

2009

ENGINE BUILDER



Machine Shop Market Profile

PART 1

BY DOUG KAUFMAN, EDITOR | dkaufman@babcox.com

As the debate over bailouts, bankruptcies and generally bad policy concerning the automotive aftermarket continues in Washington, engine builders may well shrug their shoulders and say “welcome to our world.”

Now that new car dealers and manufacturers are taking it on the chin because many consumers have apparently decided that “making do is better than buying new,” there is increased optimism in many segments of the service sector. For engine builders – who have been operating in a challenging environment for several years now – the opportunities to be both economically and ecologically friendly have never been better, and some positive signs are emerging.

For more than 20 years, *Engine Builder* magazine has surveyed the same machine shop/custom engine rebuilder (CER) population to get a picture of the scope of this industry. Admittedly, each year we’ve had to use a slightly smaller lens but the results have continued to be interesting.

Because of the decades of data we’ve collected, we believe the information in this study is the most reliable data available for tracking trends in the production of engines, cylinder heads and crankshafts, as well as specific business data.

The data generated for this year’s Machine Shop Market Profile was collected through survey questionnaires sent to the machine shop/custom engine rebuilding membership of the AERA. Four different questionnaires, consisting of four pages each, were developed to

obtain the information contained in our profile.

Each questionnaire was mailed to one-quarter of AERA’s rebuilding membership, selected on a random-start Nth-name basis. A total of 1,830 appropriate usable outgoing questionnaires were sent out in early January.

A total of 203 completed questionnaires were returned, resulting in a return rate of 11%. Analysis of the data was completed by Babcox Market Research.

The survey information reflects data for production year 2008. Part I of this two-part profile includes data on monthly production of engine blocks and cylinder heads, broken out by engine size as well as by gas and diesel configurations, crankshafts, core sourcing, shop equipment ownership and purchasing, and total production time spent in specific engine building areas.

As engine technology has improved over the years, this industry has suffered, and there is no way to recapture the glory of the past decades in terms of numbers. But opportunities still exist for at least three reasons: people need their vehicles to run properly, there is currently no viable alternative to the internal combustion engine and the competitive fire still burns inside many people, meaning being bigger, faster and louder than the next guy still matters.

This isn’t meant to imply that the statistics surrounding this market are markedly better – in fact, in many instances declines are significant. But since we’re looking at data that reflect last year’s position, there is every reason to believe that changes in the economy now are already starting to have a positive impact.

ENGINE PRODUCTION DATA



In fact, based on the open-ended question “In operating and/or promoting your machine shop, what is the biggest problem you currently face?”, the most common complaint among shop owners or managers was reported to be “Finding qualified workers.”

Overall, the industry’s numbers may be down and there are definitely fewer shops than ever before. However, though this is a significant problem to be sure, it indicates that the work continues to be there and the number of technically proficient shops need help handling it all.

Nationally, the numbers look like this: the average machine shop produced about 13 gas and diesel engines monthly last year, down from 15 per month in 2007.

While the number of four-cylinder gas engines built remained steady, six-cylinder engines fell around 30 percent in 2008. The number of eight-cylinder engines dropped slightly, from just over 5 per month to just under 5 per month. The number of unspecified “other” gas engines fell the most, from an average of .2 engine per month in 2007 to under .1 engine per month, meaning a yearly decline from 2.4 engines to 1 per year.

Overall, gas engine production declined 13 percent in 2008, a drop fueled mainly by that “other” category. The diesel engine segment continues to be popular, and we fully anticipate that trend to continue as light duty and passenger car diesels gain in presence here in the United States.

Across the board, the number of diesel engines produced was virtually steady from 2007 to 2008 and remain at one of the highest levels since 2003.

