

THE INSTIGATOR

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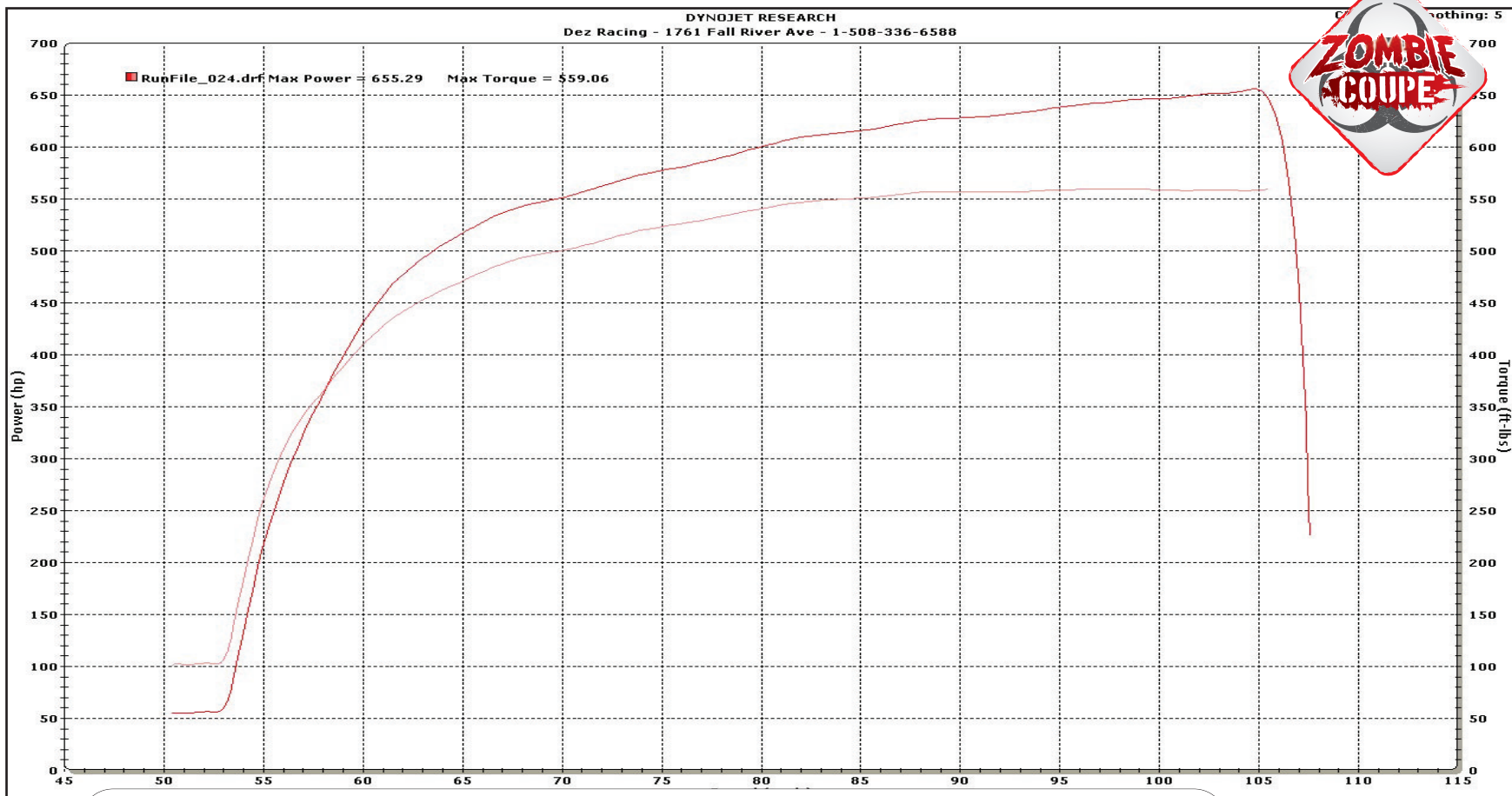
Snow Performance enables Zombie Coupe to gain 33 rwhp and still suck down pump gas

This month we are back in action with Zombie Coupe, a resident evil project car that Dez Racing has brought back from the near-dead. The 1989 Mustang LX coupe was cranking 622 rwhp when we last left off as it gulped pump gas fuel. It has been a long road to get to that point and so many parts and pieces have been replaced with the centerpiece being a ProCharger-blown 363ci stroker engine that features the Pro-M Racing EFI system. The cold weather has settled in here in the Northeast and the tracks closed up for winter, so we can't get on track 'til spring. Instead of sitting idle, we figured let's go after more power. If a little is good, then more is certainly better.



