MotoMan

" I think... therefore I am. " -- Rene Descartes 17 th Century Philosopher
" I think... therefore I wheelie. " -- MotoMan 21st Century Philosopher

Power News Magazine

Presents:

Power News Readers Rock !!!

After the last Power News came out at the end of April, the porting articles were the subject of many forum discussions around the internet. That's great !! The strange thing i every one I saw gave the idea two thumbs down !!

Some even used naughty words !

One said the idea of making ports smaller as being "the stupidest idea ever" and another said "who does this guy think he is ... the next Rob Muzzy ???

(Not at all ... in fact, in 1995 one of Muzzy's contracted superbike riders let us sneak into the semi truck and get a look at the Factory ZX7 Superbike ports. We peeled back the duct tape t find to our dismay, that Muzzy was making the intake ports bigger than stock !!!)

Power News is not cutting edge information, it's *beyond the cutting edge* ... meaning that it's a little "over the top", and as such it's bound to get some people upset, or at least cause a debate about my sanity for saying all this.

(I promise not to get offended)

You know... I could talk about high velocity ports all day long ...

... but the best way to really prove it works,

would be to hear reports from Power News readers from all over the world,

who trust me enough to:

Take Action And Do It !!

That's what Power News is all about !!

I've won at this sport for 10 years, and I'm now turning the **Power** over to **YOU** !!

So let the e-mails come pouring in !!

V i e w e r F e e d b a c k

Hey Moto Man .... It Works in Netherlands !

This is LEMSTRA RACING in Netherlands. We have tuned two Kawasaki ZX6R's with, 01 works racing kit, adjustable ignition (mapping per 250 revs), and we tuned one with ports like you described at 65% smaller and we went from 110 rear wheel bhp to 115.6!

Thanks and greetings from Alkmaar, Holland !

~ Freek (Netherlands)

Hi Freek !!

That's waaay cool that you hi - velocity ported your cylinder head !!

You're the first person to use Power News porting techniques and e-mail your results !! The "out of the box" people will always make the fastest bikes !!

Congratulations & please tell everyone in Netherlands sign up for Power News !!

~ MotoMan

Hey Moto Man .... It Works in France, Hungary, Norway, Sweden & Netherlands !

First of all: Power News is AMAZING !!!

I wanted to tell you that Norway's Kai Børre Andersen won 3 rounds of the European Supersport Championship !! And he's winning here in Scandinavia too.

Even Valentino Rossi was cheering for him as he crossed the finish line to win in Netherlands !!

His bike seems very fast ... undraftable actually.

His Yamaha R6 engine was built by Jørgen Johnsen of Fast Bikes shop here in Oslo. The rumor is that the intake ports are smaller than original.

Keep up the great Power News series !!

~ Øyvind (Norway)

Hi Øyvind !

The rumor is true ! I've been working together with Jørgen to develop smaller ports since 1993. Jørgen's Yamaha R6 engine set-up features intake ports that choke down to 65% of the intake valve diameter.

Jørgen's motors are among the fastest on the planet, and Kai Børre is riding the wheels off the bike ... it's a great combination !!

Please tell everyone in Norway to sign up for Power News !!

~ MotoMan

Congratulations to Team Veidec's Kai Børre Andersen & Fast Bikes on their Euro Supersport 600 wins !!

Kai Børre Andersen
Photo Courtesy of Team Veidec:
http://www.veidecracing.com

Hey Moto Man .... It Works in the UK !!

I have read your article on reduction porting with great interest! I have been steadily decreasing the size of the Yamaha R6 port and watching the power steadily rise !

At first the smallest port was 75 % the size of the inlet valve at the choke point.

Hi Phil !!

You Totally Rock !!

What else can I say ???

Oh yeah, please tell everyone in the UK to sign up for Power News !!

I have now gone down to the 65 % you suggested, and got even more power !!

~ Phil (England)

~ MotoMan

Hi MotoMan !

Just for your information, I was in Jan Roelof's (Netherlands) workplace a few weeks back and saw that he was filling in the inlet tracts just as you describe in Power News. I saw a couple of R6 heads and a XT660 head with filled in inlet tracts, & some with preparations to do so.

His R6's where measured with the highest top speed at the Philip Island Australia World Supersport race this year.

~ John (Netherlands)

Hi John !

Thanks for the info ! I always thought that Jan Roelof one of the best tuners in the world.

We already know it works in Netherlands,
And now we know ... It Works in Australia Too !

~ MotoMan

Hey MotoMan !

A fellow Water Cooled GSXR rider sent me over here to Mototune USA. First I want to say thanks for sharing some of the secrets, Power News has been some great reading.