Posting big gains in 2007 after a lackluster 2006, diesel engines held serve in 2008. The number of four- and six-cylinder diesel engines produced each month actually climbed 13 percent from a combined 1.9 units per month in 2007 to 2.15 units per month in 2008. The number of

AVERAGE NUMBER OF GAS/DIESEL ENGINES REBUILT PER MONTH IN 2008

	2008	2007	2006	2005
GAS ENGINES				
4 CYLINDER	3.1	3.1	3.1	3.9
6 CYLINDER	2.3	3.3	2.9	4.4
8 CYLINDER	4.9	5.3	7.1	6.2
OTHER	0.08	0.2	0.11	0.25
TOTAL	10.4	11.9	13.2	14.8
DIESEL ENGINES				
4 CYLINDER	.75	0.7	0.5	0.8
6 CYLINDER	1.4	1.2	0.8	0.9
8 CYLINDER	0.6	0.6	0.4	0.5
OTHER	0.4	0.4	0.02	0.04
TOTAL	2.8	2.9	1.7	2.2
TOTAL NUMBER OF ENGINES				
4 CYLINDER	3.9	3.8	3.6	4.7
6 CYLINDER	3.7	4.5	3.7	5.3
8 CYLINDER	5.0	5.9	7.5	6.7
OTHER	.12	0.6	0.1	0.3
TOTAL	12.7	14.8	14.9	17.0

ENGINE PRODUCTION INCREASES/DECREASES

RESPONSE	2008	2007	2006	2005
INCREASED	9.6%	26.9%	32.4%	32.8%
REMAINED THE SAME	57.7%	48.1%	39.4%	54.7%
DECREASED	32.7%	25.0%	28.2%	12.5%
TOTAL	100%	100%	100%	100%
AVERAGE INCREASE	12.5%	15.1%	12.6%	17.2%
AVERAGE DECREASE	22.3%	16.5%	13.3%	18.3%

REBUILT ENGINE SALES - DOMESTIC AND IMPORT

GAS	2008	2007	2006	2005
DOMESTIC	73.2%	72.5%	77.3%	74.8%
IMPORT	26.8%	27.5%	22.7%	25.2%
TOTAL	100%	100%	100%	100%
DIESEL	2008	2007	2006	2005
DOMESTIC	84.1%	91.8%	80.7%	75.7%
IMPORT	12.9%	8.2%	19.3%	24.3%
TOTAL	100%	100%	100%	100%

PERCENTAGE OF ENGINE REBUILDING FALLING INTO THE FOLLOWING CATEGORIES

	2008	2007	2006
AUTOMOTIVE GASOLINE	48.3%	37.1%	50.9%
PERFORMANCE	20.5%	28.6%	20.4%
INDUSTRIAL ENGINES	7.2%	8.3%	4.6%
MEDIUM-DUTY DIESEL	6.5%	5.5%	4.2%
AUTOMOTIVE DIESEL	5.5%	3.4%	5.3%
MARINE ENGINES	2.7%	2.6%	3.2%
MOTORCYCLE/MOWER/OTHER SMALL	1.7%	2.4%	3.4%
HEAVY-DUTY DIESEL	7.2%	9.6%	5.9%
OTHER TYPES	0.4%	2.5%	2.1%
TOTAL	100%	100%	100%

PERCENTAGE OF SHOPS THAT REBUILD THE FOLLOWING CATEGORIES

	2008	2007	2006
AUTOMOTIVE GASOLINE	100%	86.3%	97.2%
PERFORMANCE	81.3%	84.3%	80.3%
INDUSTRIAL ENGINES	65.6%	52.9%	56.3%
AUTOMOTIVE DIESEL	65.6%	49.0%	57.7%
MARINE ENGINES	43.8%	37.3%	46.5%
MOTORCYCLE/MOWER/OTHER SMALL	46.9%	41.2%	43.7%
MEDIUM-DUTY DIESEL	62.5%	52.9%	49.3%
HEAVY-DUTY DIESEL	40.6%	52.9%	34.0%
OTHER TYPES	12.5%	17.6%	14.9%

PERCENTAGE OF TOTAL REBUILT ENGINE SALES RETURNED AS WARRANTY

	2008	2007	2006	2005
Returned	1.3%	1.5%	1.8%	1.9%

PERCENTAGE OF WARRANTY RETURNS WHICH ARE ACTUALLY CUSTOMER INSTALLATION OR DIAGNOSTIC PROBLEMS

	2008	2007	2006	2005
Returned	77.1%	71.6%	72.8%	73.2%
Percent change	7.1%	-1.6%	-.5%	8.6%

eight-cylinder engines remained steady, and except for a miniscule drop in the number of "other diesel engines" built per month, this market shows signs of continued strength.

According to confirmation from the Automotive Aftermarket Industry Association (AAIA), the past few years have, in fact, been challenging. In 2008 we saw just 0.2 percent growth for the automotive aftermarket and things are not expected to improve in the short term.