Zombie Coupe received a Snow Performance Stage 3 Boost Cooler water/meth system. The kit includes everything you need to safely run water/meth on your engine including a digital controller with LCD screen, Safejection, massive water/meth tank, ten-feet of line, all the fittings required for a two-nozzle system, a couple of jet sizes to control volume, and all other hardware.





Thanks to Snow Performance we now have a pump gas street car that cranks out 655 rwhp safely. Zombie Coupe saw a peak boost reading of 18 psi and we were able to add six degrees of ignition timing safely thanks to the higher octane and cooling effects of the water/meth.

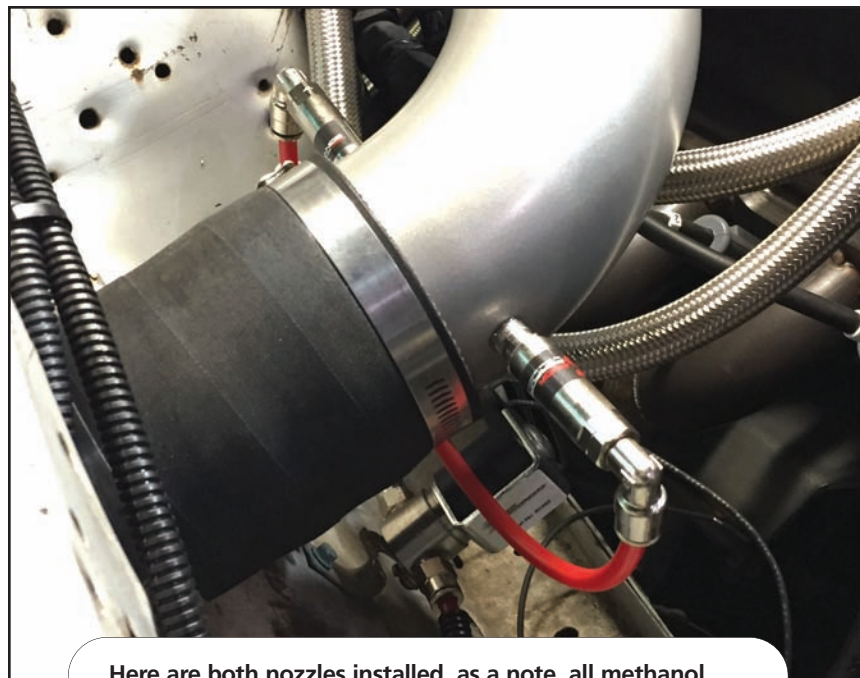
The details of the 363ci engine include an Edelbrock top-end, custom Dez Racing camshaft (made by Comp Cams), a Coast High Performance short-block, and a ProCharger D-1SC supercharger with a front-mounted intercooler. The Pro-M Racing EFI system has been on the car since we fired it up after a seven-year sleep. It has been flawless as the ECU is self-learning allowing us to go from the 379-rwhp package to the 622 rwhp by working a few keystrokes and upgrading to Pro-M Racing's coil-on-plug ignition system.

Our goal from the start has been to build a legit street car and while E85 is all the rage in different parts of the country, it isn't readily available near your author. So we decided to get a Snow Performance water/meth kit as a supplement to allow Dezotell to add more timing, ultimately bumping output of the engine. For the uninitiated, water/meth injection has been around a long time, some claim its roots go back to



Doug Paradise, technician at Dez Racing, removed the blower elbow pipe that attaches to the throttle body. He drilled and tapped two holes on either side of it for the nozzle placement.

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Here are both nozzles installed, as a note, all methanol fittings require E6000 compound on the threads. The nozzles are placed down stream from the throttle body.

