

# PRRI

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

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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 trough 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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