The negative impacts from high unemployment and falling consumer confidence, declines in consumer wealth and a decline in the GDP, have caused the U.S. aftermarket to contract 1.2 percent so far in 2009. "The falling economy and its impact on miles driven and consumer spending will outweigh the forces working for the industry," says AAIA in its annual Industry Factbook. "However, as the economy rebounds in 2010, there will be significant pent-up demand for aftermarket-related products and services and growth of 4.5 percent is forecast."

The average national monthly gas and diesel engine production of nearly 13 units translates to 156 engines produced annually. This compares to annual production of 180 engines produced during 2006 and 2007 for the typical CER.

Projected onto a universe of 4,000 to 5,500 full-service machine shops, it's estimated that CERs accounted for between 624,000 to 858,000 gas and diesel engines built during production year 2008. During production years 2006 and 2007 the national average for the CER market in gas and diesel engine production ranged between 720,000 and 1.08 million units, based on a universe of 4,000-6,000 shops.

If you add in the estimated 450,000 engines remanufactured annually by the approximately 30 U.S. production engine remanufacturers (PERs), the combined total number of engines rebuilt in 2008 by CERs and PERs would be approximately 1.07

PERCENTAGE OF TOTAL REBUILDING BUSINESS IN GAS ENGINE PRODUCTION FOR FOLLOWING CATEGORIES

	2008	2007
SHORT BLOCKS	10.9%	11.9%
LONG BLOCKS	13.0%	13.0%
COMPLETE ENGINES	27.7%	20.7%
HEADS*	40.2%	45.1%
CRANKS	8.3%	9.4%

*Not used on long blocks or complete engines

PERCENTAGE OF TOTAL DIESEL ENGINE REBUILDING PRODUCTION IN FOLLOWING CATEGORIES

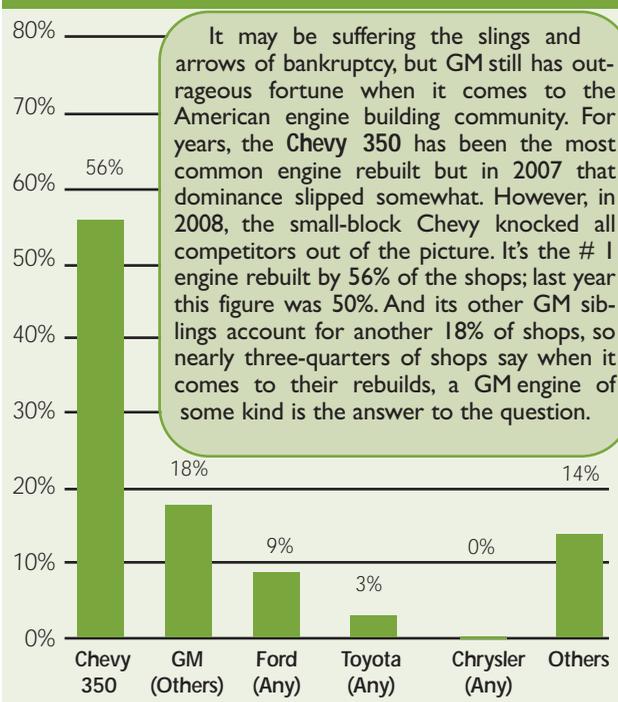
	2007	2006
SHORT BLOCKS	9.0%	10.1%
LONG BLOCKS	6.3%	15.6%
COMPLETE ENGINES	11.7%	8.7%
HEADS*	61.3%	53.7%
CRANKS	11.7%	12.0%

*Not used on long blocks or complete engines

PERCENTAGE OF ENGINE PRODUCTION (TOTAL) THAT IS PERFORMANCE-RELATED

PERCENTAGE OF RESPONDENTS	
One to 10%	30.4%
11% to 20%	10.4%
21% to 30%	13.6%
31% to 40%	4.0%
41% to 50%	8.8%
51% to 70%	8.0%
More than 70%	12.8%
None/no answer	12.0%

PERCENTAGE RANKING AS #1 ENGINE REBUILT



million to 1.31 million units. This compares to approximately 1.32 million to 1.68 million engines produced by PERs and CERs during production year 2007 (the universe of PERs has been revised downward from 40 with this year's survey).

