Motorcycles

INDUSTRIAL CODES

NAICS: 33–6991 Motorcycles and Parts Manufacturing

SIC: 3751 Motorcycles, Bicycles and Parts

NAICS-Based Product Codes: 33–69911 through 33–69913100

PRODUCT OVERVIEW

As an alternative to the automobile, motorcycles are a popular means of transportation. Because they do not have much cargo capacity and offer minimal protection from the elements, however, they are often used primarily for recreational purposes or for short commutes. Motorcycling represents a lifestyle and sense of community among many consumers, whose demographics have shifted toward an aging population. In the early years of the twenty-first century, motorcycle sales were increasing because of fuel economy issues—high gas prices and unstable supplies of oil. For this reason, motorcycles are also a preferred choice of transport in many developing countries. Depending on the model, gas mileage for a motorcycle can range from fifty to sixty miles per gallon all the way up to 470 miles per gallon, in the case of the Matzu Matsuzawa Honda XL125.

Many different types of motorcycles are available to consumers today. Touring bikes and cruisers are designed to offer more horsepower and, with their well-padded seats, comfortable rides for longer trips. Many touring bikes have a passenger seat or sidecar and more storage capacity. Standard or street bikes (sometimes called naked bikes because they lack a fairing, or fiberglass shell that protects the rider, conceals machine components, and affords better aerodynamics) are lighter bikes well-suited for short commutes. Sport bikes and motocross bikes are sleeker, intended for racing, and are designed for the rider to be seated in a forward-leaning position. Mini or electric motorcycles offer lightweight fun for families and younger riders. Some motorcycles are considered crossovers. They are suitable for both fast-speed riding and street travel. Scooters, mopeds, and all-terrain vehicles (ATVs) will be regarded as complementary to and separate from traditional motorcycles, although some government statistics group motorcycle production and sales together not only with these products but also with bicycles.

The history of motorcycles goes back to the 1860s, when Sylvester Howard Roper configured a bicycle with steam power. Meanwhile, in France, L.G. Perreaux and bicycle inventor Pierre Michaux created a similar bike called a velo-a-vapeur. In 1879 Italian Giuseppe Munigotti patented a four-stroke engine for motorcycles that ran on gasoline. However, it was an adaptation of the four-stroke, coal gas powered engine invented by Germans, Dr. Nicholas Otto and Eugen Langen, that first powered the Reitwagen, the first petroleum-powered motorcycle. Invented in 1885 by Gottlieb Daimler and Wilhelm Maybach, the Reitwagen's engine ran on benzine. Then, in 1894, the German company Hildebrand and Wolfmüller offered the first motorcycles for public sale. After Carl Hedstrom, an American originally from Sweden, invented the first true motorcycle, the Indian, in 1901, the motorbike's popularity grew noticeably. By the early 1900s there were well over one hundred companies producing motorcycles, including Henderson, Marsh,

Yale, Indian, Merkel, Rambler, Orient, Tribune, Cyclone, which specialized in racing bikes, and today's best-known American manufacturer, Harley-Davidson.

The first setback for the motorcycle industry was the Model T. Available to the public in 1913, the Ford Motor Company's automobile offered a much more comfortable mode of personal, gas-powered transportation. As a result, most of the motorcycle companies closed their doors; those that remained were struck a second blow in the 1930s with the Great Depression. It was not until after World War II that the motorcycle industry began to rebound.

Harley-Davidson would prove to be the victor among remaining competition, and by 1953, it was the sole manufacturer in the United States. British and American motorcycles still dominated the market in the 1950s and 1960s, and a subculture began to surround them that stemmed from young war veterans who had used motorcycles in reconnaissance and other dangerous missions. There was a mystique of toughness about being a biker. Rockers, who sported leather jackets and were embodied by the image of actor Marlon Brando in the 1953 movie *The Wild One* and Peter Fonda in 1969's *Easy Rider,* embraced motorcycle culture and sometimes were associated with criminal gangs. Harley-Davidsons, Harleys, became affectionately known as *hogs*.

The gasoline crisis of the 1970s spurred more change in the industry. Somewhat surprisingly, it had a negative effect on Harley sales as consumers turned increasingly to cheaper, more reliable Japanese models. Harley-Davidson struggled, but began to make a comeback in the early 1980s by creating better-quality bikes. A new tariff on Japanese bikes that began in 1983 also helped the American industry.