I have a 1993 GSXR 750 with Stock internals and no porting what so ever, I have added the following bolt ons: WebCams 352 Cams, Keihin 39mm Flatslide Carbs and a Yosh full Race Duplex system. From what others have said I am looking at roughly 125 RWHP Not bad for a 9 year old bike. I would like to hit 130RWHP without a BIG Bore Kit do you think your "reduction porting " will work on an older bike like mine ??

Thank You for your Time !

~ Jim
USA

Hi Jim !

Yes, smaller ports will work "awesome" on your bike !

In 1994, Jørgen [the same Jørgen as in the 2nd letter and I developed the intake ports for Suzuki Norway's Jan Olav Noteng. That year Jan Olav qualified within a couple tenths of a second of Factory Suzuki rider Herv Moneau at a World Superbike race ... with smaller ports.

No one could figure out why that bike was so fast ... now you know !! Wow !!

Please tell everyone in the USA to sign up for Power News !!

~ MotoMan

Hi MotoMan,

I have been reading with interest your work on the high velocity ports I have a zx11 with 1137cc cosworth piston kit, yosh cams, flatslides, etc and last year was making 175 hp.

Over the winter 1 mm oversize inlets valves were fitted, with the ports opened out the same, and compression increased from 12.5-1 to 13.1-1, and I have struggled to 173 hp now.

Have you carried out high velocity port work on the zx11 head, and would you still expect to get the same results ??

~ Arthur
M

Hi Arthur !

The "problem" with the ZX11 cylinder head, is that it's flow can be increased tremendously over stock. More than any modern head I've come across. This creates situation where flow porters get a real adrenaline rush when they hook up the head to the flow bench !

I have full confidence that Power News will put an end to the flow=power idea, which has resulted in 'zillions lost horsepower over the years. (where does it all go '

I believe that energy isn't lost, it just goes somewhere else. In this case the adrenaline gain experienced by t head porter, is approximately equal to the amount of

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adrenaline loss the rider experiences when he rides hi
newly flow-ported bike.

The good news is the loss is temporary !!

You'll gain lots more power (and recover your lost adrenaline) by reducing the port size of your Kawi as shown in Power News !

~ MotoMan

Amazing Factoid:
At the beginning of the twentieth century, everybody "knew" that a heavier-than-a machine couldn't possibly fly. It would violate the "laws" of physics.

All of the "experts" said so.

**Luckily, there were some who refused to think in the "box" ....
and today we take airplanes for granted !!**

Thanks to YOU, the readers of Power News,

the "experts" are once again being overtaken by

the "out of the box" thinkers !!!

What About 2 Valve Heads ???

I've had tons of e-mails asking if this idea works on car engines, Harley-Davidsons, and older Japanese engines which use just 1 intake valve.

I can't really say for sure, because I've never high velocity ported a 2 valve head before.

If I were building a 2 valve engine, the curiosity would get me, and I'd just have to go for it !!

The 65% formula is a rule that works on multi valve heads. With a 2 valve head, I'd first start reducing the choke point height of the port to 80% of the intake valve. The peak power may r increase, but it could give the midrange power a boost.

This is most likely the dimension of the stock port, so I'd recommend checking it first before removing the cylinder head. Remove the carburetors and compare the height of the port at i tightest point against the intake valve's diameter. (The valve diameter should be listed in the s manual.)

Please understand that this would be an experiment, as I've never done it myself.

The Ultimate Test !!

Once when I was in Norway, I had an amazing opportunity to dyno test High Velocity Porting !!

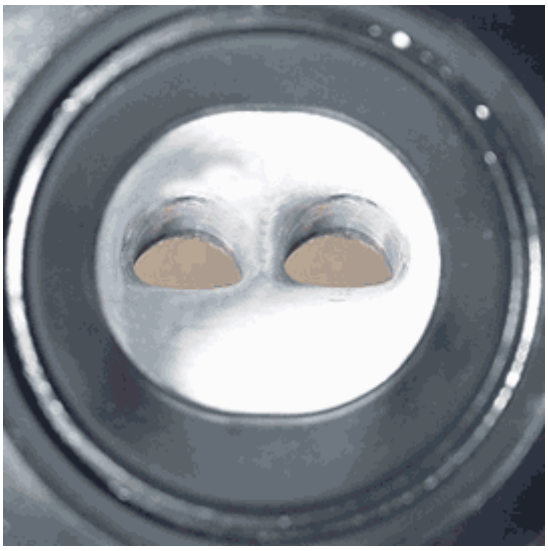
As it turned out, the rider I was helping out had a cylinder head on his engine which was from the Yamaha R6 that Germany's Jörg Teuchert used in 1999 to win a World Supersport race !!

The valve seal was fresh, and we had every reason to believe that it represented the cutting ec of racing technology for 1999.

I just had to whip out my camera and take a photo of the intake port for you:

.

The World Supersport Victor !!



