Photos taken and provided by Buell motorcycle owners. All Streetfighter submissions become property of Buell Motorcycle Company. If you would like to have your photo returned, please send a self-addressed stamped envelope with your submission.



**Buell Riders Adventure Group™**

3700 West Juneau Avenue  
Milwaukee, Wisconsin 53208  
1-888-432-BRAG (2724)  
Fax 414-343-4515  
www.buell.com

MOVING? **FUELL®** is mailed Third Class and will not be forwarded. Please notify the BRAG Office with any address changes.