By the early 1990s, motorcycle sales in the United States began to increase again. A decade of prosperity meant that Americans had more disposable income, and motorbikes were increasingly purchased for fun and recreation. The demographics changed considerably, too, as the image of motorcyclists as young rebels changed and aging baby boomers and families viewed motorcycles as economical and fun modes of transportation.

MARKET

After a decline that continued through the 1970s and 1980s, motorcycle sales in the United States and abroad have enjoyed a generally upward trend since 1992, when only 278,000 units were sold. Sales were particularly strong between 1998 and 2004, when the growth rate increased at a double-digit pace. In 2004, 1.1 million new motorcycles were purchased by American consumers, according to a report from the Motorcycle Industry Council (MIC). The result has been a near doubling of registered motorcycles in the United States from 3.4 million in 1995 to 5.7 million in 2004, or 2.4 percent of all registered vehicles.

An ongoing trend in American business in general has been the consolidation of companies into larger entities, and this has been true among motorcycle dealerships as well. According to the U.S. Department of Commerce, which groups motorcycle data together with bicycles, from 1997 to 2002 the number of companies manufacturing these products declined slightly from 373 to 346. Employment, too, decreased from slightly over 17 million to just over 15 million workers. At the same time, however, shipment values for motorcycles, including scooters, three-wheelers, mopeds, and parts, rose from $1.68 billion in 1997 to $3.16 billion in 2002 as production became more efficient. Retail sales for motorcycles alone, according to the MIC, hit $16 billion in 2002; in 2005 the motorcycle industry generated $25.5 billion in sales, taxes, services, and licenses.

Harley-Davidson remains the major producer of motorbikes in the United States, although a new company, Victory Motorcycles, has entered the field, and the once defunct Indian has been revived. America remains best known for its larger motorcycles, which have been enjoying a comeback in recent years. The Department of Commerce, which classifies large motorcycles as those having engines with 651cc or larger capacities, measured a 9 percent growth rate from 1992 through 2005. Of the $13.1 billion in world sales for heavy motorcycles, Harley's share is approximately 33 percent share and Honda's share is a distant second at 15 percent.

In 2005 and 2006 there was somewhat of a slowdown in sales, though overall gains were still in the black. There has been some speculation that the aging Baby Boomers, who have formed the core of sales for decades, have been purchasing fewer bikes. Experts, therefore, predicted weaker sales through the rest of the decade. Off-road and street bike sales showed the poorest performance in 2006 and early 2007, with sales down 17.8 percent and 2.6 percent, respectively. Dual-purpose motorcycles, however, remained fairly consistent, growing by 1 percent over that year. Factoring in sales of all types of motorcycles over the year 2006 showed that the boom over the previous fourteen years was at an end. Sales rose from 1,009,588 units in 2005 to 1,022,332 in 2006, a modest 1.3 percent growth rate.

The trade imbalance that has been characteristic of the U.S. economy as a whole is also the rule for the motorcycle industry. American motorbike manufacturers exported $917.2 million in 2004, while U.S. consumers purchased $3.81 billion from foreign makers that same year. Over half—63 percent—of foreign-made motor-

cycles came from Japan, while the main customers for American products were Japan, Canada, and Belgium.

KEY PRODUCERS/MANUFACTURERS

As a broad generalization, one may separate motorcycle markets into two main categories: heavyweight bikes, including cruiser, touring, and low-rider motorcycles; and lighter motorcycles, including street, sport bikes, mini bikes, and electric bikes. Scooters and mopeds are often also included in this latter category. When it comes to the heavier bikes, Harley-Davidson rules the road, while Japanese models continue to dominate the lightweight market. According to a *Dealernews* report as cited in *Market Share Reporter*, in 2005 Honda held a 28.23 percent share of motorcycle sales in the United States, with Harley-Davidson a close second at 26.33 percent (see Figure 147). The leading Japanese companies Honda, Yamaha, Suzuki, and Kawasaki together represented approximately 67 percent of total motorcycle sales in the United States in that same year. Honda has dominated Japanese brands and its motorbikes still have a loyal following in the United States.