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MotoMan's Wimpy Little Port !!

As you can see, I was surprised to find out that the ports were bigger than stock !

I have to admit, I was getting a little scared, seeing as how I was going up against the best in the world !! Motot easily beat

the Yamaha US Factory Team in Supersport power & speed in America, but now we're talking about World Supersport ...

"The Box" started to close in all around me, and I felt the familiar "fear adrenaline" surge as we drove to the dy test.

This head was ported by the best in the world, and was a winner on the racetrack. Now I had to face the music

My customer would be really mad if we ended up losing power after coming all the way over there !!

But, even worse ....

What if I've told my 8,709 friends who've subscribed to Power News a bunch of hogwash ???

MotoMan was really up against the wall now, with nowhere to run & hide !!!

We got to the dyno facility, and as the engine was warmed up...

Beads of sweat appeared on my forehead !!

This could be a real ugly scene ...

What happened ???

(stay tuned)

Horsepower & Personal Power

What happens when you decide to high velocity port your cylinder head ???

You can't make that decision without also making some amazing realizations, all of which increase your personal power:

1) You think out of the box !!

2) Money can't buy everything. (This will change as more professional tuners sign up for Power News)

3) Truth (reality) is often regulated for a variety of reasons.

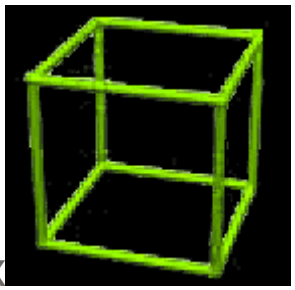
4) You personally have a lot more power than you may have previously realized.

5) The possibility that there are many other things in this world that are the opposite of what they appear, but you've got to be able to get out of the box to see it.

6) Information on "the internet" can't automatically be discredited because of the silly "dot-com" phenomenon.

7) Power News does in fact ... **ROCK** !!

8) Oh yeah, I almost forgot ... **your engine will suddenly become really, really fast !!**



Think Outside of The Box

Like the many layers of an onion, after breaking out of one box, look hard enough, and you'll find a new one.
Some boxes are built more solidly than others, but with practice, one day you'll find that all the walls will fall quite easily.

And Now...
For The First Time Ever Seen On World Wide Media:

Presenting:

The

" Little Exhaust Ports "

... Of A 126 HP Yamaha R6 !!

This is the work of someone I have a lot of respect for !!

Here's the guy MotoMan calls when I've got motor questions:

I'm talking about none-other than Jørgen Johnsen from Fast Bikes shop in Oslo, Norway !!

Jørgen's mixin' up another batch of epoxy

'Small ports' are the name of the game at Fast Bikes !!

Jørgen was cool enough to let me show you one of the secrets to his 126 horsepower R6's !

Nope, I didn't come up with this idea ... it's all Jørgen's !!!

[Applause]

And now without further ado ...

This is the stock R6 exhaust port size ...

The blue clay represents the area which will be carefully welded up to create supersonic velocity !!

(Aluminum welding must be done a little at a time to avoid warping the head.)

The intentional flat face of the "D" shape reduces backflow, which contaminates the mixture.

This is a great example of a "one way" port...

It flows better "out" than "in",
the way it should be !!

Jørgen found this set-up to be worth 2 - 3 more HP on the Yamaha R6 !!

If the idea is to reduce exhaust pumping losses, and that means increasing "flow", how can this possibly work ??

Remember the 8 Phase Article !! Here's a review of the 2 distinct exhaust phases ...

2 EXHAUST PHASES (Exhaust Blowdown / Exhaust Return)

Exhaust Blowdown:

The exhaust must be completely cleared from the cylinder. The only way to accomplish this, is open the exhaust valves about 30-40 degrees before the bottom of the power stroke, so that still burning charges pressure can begin to escape out of the cylinder. If the power phase we allowed to continue to the bottom of the piston stroke, the piston would have to work hard to p against the high pressure created by the still burning (and still expanding) gasses during the upward exhaust stroke. Instead, some of it's own pressure is used to blow itself out of the cylir while the piston is still on the down stroke.

Exhaust Return:

By the time the piston reverses direction in the exhaust return phase, the excess pressure is gc If the exhaust silencer is positioned as shown in the **Dynamic Horsepower** newsletter, there be a slight vacuum which will actually pull the piston up !!

The "textbook 4 stroke" had positive pressure during the exhaust return phase, whereas I'm saying there is vacuum !!
Which one makes more sense ??

It turns out that when you decrease the area of the exhaust port to the point where the flow exceeds the speed of sound, the amount of energy necessary to clear the cylinder of exhaust gasses is almost zero !! (so much for the supersonic nozzle "problem" !!)