Much of this decline can be attributed to fewer full-service machine shops in general, a statistic we recognize from looking at industry participation as well as our own circulation. However, we firmly believe that the aftermarket contains many non-traditional engine building outlets providing machine shops additional sales and service that are not necessarily reflected in these "complete engine" numbers.

At an average retail cost of approximately \$2,600 per engine, we speculate that, even in a challenging, difficult business, the total rebuilt/remanufactured engine market generated between \$2.78 billion and \$3.43 billion in rebuilt engine sales in 2008.

We asked engine builders to break their craft down into five basic categories short of actual machining processes: production of short blocks, long blocks, complete engines, cylinder heads (not used on long blocks or complete engines) and crankshafts (also not used in long blocks or complete engines). In both gas and diesel engines, the percentage of production of complete engines increased dramatically from last year's report. For diesel engine builders, cylinder head work increased as well in 2008.

While defining "performance" continues to be an elusive task, as challenging perhaps as any other part of this business, it's no secret that performance-related work continues to be an important part of today's engine production mix. Nearly 21 percent of respondents say that performance accounts for more than half of their business, and 88 percent of respondents say that performance makes up SOME percentage of their total engine production (see the chart at the upper left).

It used to be said that what's good for GM is good for America, and while that quote may be less than accurate today, it's apparently still true in this industry. The small-block Chevy continues its reign as king of the hill when it comes to the top engine rebuilt, according to 56 percent of survey respondents. "Any other GM" ranked second at 18 percent.

CYLINDER HEAD PRODUCTION DATA

AVERAGE NUMBER OF GAS/DIESEL CYLINDER HEADS REBUILT PER MONTH IN 2008

	2008	2007	2006
GAS CYLINDER HEADS			
4 CYLINDER	13.8	16.7	16.4
6 CYLINDER	7.1	10.0	11.6
8 CYLINDER	12.4	14.9	17.7
OTHER	.25	0.8	0.8
TOTAL	33.6	42.4	46.3
DIESEL CYLINDER HEADS			
4 CYLINDER	2.7	2.4	3.2
6 CYLINDER	3.2	3.6	4.0
8 CYLINDER	1.6	1.6	1.7
OTHER	0.4	0.2	0.4
TOTAL	7.9	7.8	9.1
TOTAL NUMBER OF CYLINDER HEADS			
4 CYLINDER	16.5	19.1	19.6
6 CYLINDER	10.3	13.6	15.6
8 CYLINDER	14.0	16.5	19.4
OTHER	0.7	1.0	0.818
TOTAL	41.5	50.2	55.4

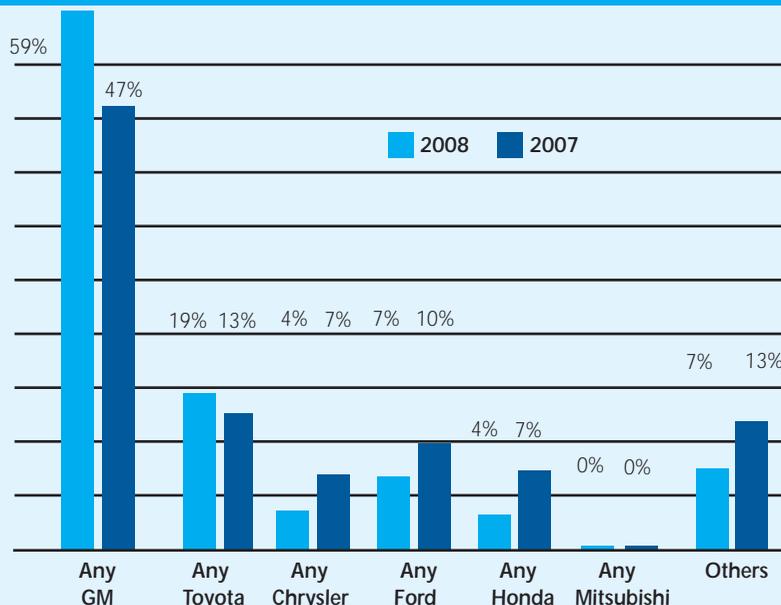
On a national basis, combined gas and diesel cylinder head production decreased 16 percent, dropping from a total of 50 units rebuilt monthly in 2007 to 42 units rebuilt monthly in 2008.

