Market Report

Small Engines Placing Big Demands on Lubes: Growing Powersports Segment Features 900–1,000 cc High-Performance Power Plants

By Michael Aistrup

Recently, off-road industrial and recreational vehicle engines have become increasingly larger and higher performing. The result is a demand for these once smaller engines in increasingly difficult situations, and performance demands placed upon engine lubricants used by off-road industrial and recreational vehicles are also increasing. Could this trend provide increased opportunities for specialized lubricants?

This article looks at important trends in North American small engine production and use since 2011 and considers how these trends might affect lubricant use.

We consider a small engine as one with a displacement less than 2,000 cubic centimeters (cc). The most significant trend in the small engine space over the last five years, especially in the powersports category, is the continued move to bigger engines. We'll consider powersports to include four-wheelers (side-by-side vehicles and all-terrain vehicles, or ATVs) and two-wheelers, primarily motorcycles.

Powersports side-by-side (SxS) units are designed for one of two basic uses: for play (recreation and sport models) or work (utility models). The machines are used for off-road recreation (the Polaris RZR is a leading example), by homeowners for work on large residential lots (lawn and garden), and for industrial applications ranging from construction to in-plant industrial jobs. They're also used for ranching, farming and hunting.

Research by Power Systems Research (PSR), an international firm that tracks the production and use of engines and engine-powered equipment, shows that there has been a noticeable shift in recent years from small displacement engines to much larger power plants in the 1,000 cc range.

The research also shows that riders of these off-highway machines are demanding more and more performance from their engines, even as the size is increased. At the same time, the number of machines in the powersports segment also is increasing.

The net result is that the demand for high-performance engine lubricants that can withstand the increased demands of these riders in tough conditions is increasing, and the global volumes of these lubricants is increasing, as well.

Many original equipment manufacturers (OEMs) are addressing this need and opportunity by marketing their own branded lubricants. Consider Polaris Industries, the Minnesota-based global manufacturer and distributor of high-performance off-road vehicles (OHV).

Polaris is the global market share leader in off-road vehicles (ATVs and SxS units); it also is a leading manufacturer of snowmobiles and on-highway motorcycles.

Engine CC Range	2011	2012	2013	2014	2015	2016
150 – 250	0	0	0	0	239	234
251 – 500	59,068	71,596	72,129	56,913	62,423	58,895
501 – 750	46,585	56,793	69,318	107,700	125,003	139,306
751 – 1,000	118,496	154,476	182,294	197,816	189,252	195,537
Above 1,000	7,915	8,668	10,091	19,850	23,920	23,540
Total	232,064	291,533	333,832	382,297	400,837	417,512

Source: PSR EnginLink™ Database

By one estimate, worldwide sales of ATVs in 2015 were 412,00 units, and estimated global sales of SxS units that same year were 439,000.

Polaris offers an extensive range of lubricant information on its page, ranging from products, safety data sheets (SDS), application charts and oil change instructions.

By comparison, Harley-Davidson, the largest seller of on-highway motorcycles in the U.S., also sells lubricants, but it doesn't offer as many products, nor does it promote them as aggressively as Polaris does for its off-road products, where riding conditions are tougher.

TOUGH CONDITIONS

Off-road riding, especially in high-powered performance machines, places greater demands on engine lubricants than other riding.

- Dirt and sludge can build up because few small engines have an oil filter to effectively remove particles and because the amount of oil used is relatively small.
- Small engines usually operate at maximum power output; oil in small gas engines runs hotter, so it oxidizes and breaks down faster.
- Small engines normally operate close to the ground, so dirt and dust are more likely to enter the crankcase.
- Most small engines often have no pressure gauge or warning light to indicate low oil pressure.
- Small engines are lightweight, causing more vibration, which can add to the bearing load.
- Turbo-charged engines, especially those with electronic fuel injection (EFI), increase demands on engine lubricants. Turbos need a steady supply of clean, fresh, high-grade lubrication oil to run at maximum efficiency.

IMPORTANT TRENDS IN NORTH AMERICAN SMALL ENGINE MARKET

The North American small engine market is changing in several ways. First, the engines are not so small anymore. The world changed when Triumph set the new benchmark in 2003 with its giant liquid-cooled straight-three Rocket III, the largest production motorcycle in the world at 2,294 cc (140 ci) and 106 horsepower.

With that move, Triumph upped the size ante, and the mark hasn't been topped since.

Today, there are plenty of bikes in the 1,500 cc and up range, and 1,000 cc power plants are common in the off-road segment of the powersports and lawn and garden industries. But nobody tops the Rocket III.

By comparison, look at Honda's Accord LX, which runs a 185-horsepower, 2.4-liter engine, and its smaller 2017 Civic lineup that's powered by 1,496 cc (1.5 liter) and 1,996 cc (2.0 liter) engines. Production motorcycle V-twins are as large as some automobile engines.