American Makers. Harley-Davidson, America's leading motorcycle company and for many years its only one, is based in Milwaukee, Wisconsin. Founded in 1903, the company employs approximately 7,000 workers and had sales of $11.9 billion in 2001. It specializes in heavyweight touring and cruiser bikes, including custom motorcycles. The company sells 32 models, has subsidiary offices in Europe, Asia, Australia, and New Zealand, and approximately 1,300 authorized dealers in the United States. Sales of Harleys exceeded $5 billion in 2004.

Once subject to its parent company, AMF, Harley-Davidson executives bought their company's independence in 1981 after 12 years under AMF. To protect its interests, the company successfully lobbied the International Trade Commission (ITC) to place a tariff against Japanese imports of bikes with engines larger than 700cc. By 1987, however, the company felt it had regained its edge and returned to the ITC to have the tariff removed. Introducing new models, such as the FLSTF Fat Boy, which debuted in 1990 and was highly popular, the company also branched out into Superbike racing with the VR1000 in 1994. The previous year, they purchased an interest in the Buell Motorcycle Company, which specializes in sport motorcycles. Meanwhile, the company has continued to improve its products, introducing new Twin Cam engines, premiering a six-speed engine on its Dyna motorcycles in 2006, and making various body design improvements. Through these efforts Harley-Davidson has maintained its competitiveness in an ever more challenging international market.

Although Harleys dominate the domestic market, one other revered name that has survived over the years is Indian. Originally based in Springfield, Massachusetts, the Indian Motorcycle Manufacturing Company was founded in 1901. From the 1920s through the early 1950s, its popular Scout and Chief models made it the leading motorcycle company in the world. From 1931 to 1953, Indian and Harley-Davidson were the only motorbike companies in America. After its purchase in 1945 by Ralph B. Rogers, Indian began to build lighter bikes. The company went out of business in 1953, however. The Indian name was revived over the years as several companies used its brand to sell imported motorcycles. It was brought back into domestic production with the Gilroy Indian Motorcycle, based in Gilroy, California, and created new versions of the Scout, Chief, and Spirit motorcycles. In 2003, after only three years, the company went bankrupt. In 2006 a new company took the name Indian and based its operations out of Kings Mountain, North Carolina, though it is owned primarily by London equity firm Stellican Ltd. The revived Indian Motorcycle Company has returned to building new models of the Chief.

Another new upstart American company appeared in 1994: Victory Motorcycles, the first company to challenge the Harley's dominance domestically. A subsidiary of Polaris Industries, a manufacturer of ATVs and snowmobiles, Victory also produces heavyweight touring bikes, beginning with the V92C. That model won a Best Cruiser award from *Cycle World.* Since then, the company has continued to introduce new heavyweight models, and in

FIGURE 147

Two-Wheel Motorcycle Sales Estimates, 2003 and 2004

Company	2003 (units)	2004 (units)	Share of 2004 Total (percent)
Honda	248,530	270,253	29.18
Harley-Davidson	228,528	248,217	26.80
Yamaha	154,911	151,812	16.39
Suzuki	103,335	110,217	11.90
Kawasaki	85,005	89,547	9.67
KTM	16,459	20,368	2.20
BMW	15,412	12,991	1.40
Triumph	5,577	5,738	0.62
Buell	5,698	5,899	0.64
Ducati	4,568	5,396	0.58
Victory	3,101	3,851	0.42
Aprilia	1,829	1,805	0.19
Indian	2,798	na	na
MZ	224	222	0.02
Total	875,975	926,316	100.0

SOURCE: Compiled by the staff with data from Brown, Don J., "2 Million Units, But When?" *Dealernews,* July 2004.

2007 it introduced luxury models for high-end consumers. Victory sold $1.77 billion in motorcycles in 2004.

Asian Makers. Generally appreciated by consumers for their off-road, street, and sport bikes, Japanese motorcycle makers also produce cruiser and touring bikes. They have come to dominate the market, not only in America and in Japan itself, but also in many other Asian and Oceania markets. For example, Indonesia is a huge importer of Japanese models, which are affordable to purchase and operate, as well as being more suited to travel in Indonesia's crowded cities. In 2005 Japanese companies sold 4.76 million motorcycles in Indonesia, with over half of those (52.3%) being Hondas, and Yamaha and Suzuki splitting approximately 45 percent of the rest of the market. In Japan itself, Honda again leads with 55.5 percent of the local market of 700,000 units in 2004. Yamaha had 24.4 percent of the domestic market, Suzuki 17.3 percent, and Kawasaki 2.8 percent.