Gas head production fell about 8 percent, going from 42.4 units monthly in 2007 to 33.6 units produced last year. Across the board, the numbers were down: four-cylinder head production declined 18 percent; six-cylinder production dropped 30 percent and eight-cylinder head rebuilding declined 20 percent in 2008. "Other" cylinder heads (likely small heads for kart motors or other types of small engines) saw a production decrease after a 33 percent increase in 2007. The decline is likely the result of the economy and increasing number of new cores or complete heads available.

Diesel heads rebuilt monthly had a positive turn, reversing declines of the past several years. Total diesel cylinder head production climbed slightly from from 7.8 units rebuilt monthly in 2007 to 7.9 units in 2008, though it was a mixed bag of results. Four-cylinder diesel head production rose 11 percent; six-cylinder diesel head production dropped 11 percent; eight-cylinder head production stayed even with 2007 numbers and "Other diesel cylinder heads" climbed 50 percent, albeit from 0.2 cylinder head per month (2.4 per year) to .4 cylinder head per month (4.8 per year).

The percentage of cylinder head rebuilding that is aluminum rebounded in 2008. In 2006, 55.8 percent of cylinder head work was done in aluminum; in 2007, 48.4 percent of repaired cylinder heads were aluminum, which actually matches the 2005 level. The 2008 results show that 56.3 percent of cylinder heads rebuilt are aluminum, the highest percentage we have ever seen in this report.

PERCENT NAMING AS NUMBER ONE CYLINDER HEAD REBUILT



PERCENT OF CYLINDER HEAD REBUILDING THAT IS ALUMINUM

Average 2008 56.3%

Average 2007 48.4%



New warehouse locations in Los Angeles, CA,
Charlotte, NC and Worcester, MA

When You Need Speed

Valves	Lifters
Seats	Springs
Stem Seals	Guides
Spring Inserts	Keepers
Water Pumps	Freeze Plugs

Now introducing Injector Tubes

Driven to a higher standard

Available from our world HQ in Nashville, TN
or any of our regional warehouses:

Pacific NW, Northern California, Southern California, Arizona,
New Mexico, Texas, Missouri, Illinois, Indiana, Ohio,
Massachusetts, Minnesota, New Jersey, North Carolina.

Tel: 888-432-4552 Fax: 615-777-0464 Email: Qualcast@qualcast.com
www.qualcast.com

CYLINDER HEAD PRODUCTION INCREASES/DECREASES

RESPONSE	2008	2007	2006	2005
INCREASED	33.3%	36.4%	43.3%	50.0%
REMAINED THE SAME	38.9%	41.8%	40.5%	38.2%
DECREASED	27.8%	21.8%	16.2%	11.8%
TOTAL	100%	100%	100%	100%
AVERAGE INCREASE	11.9%	15.4%	13.0%	13.8%
AVERAGE DECREASE	21.2%	20.0%	16.4%	17.1%

CRACK REPAIR ON CYLINDER HEADS

REPAIR ALTERNATIVE	Diesel Heads	Aluminum
DO REPAIRS OURSELVES	35%	35%
SEND OUT FOR REPAIR	65%	65%

PERCENTAGE OF CYLINDER HEAD CRACKS WELDED VERSUS PINNED

REPAIR ALTERNATIVE	Diesel Heads	Aluminum
WELD CRACK	37.9%	72.4%
PIN CRACK	62.1%	27.6%

PERCENTAGE OF CYLINDER HEADS REPAIRED VERSUS SCRAPPED

	Diesel Heads	Aluminum
REPAIR CYLINDER HEAD	74.5%	77.5%
SCRAP CYLINDER HEAD	25.6%	22.5%

PERCENTAGE OF TOTAL CYLINDER HEAD PRODUCTION THAT IS PERFORMANCE RELATED

PERCENTAGE OF RESPONDENTS

One to 10%	32.8%
11% to 20%	14.4%
21% to 30%	16.0%
31% to 40%	5.6%
41% to 50%	9.6%
51% to 70%	4.8%
More than 70%	10.4%
None/no answer	6.4%

As with complete engines, General Motors still dominates in the cylinder head rebuilding market according to our survey respondents, and with authority. When asked what the number one cylinder head rebuilt in their shop was, about 59 percent named a GM product.

Toyota solidified its second place standing in 2008, as 19 percent of shops indicated that Toyota heads were the number one aluminum head rebuilt in their shops, up from 13 percent in 2007.