By placing the port's smallest cross section, or "choke point", below the valve seat, the flow's maximum velocity **pulls** the exhaust gasses out after the bottom of the power stroke

When this happens, the piston is actually pulled up for the exhaust return stroke !

It's not 100% "free power", because the energy comes from the last of the expanding gasses f the power stroke. But, it turns out that this tradeoff of energy results in more power gained through using the gasses to pull out the exhaust than to use them for a longer power phase

In other words, the power stroke end gasses are being used to make the exhaust stroke effectively into a mini 2nd "power stroke" !!!

Call it the "Power Upstroke" !!!

On the flow bench, these "Mach 1" exhaust ports really "scream" and ear plugs are required !!

" It's A Screamer !! "

Hey everybody !!

I don't know about you, but I just can't get enough of those cool

POP UP ADS !!

I love them !!

They're so dog-gone awesome, that I buy everything they are trying to sell me !!

I've got hundreds of those "X10" cameras all over my house, and I just love getting told to bu more of them by those fantastic, yet totally non-annoying pop up ads that so conveniently sho up
when ever I go on the internet !!

Some motorcycle websites even have them now .... coooool !!

Wow, I just get so impressed by those, and they really make me like the people who are delive them to me so much that I just want to buy all their products !!

~ Just Kidding

So, how can you stop those fruity - tooty pop-ups ???

Quick Computer Tip:

As soon as one of those yucky buggers starts to load, just click "Control" and "W' on your keyboard to send it back under the cyber-rock it crawled out from !!!

Click Here To Test It Out On Wild Billy's Hilarious, Yet 100% Out Of Control Pop-Up Page !!

Try it a couple times .... it's actually fun !!
... don't worry, except for this there will never be pop-ups on Mototune USA !!

As You Know ...

The #1 goal of Mototune USA is to bring the sport of Motorcycle Roadracing into the World-Wide Mainstream !!

That's No Joke Folks !!!

I'm Talkin' About Increasin' It To Somewhere Way Beyond

"Football - NASCAR - Professional Wrestling - Like Status !! "

That's what I'm talkin' about !!!

So, how can Power News generate
Zillions of NEW
Motorcycle Roadracing Fans
from all over the world

???

Welcome to:

Superbike High School !!

A couple of months ago, at Northern California's McKinleyville High School, I helped auto shop teacher **Mr. Dave Backman** teach Superbike Engine Technology to his students !!

L-R:
Dave Backman, **MotoMan**, **JD Grow**

Power News reader and AFM racer JD Grow told his former high auto shop teacher about **Power News**. Dave liked it so much that I was invited to do a

POWER NEWS
Presents:

Superbike Engine Technology in The Classroom !

seminar for his class !!

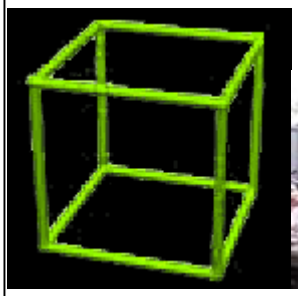
Back To School

MotoMan Meets Dave ...
Ooops, I mean ...
Mr. Backman !!

Power News TV

Mr. Backman made a video set-up that allows close up work to be seen by the entire class.

Here, the students are glued to the TV screen as they learn to make intake ports **smaller** !!



Learning to Think Out of The Box

McKinleyville High School's auto class **ROCKS** !

A Power News "Report Card" From Mr. Dave Backman !!

Dear MotoMan:

" Thank you so much for presenting your **Power News** seminar to my automotive classes at McKinleyville High School. Your presentation helped me in my quest to teach my students "how to think" rather than "what to think". The week after your presentation I was impressed by the higher level questions my students were asking and the comments they were making. It was clear that they were thinking “out of the box” and questioning conventional thought.

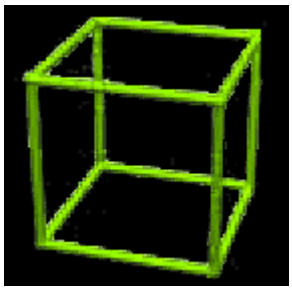
The best way to **think outside the box** is to first understand why we think inside the box. It is important that we not corrupt the basic instincts of “cause and effect” that thinking outside the box needs, but teach students to understand technical and mechanical concepts that question theories set by others. An understanding of the basics of theoretical concepts is critical to the learning process. You helped me accomplish this with your presentation to my classes.

Your analytical mind, your natural inquisitiveness of things mechanical, coupled with your practical and logical thought processes, has developed you into an “outside the box” thinker. I cannot thank you enough for your visit to my class, I am looking forward to your return. **Power News** is the best !! "

Sincerely,
Dave Backman
Automotive Instructor
McKinleyville High School, McKinleyville, California

The students stuck around, and asked lo questions, even after the bell rang for end of class !!

(When's the last time you heard of t happening ??)



The Box

Get It !!