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565HP: HPA'S Mk5 R32 TWIN-TURBO

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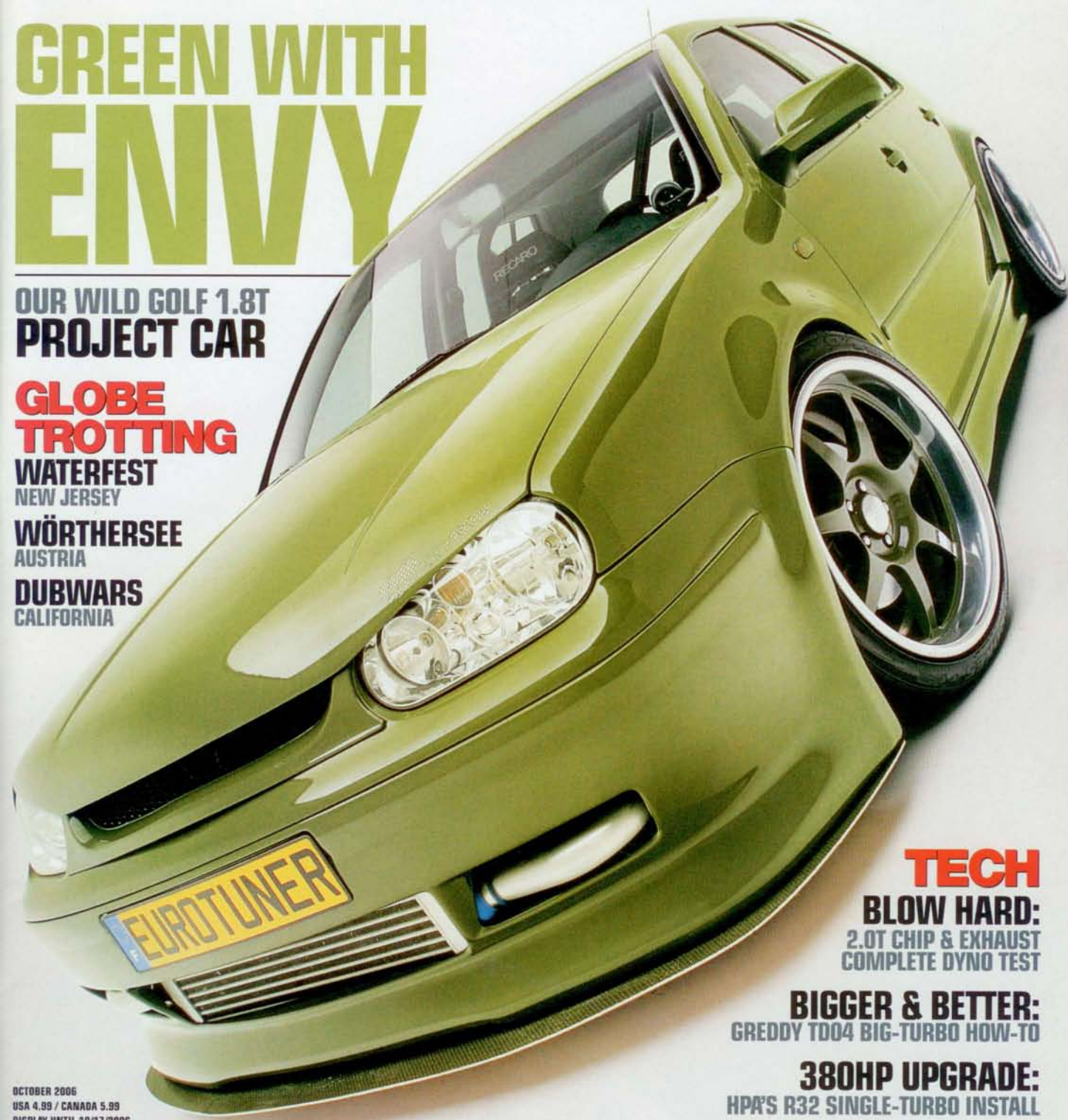
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R32 Evolution

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We take the first look at North America's only Mk5 R32 twin-turbo, built by HPA Motorsports.

Words & Photos: Sam Du



One year after collaborating with VWoA in the construction of the R GT concept cars for SEMA '05, HPA Motorsports imported the first Mk5 R32 into North America. The plan was to turn it into a twin-turbo monster, so we flew to the company's Canadian headquarters to see how the project was coming along.

We were pleasantly surprised to see all three R GT concepts scattered around the

property. They were in the process of final preparation before being shipped to Germany.

Behind the R GTs we noticed a deep blue metallic '06 R32 on the lift. With anticipation boiling inside us, we were disappointed to discover the car was undrivable after it suffered a mechanical failure on a test run the day before. In the end we had to postpone our photo shoot until Dubwars, but made the best of the situation and looked

around the car while it was dismantled.

Walking around the R32, Marcel Horn, founder of HPA Motorsports, pointed out the highlights of the project and give us a brief history of the buildup.

We opened the conversation by asking Marcel how HPA was able to acquire the vehicle prior to its US release. We were slightly unsure about its original configuration but Marcel assured us, "We exercised our long term contacts in Europe," he explained. "HPA acquired one of the first Mk5 R32s released last autumn. This car is as authentic as German bratwurst!"

We were surprised to see how subdued the new project was compared to its R GT predecessors. The car had factory paint, no extreme bodywork and basic interior upgrades. "The Jetta R GT was executed to display street car and racecar personalities," Marcel started, "with this car [the R32] we picked a dedicated path and found a favorable result. We concentrated on its track personality, which is reflected in the width of wheels, aggressive styling and motorsport







hardware. We wanted to highlight the sophistication and feel of the new Golf platform. From suspension to brakes, it wasn't so much a need to improve the new Mk5 platform because it's so much more refined than the Mk4. Instead, it was an exercise to push the envelope."