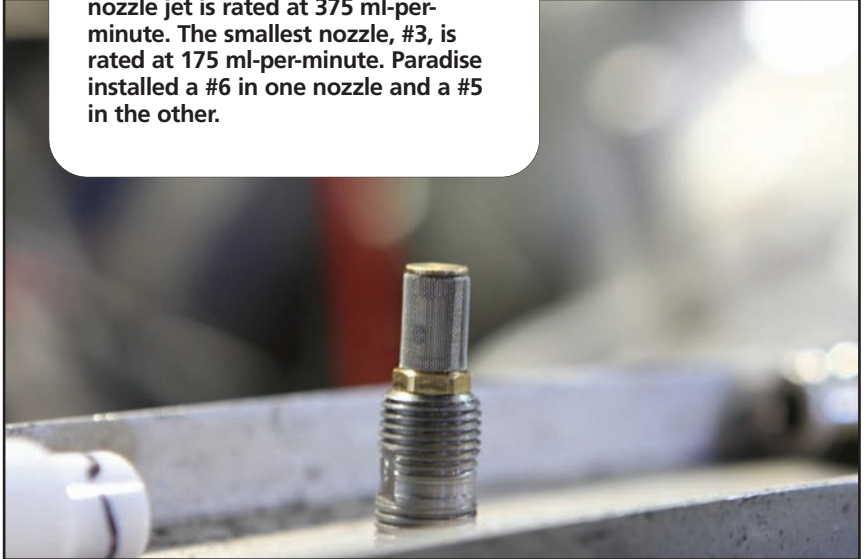


World War II for improved power in dog-fighting planes. In the automotive world, Snow Performance has brought the practice to the mainstream and we first stumbled upon them a little over ten years ago. In that time the delivery methods have changed quite a bit but the concept of water/meth has stayed the same.

The water/meth injection serves two purposes—to cool the intake charge as the water absorbs the heat when it turns to vapor, and it provides an increase in octane rating. By itself, adding water/meth to your engine helps reduce inlet air temperatures but the major gains are seen with an increase in timing and/or more boost. Heated inlet air and pump gas octane ratings are the major drawback to making more power in the typical street car. For most of us, running E85 or race fuel is not option due to availability, cost, or convenience. That is what makes the Snow Performance water/meth injection a very attractive bolt-on for cars like Zombie Coupe.

A massive air-to-air intercooler sits in the front bumper area but that isn't going to help the gasoline's octane rating and is limited on severely hot days. That is why the Snow Performance kit made the most sense for us at this point. The kit comes complete with a digital controller, Safejection, massive trunk mounted water/meth cell, a severe-duty pump and everything else needed to install the system on a supercharged car. We opted for a dual nozzle system given the car's big boost and anticipation of a larger supercharger down the road.

There were three nozzles in the kit, a #6, #5, and #3, and they are used to control flow. The #6 nozzle jet flows 625 ml-per-minute while the #5 nozzle jet is rated at 375 ml-per-minute. The smallest nozzle, #3, is rated at 175 ml-per-minute. Paradise installed a #6 in one nozzle and a #5 in the other.



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The Pro-M Racing EFI harness was modified by Pro-M with water/meth controller hook ups. The EFI has the ability to monitor two flow sensors; we only utilized a single flow sensor for our Snow Performance dual-nozzle system. The Pro-M flow sensor must be mounted before the solenoid.