Honda Motor Co. was founded in 1948 and by the late 1960s was building 10 million motorcycles annually; in 1997 the company hit the 100 million mark in annual production. The Super-Cub, first introduced in 1958, became a perennial favorite among customers, representing approximately one-fifth of total sales. Honda has factories worldwide, including in China and the United States, with plants in the latter building the larger touring bikes. In 2005 Honda cut production slightly while competitors Suzuki and Yamaha saw increases in manufacturing. Japanese exports in general were down by approximately 4 percent, while domestic production increased 2.1 percent in 2005. Mid-decade reports noted a steady decline in Japanese motorcycle sales from 2003 through 2006, with overall production down 1.1 percent. Honda and Suzuki showed the biggest declines (down 7%), followed by Yamaha (4%) and Kawasaki (3%).

Japan is no longer the only Asian country involved in motorcycle production. China has become a giant in the industry, producing 14 million motorcycles in 2003, or 48 percent of world production. Though not yet popular in America or Europe, their motorcycles are exported around much of the rest of the world. Malaysia is also an up-and-coming competitor, with production rising from 352,933 bikes in 2003 to 472,726 in 2004.

England and Europe. The leading companies in Europe and England, in terms of sales, include Triumph, based in Hinkley, United Kingdom; BMW (Bavarian Motor Works), based in Munich, Germany and also known for its luxury automobiles; and KTM-Sportmotorcycle, a manufacturer specializing in off-road bikes who are headquartered in Mattighofen, Germany. Also of note are Italian models by such manufacturers as Vespa, Benelli, and Moto Guzzi.

While a relatively small company compared to Honda or Harley-Davidson, Triumph has a loyal following of enthusiasts who appreciate its history—symbolized by its old-fashioned marquee—and have been rewarded for their loyalty with the introduction of reengineered models. The most significant of these in recent years have been the Daytona 955i and T595 Daytona, both introduced in the 1990s. They offer a combination of macho appeal with high performance that rivals Japanese bikes.

In Germany, BMW got its start as an airplane manufacturer; later, it also built agricultural machines, furniture, and air brakes. By 1923 BMW had entered the motorcycle business and is now known for high-end bikes, though they also sell sport cycles and motorcycles for commercial use, such as emergency services. Sporting motorcycles are a specialty of KTM-Sportmotorcycle, which is known for its off-road bikes.

Italians are fans of motorcycle transportation, which suits their culture and narrow city streets. Even more, they love their scooters, and the Vespa, produced by the company founded by Enrico Piaggio after World War II, is the best-known brand in America. Vespa also makes motorcycles, such as the Granturismo 200. Other companies in Italy include Benelli, manufacturer of the Tornado, and Moto Guzzi, well-known for its racing bike the Normale.

MATERIALS & SUPPLY CHAIN LOGISTICS

One of the allures of motorcycles has been that they lend themselves well to customization and tinkering. In the case of Harleys from the 1950s and 1960s, mechanical repair was not just a hobby but a necessity, as the bikes were known for being unreliable and in need of frequent fixing. With increasing competition, Harley-Davidson greatly improved the quality of its bikes, but customizing them has remained a popular hobby. In addition, specialty shops exist that build motorcycles to spec. These are usually low rider or touring bikes with unique frames and custom-painted fairings.

Over the years, manufacturers in England, America, and Japan developed their own standards as they worked to create competing designs that would appeal to customers. Standards have varied from manufacturer to manufacturer, but this fact appeals to motorcycle aficionados who appreciate the different look, feel, and sound of their favorite models.

Motorcycles are constructed of a wide range of raw materials, including rubbers, plastics, and metals. Total cost of these materials has risen steadily in recent years, according to U.S. Department of Commerce statistics, which include parts manufacturing and bicycles with its

information on motorcycles. In 2002 raw material costs were approximately $2.6 billion, and this increased to $3.16 billion in 2005. Over the same time period, electricity and other fuels to run manufacturing plants increased from $26.9 billion to $40.8 billion in annual usage.