With the damaged motor pulled from the engine bay, we examined the intricacies of the twin-turbo 3.2 liter setup. Boasting 565hp and 620 lb/ft of torque, we were curious about the motivation behind the system.

"The general twin-turbo theme is the only thing carried over from the previous programs," Marcel clarified. "The leap from single-turbo to twin-turbo is the result of looking for a balance of performance, power and drivability. A single-turbo is ultimately limited in its drivability and responsiveness. When you look for more and more power you come up against more turbo lag. To avoid this we look to the unlimited power potential of

twin-turbos."

HPA and its German partners HGP Turbo, designed the twin-turbo system with two Garrett GT28RS turbochargers utilizing HGP compressor and exhaust housings. They also fabricated dual side-mount intercoolers to maximize the boost. However, it would also be necessary to lower the compression to 8:1 with a sandwich plate to accommodate the extra pressure.

Bottom end strengthening involves race-spec rod bearings for improved durability, while at the top end they've installed a short-runner intake manifold. Spent gases are expelled through an 88mm stainless steel exhaust system that incorporates dual bypass valves to control boost pressure. Finally, dual fuel pumps address the fueling requirements.

After analyzing the engine components, Marcel explained the need for balance. "One must address other limiting factors

such as transmission, drivetrain, braking and suspension," he said. "What this car represents is a balance of useable power with total vehicle preparation."

The R32 uses a six-speed transmission. However, it must now cope with more than double the horsepower and torque of the original motor. Under these circumstances the factory clutch would have extreme difficulty so HPA fitted its stage 3 clutch, plus a lengthened and hardened gear set. "The lengthened and hardened gears result in fast quarter-mile pulls with one less shift," Marcel explained. "It also effectively lengthens all six gears, increases the possible top speed and lowers cruise RPM, which then improves gas mileage."

Like the previous R32, the Mk5 is equipped with the 4-Motion AWD system, excellent for road course traction. Unfortunately, a stock R32 encounters significant understeer that can cost it valuable time each lap. So a





second-generation Haldex Sport controller was fitted to increase the amount of power transferred to the rear wheels. This also increases torque transfer during acceleration. It allows the R32 to have more consistent performance and apply more power out of corners. The second-generation controller allows the driver to adjust the power ratios in three different modes to suit driving styles and road conditions.

Because HPA was building the car for the track, suspension was also part of balancing the car. With the help of KW Suspension, HPA utilized a set of Variant 3 coilovers where the dampers have independent compression and rebound technology.

The R32 braking system successfully matches its improved power. Inspired by motorsport, HPA assembled its own kit around 14.4" (365x34mm) rotors and eight-piston monobloc calipers in the front. The rear rotors were enlarged to 12.2".

Outside the massive brakes, HPA increased the wheel size with a set of 19x8" OZ Racing wheels wrapped in Dunlop SP Sport Maxx tires.

Both the Mk5 GTI and Mk4 R32 apparently motivated the exterior alterations. "We were inspired by the success of the Mk4 R32, but not content with the direction of the stock Mk5," Marcel said. "So we were driven to replace the frowning front fascia of the Mk5 R32 with the mischievous grin of the GTI, which was accented with custom side grilles cut on a water-jet to bring functionality to our side-mount intercoolers. It also paid homage to the aggressive styling of the previous generation R32. We wanted to widen the rear stance of the car as well, so removed the factory's middle-exit tailpipes in favor of a more robust Mk4-style system. Framed by the carbon fiber rear valance, the back end is now subtly transformed."

The interior received a race-inspired remedy: replacing the factory seats with



TECH SPEC

HPA MOTORSPORTS

LOCATION: Surrey, BC, Canada

OCCUPATION: VW tuning shop

2006 VW R32

ENGINE: 3.2 liter VR6 with heavy-duty connecting rod bearings, 8:1 compression with head plate, cast aluminum short runner intake manifold, twin Garrett GT28RS turbos with HGP compressors and exhaust housings, dual side-mount intercoolers, silicone boost hoses, dual fuel system, 88mm stainless steel dual exhaust with twin bypass valves

DRIVELINE: six-speed manual transmission, lengthened and hardened gears, short throw shifter, HPA stage 3 clutch, 4-Motion AWD, generation-two Haldex Sport controller

SUSPENSION: KW Variant 3 coilovers

WHEELS & TIRES: 19x8" Superturismo GT OZ Racing wheels, 235/35-19 Dunlop SP Sport Maxx tires

BRAKES: HPA 365x34mm front rotors with eight-piston, monobloc, four-pad calipers, 310x22mm rear rotors

EXTERIOR: GTI fascia, carbon fiber rear valance, side skirts

INTERIOR: Recaro Pole Position leather seats, custom rear seat, alcantara headliner

CONTACT: HPA Motorsports (604/598-8520, www.hpamotorsport.com)

Recaro Polo Positions wrapped in black leather. The seats are comfortable for daily driving but eliminate rear passengers because they don't tilt forward. If a passenger does squeeze into the rear, they have the pleasure of resting on custom seats with integrated headrests. Finally, a suede headliner added a dash of luxury to the cockpit.

"It'll take many years for us to wring out its full potential," Marcel concluded. "The previous generation offered a raw connection between the driver and the road, which gave it a more primal experience. Whereas the Mk5 exhibits a more cultured relationship between man and machine, but we're working to expose the animal inside." 