

# PRI

PERFORMANCE RACING MAGAZINE



## LAUNCH PAD

HOW MODIFIED SERIES ARE PREPARING  
AND ELEVATING RACERS TO THE NEXT LEVEL

### INSIDE

RACER SURVEY | NOSTALGIA DRAG RACING | OXYGENATED FUELS  
OIL SYSTEMS | CHASSIS SETUP EQUIPMENT | SENSORS  
PISTONS | FASTENERS | & MORE

### NEW PRODUCT PICKS



IMPACT'S ALPHA PATRIOT  
RACING GLOVES

## OIL SYSTEMS

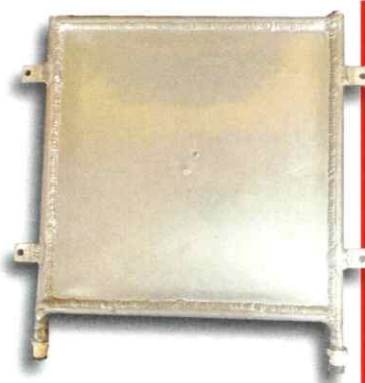
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"A wet sump oil pump with a dry sump attitude" is how Verne Schumann of Schumann's Sales & Service in Blue Grass, Iowa, describes his ER-VAC oiling system. The ER stands for energy recovery. As Schumann explained, "The bypass oil never sees the pan again. It goes back through a re-routing high-pressure hose to the pickup tube, and we re-pressurize the intake tube," promoting additional oil flow no matter the orientation of the oil in the pan. VAC stands for vacuum; the ER-VAC system is a closed-loop system not vented to the outside air. It's similar to when a drag racer "introduces a vacuum pump to suck the oil pan into a vacuum reading, which gives you horsepower," Schumann said.

The ER-VAC system works well in many racing environments, but where it really "dominates," Schumann said, is in monster truck competition. "They stand the truck on its nose for 6, 8, 10 seconds before it drops down, because the longer they stand on the nose the more points they score. But with a conventional oiling system, when the truck is on its nose, all the oil in the pan runs to the front of the motor, and the pickup, usually in the back of the motor, is now sucking air." With the ER-VAC system in place, "the trucks can sit there for 10-15 seconds before they drop down on the ground and it doesn't hurt the motor. We forcefully pipe the oil back to the intake stream and pressurize the intake side of the pump. So if the bypass oil is set at 60 psi, it's going to go in the intake at 60 psi. And guess what else does that? A dry sump, for big dollars." Schumann quoted

prices for dry sump systems as "\$3,000-\$7,000 installed; our pumps run from \$300-\$500. It is as good as a dry sump? No. But if the rules say wet sump only, we're a killer item."

Schumann has a new product "just around the corner" called DialAdjust that will enable the driver to adjust oil pressure at the turn of a knob. "Let's say in a circle track application, during qualifying the driver can turn down the oil pressure for one lap to make a better horsepower rating," Schumann said. "Later in the race, say at lap 70 or 80 of a 100-



The new Heat X-Changer from Schumann's Sales & Service is a plate, mounted in the floor of the oil pan, which carries engine coolant to the pan to cool the oil. Or heat it, said Verne Schumann. "Drag strip people will hook it to a heat gun to pre-heat the oil while leaving the engine stone cold. Cold cylinder heads make horsepower, but the hot oil must be there to keep the engine lubricated. It's the best of both worlds."

lap race, when the oil is getting hotter and more contaminated and the oil pressure is dropping, he can crank it up again."

The DialAdjust system will be available for "all engine families," Schumann said, and will require no internal engine modifications. "We'll pick up the oil for the transition and control the pressure through the oil pump filter area, and then pump it back into the pan. Adjustability will be by two means: Both the volumetric gallons per minute and the pressure will be controlled. The two always work hand-in-hand."

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PERFORMANCE RACING INDUSTRY MAGAZINE

## OIL SYSTEM COMPONENT MANUFACTURERS WORK PAINSTAKINGLY TO PROVIDE TAILOR-MADE SOLUTIONS TO COMPLEX LUBRICATION SCENARIOS.

BY JIM DONNELLY

### DEMANDING ENVIRONMENT

Quantifying oil flow in customized applications was the same sort of research undertaken at Schumann's Sales & Service of Blue Grass, Iowa, which currently has 13 patents applied for, pending, or issued for designing oiling solutions. Company founder Verne Schumann—who calls himself a tribologist, after the physical study of interactive surfaces in motion—said that much of his research and production development is aimed at race classes that require wet-sump systems due to rules.

"The most demanding oil-pump application in the country is 305 sprint cars because of their rpm potential, plus the fact that they're mostly fuel injected and pushing out almost 2 horsepower per cubic inch these days," Schumann said. "With promoter's restrictions, such as flat tappet camshafts or compression ratios, they're doing it the

hard way. It is the most demanding because you have to use 305 bore and stroke and the 42-pound crankshaft. The oiling system on a 305 is just as demanding as a 360 or 410 Outlaw motor."

The research led Schumann to develop a \$400 oil pump for wet-sump applications, and to develop a new way of measuring oil flow, in feet per second. Schumann's specialized solutions include the patented Paddle Wheel configurations for common gear-to-gear oil pumps, which result in higher flow rates at both GPM and feet per second at the same engine rpm, requiring less horsepower to move the oil. The firm also produced the ER-VAC wet-sump pump system that allows for maximum energy recovery while being unaffected by G-loadings, a key consideration for rock crawlers and Monster Truck teams. Schumann's has also developed its 140 Ball Valve, which reacts in a fraction of the time needed by conventional OEM-style cup valve systems, allowing surplus oil to vacate the sump at lower oil temperature and with no impact on ignition timing.

Conventional gear-to-gear oil pumps essentially squeeze the oil to move it via the curvature of the teeth in the gears as they rotate against each other. The Paddle Wheel gearing incorporates cup cavities in the pump's

### "THE OILING SYSTEM ON A 305 IS JUST AS DEMANDING AS A 360 OR A 410 OUTLAW MOTOR.

idler gear that aim high-velocity oil at the outlet of the pump. While the meshing of the gears is the primary means of moving the oil, the Paddle Wheel adds a secondary level of oil transfer within the same pump housing.

Schumann's offers performance wet-sump oiling systems for truck, circle track and drag applications, the latter including a typical engine applications such as the big block Oldsmobile. The same "dimple tech" gear design incorporated in the Paddle Wheel is also utilized by a high-performance wet-sump pump created for the 2.5 liter Subaru engine.

"What makes the Paddle Wheel work is when oil oozes up through the idler gears, the gears are parabolic shape, but the cavity cup is exactly the opposite, spherical," Schumann said. "Each tooth on the idler gear has a cavity cup machined into it. So we came out with feet per second measurement."

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**"Tribologist"**

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