INDUSTRY SIZE

Now, let's look at the size of the industry. The Motorcycle Industry Council (MIC), the leading North American trade association for OEMs and aftermarket suppliers, reports 2016 year-to-date sales through September of 555,393 pow-

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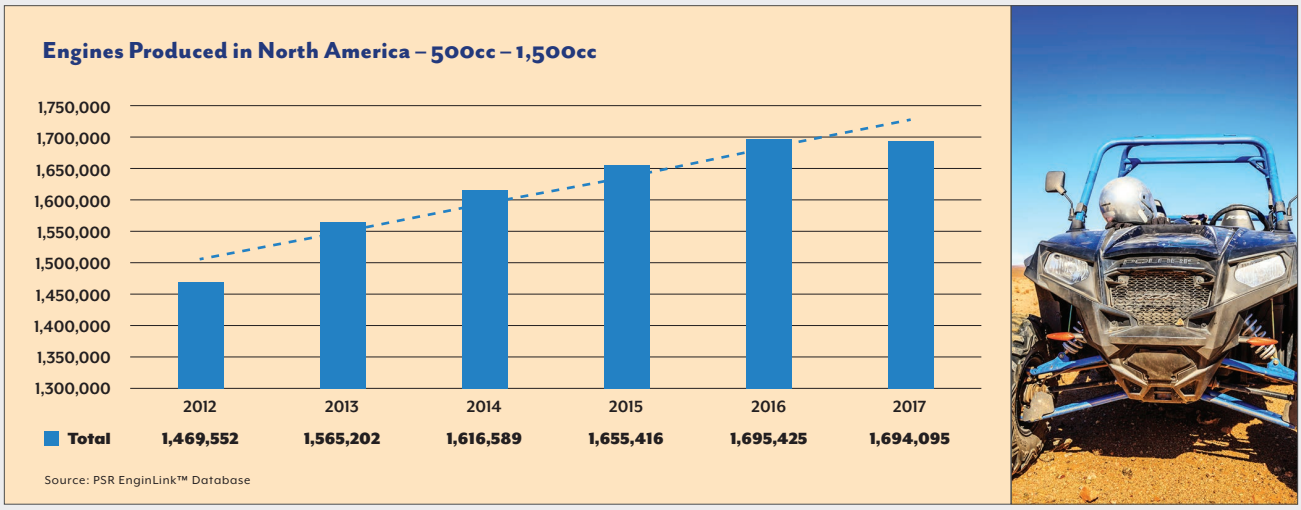


ersports units, down 3.8 percent from 2015. The 12-month total for 2015 was 729,075 units. This total includes ATVs, scooters and motorcycles.

The MIC numbers do not include SxS machines, one of the fastest-growing segments in the powersports market. SxS machines run to 1,000 cc engines that can generate 110 horsepower, such as the Polaris RZR line-up of Sport-Recreational vehicles, and hit speeds of 70 mph and more.

A similar industry picture comes from PSR. According to its figures, an estimated 244,000 SxS units were produced in North America in 2011, including electric models.

There also were 232,100 SxS gasoline and diesel engines used by OEMs in North America during that same year; these include imported engines and engines manufactured in North America.

PSR estimates that SxS production this year in North America could be more than 430,000 units, nearly double the 2011 figure. However, the situation isn't an entirely bright one. Production in 2016 is expected to be about 438,000, and then drop to about 416,700 in 2019 before rebounding to an estimated 431,300 in 2021. The drop is expected because of cyclical changes in the overall economy.

BIGGER AND BIGGER

The average engine displacement has been steadily increasing for North American utility vehicles. PSR figures show that in 2011, most engines produced (50.1 percent) were in the 751–1,000 cc range. Engines above 1,000 cc accounted for 3.4 percent of all production.

Using estimated figures for 2015, PSR calculates that the 751–1,000 segment drops to 47.2 percent, while those above 1,000 accounted for 6 percent of total production. Looking at it another way, the production of large engines above 1,000 cc climbed from 7,915 in 2011 to 23,920 in 2015, an increase of 202 percent.

At the same time, production of engines in the 501–750 range climbed from 46,585 to 125,003, or 168 percent. Total production climbed 72.7 percent, from 232,000 to 417,500 from 2011 to 2016.

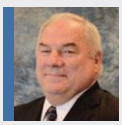
From 2011 to 2015, there was huge growth in engines with displacements above 500 cc. In 2011, there were 59,000 engines produced smaller than 500 cc. In four years, this number only climbed to 62,400, an increase of 5.5 percent. By comparison, engines above 500 cc increased to 338,000 units, or 95 percent.

Much of the growth in these large engines comes in the Sport-Rec category of powerful recreational machines, such as the Polaris RZR, Arctic Wildcat and BRP Maverick. Several of these 1,000 cc models come with EFI and include turbos.

SUMMARY

Look for continued changes in the areas of engine size, EFI and turbos as OEMs push the competitive power race and continue to battle for market share, especially in the Sport-Rec segment of SxS, and for commercial users.

We don't see significant growth in the North American SxS market for several years, but the market for engine lubes seems to hold substantial promise as engine size increases and as riders continue to push for more performance at higher speeds in tough off-road conditions.



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