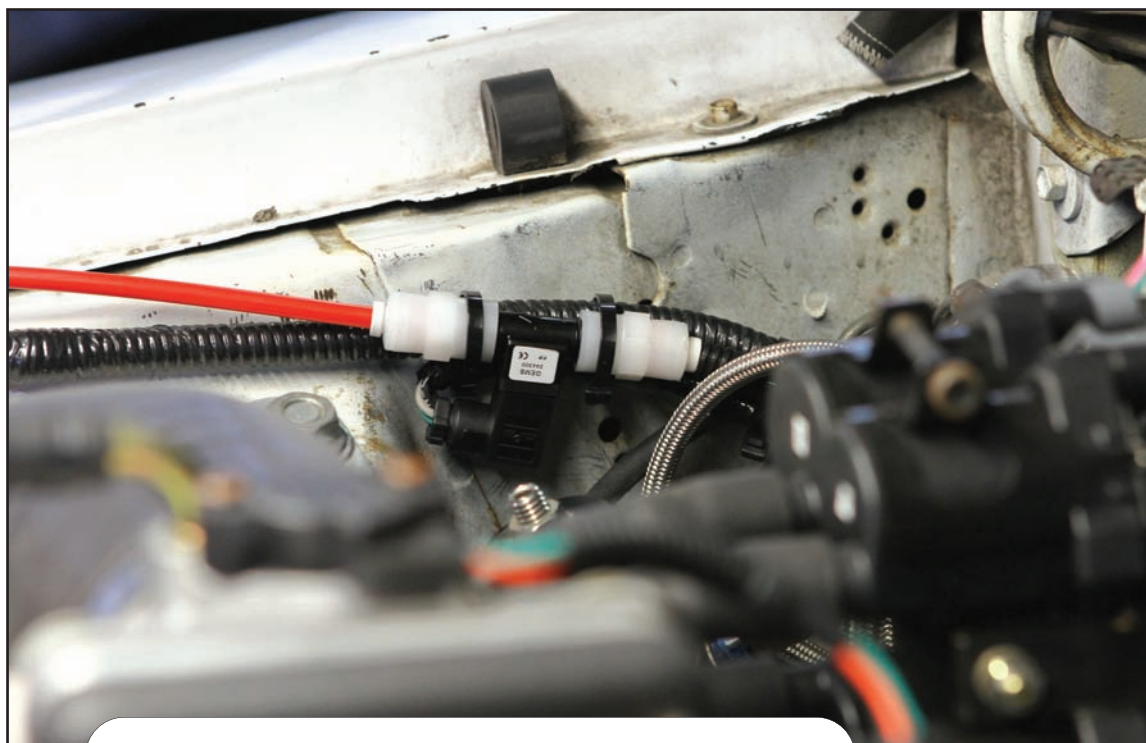
SNOW PERFORMANCE SAFEJECTION

We opted to use our ECU as a way to control the Snow Performance kit but it is not required—the company includes both a controller and its Safejection boost/timing reduction system. As we said to get the most from a Snow Performance water/meth system is to add ignition timing and/or more boost. The water/meth allows to be safely done—on pump gas—but some enthusiast prefer a piece of mind that there is a safety net in place should the Boost Juice stop flowing. An inline sensor works with the Safejection control box has the ability to retard timing and can be used in conjunction with popular aftermarket ignition systems.



The Safejection can also be upgraded so it can attach to a wastegate or bypass valve and have the ability to reduce boost pressure.

Another benefit of the Safejection is the optional flow gauge. The 2-1/16-inch LED gauge shows real-time water/meth flow in ml-per-minute rate. Shortly after print we are going to add the gauge to Zombie Coupe, which will require the Safejection box in order to run it. We didn't add the gauge this month because Dez Racing was out of pillar mount gauge pods for that size unit.



Pro-M Racing calibrates the flow sensor to ensure the utmost accuracy. Not only is the flow sensor tied into the ECU, a special high-current driver and flow-stop solenoid are used to activate and de-activate the Snow Performance pump.

Pro-M Racing has developed a water/methanol injection controller inside of its EFI system.



The Snow Performance solenoid acts in the same manner as a nitrous system solenoid. It controls the flow of water/meth into the engine. Snow Performance includes a special controller unit to activate the solenoid. The solenoid has a single feed that branches into two separate nozzles after the solenoid.