Producing motorcycles had gone high-tech by the latter part of the twentieth century, with much of the process controlled by computers and robotics in a manner similar to the automobile industry. For this reason, investment in electronic equipment represented a significant expenditure of $15.25 million in 2005 out of a total $122 million for all machinery and equipment. Materials, parts, containers, and packaging accounted for $2.89 billion. Again grouping motorcycles together with bicycles, the U.S. Department of Commerce reported a 10.8 percent decline in the number of employees involved in production from 11,887 in 2002 to 10,603 in 2005.

Government regulations regarding such factors as noise and pollution emissions and engine performance have compelled manufacturers to create components that control these elements. Devices known as shear bolts prevent owners from modifying their motorcycles in ways that would make them no longer street legal. Another development in manufacturing processes is the influence of global markets. International standards may, in the future, control motorcycle horsepower and emissions, as well as set parameters on parts sizes and quality control. For the industry, this could in some ways result in significant savings because, after an initial investment in factory modifications, a manufacturer could produce motorcycles that will conform with regulations in Asia, Europe, and North America. Motorcycle enthusiasts fear that such standardization will result in the homogenization of the motorcycle itself so that models begin to all look alike. Industry leaders, however, have emphasized that while components may be standardized there will still be flexibility in design.

DISTRIBUTION CHANNEL

Getting motorcycles to their customers is a process that is similar to that of automobiles. Original Equipment Manufacturers (OEMs), such as Honda and Harley-Davidson, work with franchise dealers, who sell to customers. There are also non-franchise dealers and numerous dealers who resell used motorcycles. There were 4,898 retail motorcycle dealers in the United States in 2002, according to the U.S. Department of Commerce. Together, they reported $15.99 billion in sales that year.

The number of retail outlets declined during the period 2001 to 2005. At the beginning of the century, there were 3,583 retail motorcycle dealers, but in 2005 there were 2,381. Approximately 40 percent of businesses were franchised retail outlets at the beginning of the century, but by 2005 there were more than 7,000 dealers outside of the franchises representing a full 80 percent of the market.

There are motorcycle dealers throughout the United States, but the highest concentration is in California, Florida, Texas, and Ohio. In 2003 the largest concentration of motorcycle users was not only in these first three states, but also in New York and Pennsylvania. Franchised retailers had sales, including services and the sale of parts and other motorcycle-related items, averaging $700,000 per year in the middle years of the 1990s, while non-franchised businesses averaged $122,500 annually.

Motorcycle dealers offer their customers more than just new and used bikes. Unlike car dealers, in many cases they carry full lines of accessories and parts, taking advantage of the motorcycle culture. Typically, a customer can find helmets, clothing, and all sorts of riding gear and accessories for his or her motorcycle. Many dealers also participate in various national and local motorcycle associations, educate their customers on riding safety, and have mechanics to provide repair services. Clubs, such as Honda's Red Rider club, work to ensure buyer loyalty, and a growing online community reinforces consumer brand preferences.

KEY USERS

Although motorcycles are purchased by government agencies, especially for highway police patrols, and are used in motocross racing and similar sports, the primary purchasers are private users. The Baby Boom generation has been central to the market for decades, and because this is an aging population some have speculated this to be the cause of the slight decline in sales in the early part of the twenty-first century. The average age of a motorcyclist in the United States was thirty-two in 1990; it was forty-one in 2005. Complementing this statistic is the decline of sales to younger riders. By 2005 only 11 percent of motorcyclists were eighteen to twenty-four years old, compared to 25 percent in 1980, while 3.7 percent were younger than eighteen. The majority of customers (90%) were men. The typical rider was married and college educated, a far cry from the rebellious youth imagery of the 1950s and 1960s.

ADJACENT MARKETS

While there is no direct competition with larger motorcycles, such as touring and cruiser bikes, riders who like off-road adventure frequently choose three- or four-wheel all-terrain vehicles (ATVs). Scooters have become popular for people who enjoy short city commutes or light recreation. ATVs are primarily recreational vehicles, and their sturdy construction makes them well-suited for muddy and bumpy terrain, but there are also

racing models that are used competitively, as well as some six- and eight-wheel specialty models. Made popular in the 1970s by Honda, which introduced the ATC90 in 1970, worldwide sales are approximately 300,000 annually, according to the company's Web site. The term ATV today applies to any three- or four-wheel off-road vehicle with low-pressure tires and handlebars. Early ATVs were also aquatic, able to navigate swamps and marshes because of their buoyant tires. In the early twenty-first century regular ATVs are not literally all-terrain, since they are not amphibious. There are, however, amphibious models called AATVs.