“Other” types of cylinder heads fell 6 percentage points into a third-place tie with Ford from their second-place tie with Toyota last year. Ford also fell 3 percentage points from last year’s survey, so both “other” and Ford were named number one by 7 percent of rebuilders. Chrysler’s popularity, too, declined, with 4 percent of rebuilders naming Mopar Number 1.

Honda lost ground according to 2008 survey respondents. Honda was ranked Number 1 by 4 percent of rebuilders, the same as Chrysler. And once again, though we know shops are rebuilding Mitsubishi cylinder heads, they were not named as No. 1 by any shop.

Far fewer cylinder heads are being scrapped each year according to our survey results. We found that just over one-quarter of diesel heads (25.6 percent) are being scrapped while even fewer aluminum heads (22.5 percent) are being scrapped. Increasingly, rebuilders say they are doing fewer of these repairs themselves. Our survey results indicate that just over one-third of respondents say they do cylinder head crack repairs themselves on either aluminum or diesel heads while 65 percent say they send the heads out for repair.

It’s interesting to look at HOW cracked cylinder heads are repaired. On aluminum heads, cracks are welded 72.4 percent of the time. For diesel heads, welding is performed just 37.9 percent of the time.

SEMA SHOW: Like a Pit Stop for Your Business.



New Products. Manufacturers. Technology. Ideas. Answers.



RACING & PERFORMANCE

Performance and racing products and accessories including powertrain components racing fuels and chemicals, racing safety equipment, performance brakes, performance enhancements, racing accessories, HID light kits, car haulers, car covers, performance engine building equipment, air compressors, pop-up canopies and wax and polish.

SEMA

SHOW
2009

EVERYTHING YOU NEED NOW, ALL IN ONE PLACE.

Las Vegas Convention Center, Las Vegas, Nevada

Exhibit Days: Tuesday, Nov. 3-Friday, Nov. 6, 2009

Education Week: Monday, Nov. 2-Thursday, Nov. 5, 2009



Circle 35 for more information

The national average number of gas and diesel crankshafts reground monthly by the typical CER declined slightly for the second year in a row, falling from 20.2 units in 2007 to 19.9 units in 2008.

Gas crank production actually increased slightly in 2008 compared to

2007. Reground gas cranks rose about a half-percent, going from 17.3 to 17.4 total units, while diesel crankshaft regrounding fell about 14 percent, going from almost 3 total units produced monthly during 2007 to 2.5 total units produced in 2008.

Gas crankshaft production rose significantly in the four-cylinder category but fell somewhat in the six- and eight-cylinder categories. Diesel crankshaft production, though showing a decline overall, saw a modest increase in the eight-cylinder category. As mentioned earlier, declines are likely the result of more long lasting engine designs, especially as it pertains to blocks.

The total number of vehicles sold in the U.S. fell in 2008 to their lowest levels in a decade. Sales of cars, light trucks and medium and heavy trucks dropped 18 percent last year, according to AAIA.

Total new light vehicle sales (13.2 million vehicles) dropped 18 percent from 2007. The majority of this decline was seen in light truck sales (6.2 million vehicles, a drop of 25 percent) while cars (7 million vehicles) fell 11 percent.

Sales of medium and heavy duty trucks (323,000 vehicles) fell 19 percent in 2008. Many different factors including rising fuel prices, reduced shipping demand for goods and services can be blamed for these declines.

Used vehicle sales fell as well in 2008, although used still accounts for more than 69 percent of light vehicles sold.

Demand for scrap metal was a huge problem for engine builders searching for cores last year thanks to worldwide demand and high scrap metal prices. Cores were very hard to come by, so customer participation was crucial.

In 2008, customer returns account for more than 71 percent of both engine blocks and cylinder heads rebuilt. In 2007 those numbers were each less than 60 percent.

A huge decline in the number of cores being sourced from salvage yards was seen in this year's survey. In 2008, salvage yards accounted for just 4.1 percent of engine cores and 5.7 percent of cylinder heads, down from 16.4 percent and 12.8 percent in 2007.