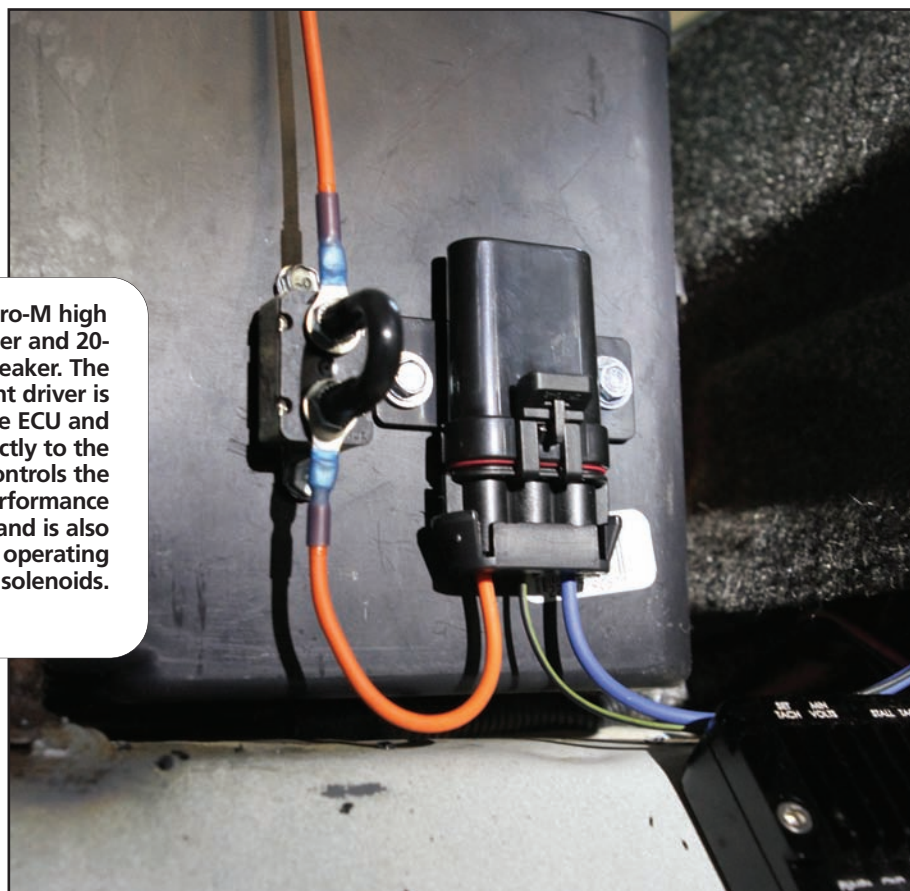
We did, however, deviate from the Snow Performance kit in terms of controlling the injection. Pro-M Racing has developed a water/methanol injection controller inside of its EFI system. Over the years we've probably covered nearly a dozen water/meth injection kits but this is the first time using an EFI system as the controller. Pro-M Racing provides a calibrated flow sensor to feed the ECU flow data. With the EFI system armed with accurate flow of the methanol injection, the ECU can properly tailor ignition timing, fuel flow, and even the water/meth flow (on/off and progressive capabilities). If the tank runs dry, the flow sensor will tell the ECU and the timing and fuel will be backed off to non-water/meth levels.



The large tank is placed in the trunk and the Snow Performance pump is mounted right next to it. Paradise and Dez Racing find this to be the easiest spot to mount the tank in Fox-body coupe cars. We aren't carrying a spare tire anyway so the pump bolts in nicely using the spare tire well.



Here is the Pro-M high current driver and 20-amp circuit breaker. The high current driver is tied into the ECU and wired directly to the battery. It controls the Snow Performance pump and is also capable of operating nitrous/fuel solenoids.