Scooters are lightweight, two-wheel vehicles that have automatic transmissions and are easier to operate than motorcycles, which have gears and clutches. They are also very comfortable to ride, having a step-through seating design where one is not resting above the engine. Instead, the engine is behind the rider. Scooters are a popular choice for people who wish to own a motorized bike that is easier to operate, especially on congested city streets. Because they are lighter in weight, they are also easier to store. Scooters can have engines as small as 50cc or less, in which case it is not required for operators to own a license. The smaller scooters are a great choice for children looking for a little motorized fun. Larger scooters are available, too, many of which have enough power to ride on major freeways.

According to MIC statistics, scooter sales in the United States saw strong growth from 1997, when 12,000 were sold in the United States, through 2002, when sales reached 69,000. However, from 2005 to 2006, the market leveled off and decreased slightly. Sales totaled 56,899 in 2005 and dropped 4.6 percent to 54,268 the following year. Industry experts were puzzled by this decline, given that increasing gas prices should favor fuel-efficient scooters as good choices for alternative transportation. A similar decrease for ATVs was seen during the period 2002 to 2006 with sales falling 4.2 percent to 747,581 units in 2006. This decline might be reflective of an overall slowing of off-road vehicle demand, with motorcycles of this type experiencing a 17.8 percent decline in sales from 2006 to 2007.

RESEARCH & DEVELOPMENT

When motorcycles were first invented, they were little more than bicycles with engines strapped onto them. In 1903 the first Harley-Davidson was so crude the carburetor was made from an empty tomato can. A brief six years later the company introduced its V-twin engine, the design of which would become the iconic image of the Harley. During the 1910s, increasingly powerful engines were produced for motorcycles, and in 1914 sidecars became available on the Harley. Two-cam engines were introduced in 1928. World War I, in which 20,000 Harleys were used by the military, and World War II, in which an estimated 90,000 were deployed in the war effort, helped advance technology further. Hydraulic suspensions and rear brakes were introduced in 1958, and electric starters premiered in 1964.

Harley-Davidson sold blueprints and tools to the Japanese company, Sankyo, in 1935, but the Japanese industry did not become serious competition until the 1970s and 1980s. Honda debuted the CB400F in 1975, which marked a radical new design at the time that appeared flashy, with its four-into-one exhaust pipes. The next year, the company came out with the first motorcycle with an automatic transmission, the CB750A. Not resting on its laurels, in 1982 Honda created the first turbocharged motorbike, which was called the CX500T Turbo. Hondas began dominating racetracks, and the company continued to make more powerful and aerodynamic bikes through the 1980s and 1990s.

Meanwhile, Harley-Davidson had to do some catching up to compete, not only in terms of design, but also in production. The Japanese just-in-time inventory method, relying heavily on computers and timely shipping, made their factories more efficient. State-of-the-art factories making Harleys were built in York, Pennsylvania, in 1991 and in Franklin, Wisconsin, in 1996. Harley-Davidson emulated Japanese methods, improved its quality, and shook off its former reputation as being mechanically unreliable.

CURRENT TRENDS

With fuel prices skyrocketing in the middle of the first decade of the 2000s, one might easily speculate that motorcycles, which are fuel-efficient would see strong sales. This has not been the case, however, and in 2005 and 2006 sales were stagnant. The problem may be that consumers in the twenty-first century increasingly demand luxury conveniences in their personal transportation. Thus, in automobiles, manufacturers offer everything from built-in telephones and televisions to high-tech security devices and seats with customizable lumbar back supports. Motorcycles remain a lifestyle choice that appeals to a certain demographic that seeks adventure over comfort.