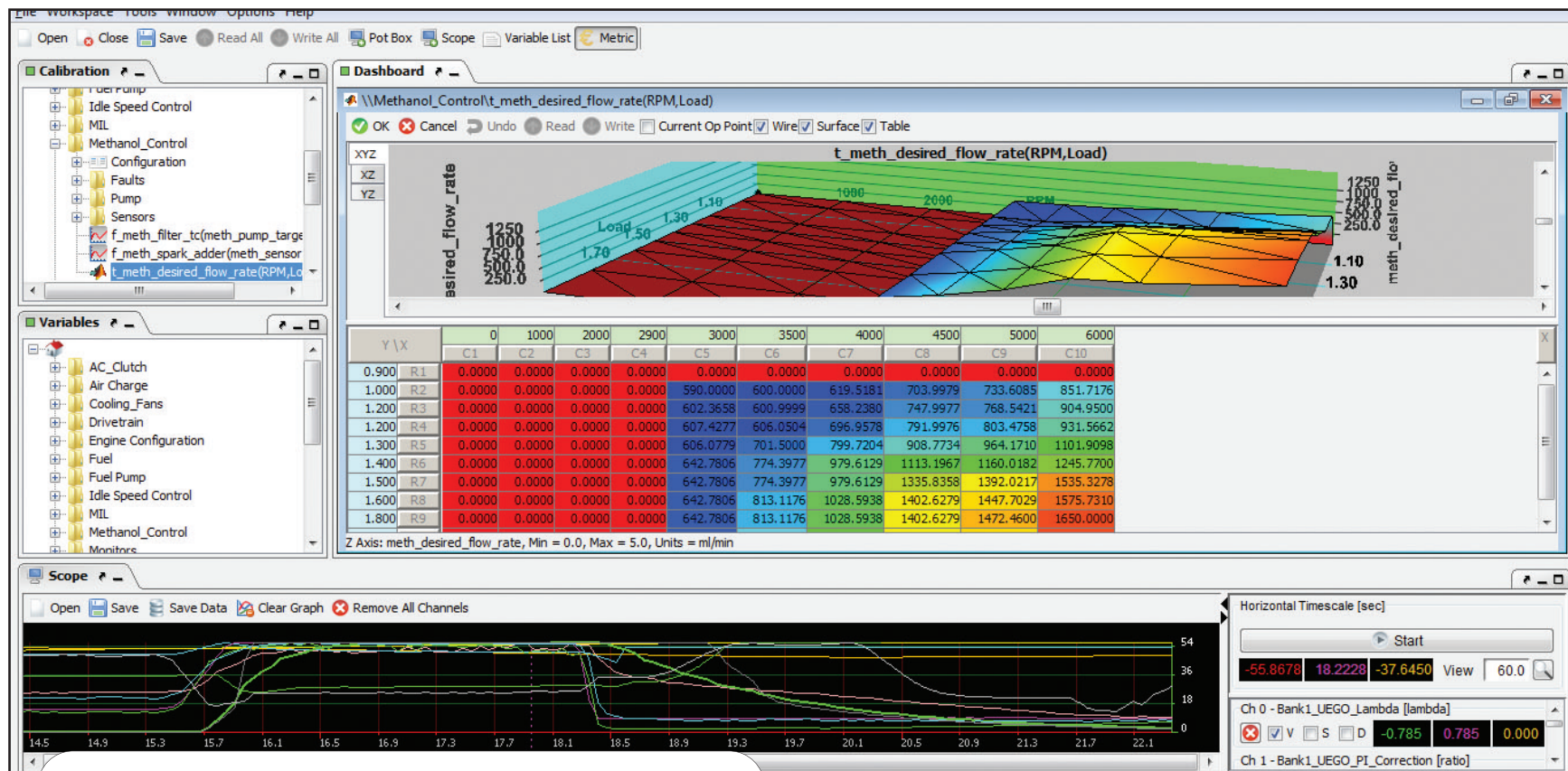


With the Snow Performance kit installed, Dezotell only had add a few parameters in the Pro-M Racing software, as the system is virtually hands-free. Zombie Coupe produced a baseline of 622 rwhp on 18 psi of boost with 18 degrees of ignition timing and the plan was to add a few degrees at a time. The first step was to bump it to 22 degrees; the result was 644 rwhp and zero hint of detonation and the air/fuel remained steady at 11.5:1.

We got bolder and added two more degrees of ignition timing to bring it up to 24 degrees total. Zombie Coupe pushed the chassis dyno to a career-best of 655 rwhp; torque came into the party at 559 rwtq. A few back-up pulls confirmed our initial dyno reading of 655 rwhp, as we like to perform two runs under similar conditions to be sure the results are accurate.

Water/meth injection might not be considered a power adder like boost or nitrous oxide, but it is an instigator that enables an engine to run more timing and ingest cooler air. The bottom line is adding the Snow Performance kit increased output by 33 rwhp. ■

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Mike Dezotell took a screen shot of the Pro-M Racing EFI software for water/meth control. Thanks to the flow sensor and ability to control the Snow Performance pump and solenoid, all of the timing and air/fuel ratio tuning can be tailored to the water/meth volume going into the engine. Zombie Coupe sees six additional degrees of timing with maximum flow of the water/meth and the air/fuel ratio is dialed in at 11.5:1.

SOURCES

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