Nevertheless, not all consumers care about owning a motorcycle that has a loud, powerful-sounding engine. Motorcycle manufacturers are beginning to capitalize on a changing market that appreciates clean, reasonably-priced, efficient bikes. By 2005 companies such as Electric Motorsport and Derbi, which was purchased in 2005 by scooter-maker Vespa, began limited production of electric bikes. Electric motorcycles can offer similar performance to a 250cc two-stroke gas-powered engine with only a 50cc motor, and when constructed on similar chassis the

two types of bikes look virtually the same. Electric motorcycles have several advantages over gas-powered machines, too, including less noise, no moving parts (thus, less wear and tear on the engine), and a smoother ride with minimal or no vibration. Meanwhile, companies such as Vectrix are exploring the possibility of hybrids, resulting in a machine that is something of a cross between a scooter and a motorcycle. Hydrogen fuel-cell-powered motorcycles might be seen in the future.

In design news, a quirky new bike is on the horizon. Looking somewhat like a three-wheel ATV riding backwards, the Spyder, has two tires in the front and one in the rear. Created by Canadian company Bombadier Recreational Products, the Spyder features Y-architecture, which makes the motorbike easier to control, especially for younger riders. Some industry experts also believe the three-wheel bike might be popular with Baby Boomers who never rode motorcycles when they were younger and now wish to enjoy some of the thrills they missed. Not long after the Spyder debut, Harley-Davidson announced in 2007 that it also has a motorcycle with a three-wheel design.

Another development in motorcycles in the twenty-first century is the addition of safety devices. While a number of states have passed helmet laws to keep riders safe, many people still believe that this is not enough. Motorcycle manufacturers have responded by adding safety devices such as seat belts, airbags, and anti-lock brakes.

TARGET MARKETS & SEGMENTATION

The main market for motorbikes has traditionally been white males. Only 1 in 10 new buyers are women. Caucasian buyers represented 89 percent of the market, according to 2007 data from J.D. Power and Associates. Marketers have viewed this as an opportunity to focus more advertising efforts African-Americans, Hispanics, and Asians who are more inclined to purchase the lighter, sportier, and somewhat less expensive motorcycle models.

RELATED ASSOCIATIONS & ORGANIZATIONS

Association de Constructeurs Europeens de Motorcycles (ACEM), http://www.acembike.org

Motorcycle Industry Association (MIA), http://www.mcia.co.uk

Motorcycle Industry Council (MIC), http://www.mic.org

Motorcycle Riders Foundation (MRF), http://www.mrf.org

Motorcycle Safety Foundation (MSF), http://www.msf-usa.org

BIBLIOGRAPHY

Brown, Don J. "2 Million Units, But When?" *Dealernews.* July 2004.

———. "Easy Rider; Can a Three-Wheel Motorcycle Be Cool? The New Can-Am Spyder Roadster from BRP Is Betting It Will—and Harley Is Too." *Business Week.* 27 June 2007.

"International Motorcycle Market Report." *Powersports Business.* 25 December 2006.

"Japan Builds Less than Half of World's Motorcycles in 2006." *AsiaPulse News.* 12 July 2007.

"Japanese Bike Production Drops in 2006." *Powersports Business.* 12 March 2007.

Kirkpatrick, Janice. "On Your Bike: Janice Kirkpatrick Looks at Accelerating Innovation in the Motorcycle Industry." *Design Week.* 19 April 2001.

Lazich, Robert S. *Market Share Reporter 2007.* Thomson Gale, 2007, 505–506.

MacMillan, Douglas. "Hogging from Harley-Davidson; Just Entering Its 10th Year, Victory Motorcycles Follows in the Footsteps of the Biggest Domestic Competitor to Harley-Davidson of All Time." *Business Week.* 31 January 2007.

"Miscellaneous Subjects: 2002." U.S. Department of Commerce, Economics and Statistics Administration. December 2005.

"Motorcycle, Bicycle, and Parts Manufacturing: 2002." *2002 Economic Census.* U.S. Department of Commerce, Bureau of the Census, Economics and Statistics Administration. December 2005.

Palm, Kristin. "Motorcycle." *How Products are Made,* 2007. Available from <http://www.madehow.com/Volume-4/Motorcycle.html>.

Pascale, Neil. "The Unchanging Face of the Industry: Survey Shows Minority Consumer Groups Are Largely Untapped by the Motorcycling Industry." *Powersports Business.* 2 April 2007.

Verma, Meenakshi. "Make Mine an Electric." *Economic Times.* 21 July 2007.

SEE ALSO *Automobiles, Snowmobiles, Trucks*