AVERAGE NUMBER OF GAS AND DIESEL CRANKSHAFTS GROUND PER MONTH IN 2008

	2008	2007	2006	2005
GAS CRANKSHAFTS				
4 CYLINDER	5.9	4.4	5.6	5.3
6 CYLINDER	4.2	4.3	4.9	5.0
8 CYLINDER	7.2	8.4	8.9	8.1
OTHER	0.09	0.2	0.3	0.3
TOTAL	17.4	17.3	19.7	18.7
DIESEL CRANKSHAFTS				
4 CYLINDER	0.7	0.9	1.5	1.2
6 CYLINDER	1.1	1.4	2.3	1.8
8 CYLINDER	0.6	0.5	1.0	0.9
OTHER	0.08	0.1	0.05	0.1
TOTAL	2.5	2.9	4.9	4.0

TOTAL AVERAGE NUMBER OF GAS AND DIESEL CRANKSHAFTS GROUND PER MONTH

	2008	2007	2006	2005
TOTAL NUMBER OF CRANKSHAFTS				
4 CYLINDER	6.6	5.3	7.1	6.5
6 CYLINDER	5.3	5.7	7.2	6.8
8 CYLINDER	7.8	8.9	9.9	9.0
OTHER	.17	0.3	0.4	0.4
TOTAL	19.9	20.2	24.6	22.7

CRANKSHAFT PRODUCTION INCREASES/DECREASES

RESPONSE	2008	2007	2006	2005
INCREASED	12.5%	20.9%	21.9%	23.1%
REMAINED THE SAME	62.5%	60.5%	56.2%	50.0%
DECREASED	25.0%	18.6%	21.9%	26.9%
TOTAL	100%	100%	100%	100%
AVERAGE INCREASE	10.6%	20.0%	8.8%	19.3%
AVERAGE DECREASE	22.0%	22.1%	14.4%	13.3%



YOUR ENGINE BUILDING HEADQUARTERS

CRANKSHAFTS



Chevy Superlight Shown

Ground & Polished to Exacting Tolerances

Straight-Shot Oiling System

SCAT Cranks available in Cast, Forged & Billet

CONNECTING RODS



I-BEAM 3/8"

I-BEAM 7/16"

H-BEAM 7/16"

ULTRA LIGHT H-BEAM STROKER

THE POWER OF SCAT MANUFACTURING

SCAT offers over 1,200 rotating assembly and block combinations for Chevy, Ford, Chrysler, Pontiac and Honda applications. Complete balancing available for any SCAT rotating and block assembly.



SCAT's manufacturing and distribution facility in Redondo Beach, CA.



Ability to turn a raw billet into a crankshaft for any application up to 40" length and 10" diameter.



Rods are finished honed and balanced at SCAT.

SCAT ENTERPRISES, INC.
PHONE: 310-370-5501 • FAX: 310-214-2285
www.scatcrankshafts.com

Circle 37 for more information



SHOP EQUIPMENT PROFILE

TYPE OF EQUIPMENT	% OF SHOPS WHO OWN	AVG. NO. OWNED	AVG. AGE	% LIKELY TO PURCHASE	% WHO PURCHASED LAST YR.
Aqueous Cleaning	53.8%	1.6	12.2	1.9%	0.0%
Ultrasonic Cleaning	11.5%	1.0	16.7	3.8%	0.0%
Solvent Cleaning	69.2%	1.6	12.5	3.8%	0.0%
Aluminum Head Welding	53.8%	1.0	9.7	0.0%	0.0%
Blasting Equipment	88.5%	1.5	13.0	1.9%	1.9%
Cam Grinder	5.8%	1.7	14.5	0.0%	0.0%
CNC Machining Center	11.5%	1.0	8.0	1.9%	0.0%
Crack Detection	90.4%	1.5	16.4	0.0%	0.0%
Crankshaft Grinder	46.2%	1.2	20.7	0.0%	0.0%
Crankshaft Polisher	78.8%	1.1	14.3	0.0%	0.0%
Crankshaft Straightener	42.3%	1.0	20.3	0.0%	0.0%
Crankshaft Welder	17.3%	1.2	21.8	0.0%	0.0%
Cylinder Boring Bar	84.6%	1.5	18.5	1.9%	0.0%
Cylinder Honing Machine	88.5%	1.2	15.6	3.8%	1.9%
Electrical Testers	25.0%	2.7	11.1	0.0%	0.0%
Engine Balancing	48.1%	1.0	16.7	1.9%	0.0%
Flywheel Grinder	78.8%	1.0	16.5	1.9%	0.0%
Head/Block Resurfacer	90.4%	1.4	15.5	3.8%	1.9%
Heat Cleaning	55.8%	1.3	16.0	0.0%	0.0%
Lathe	76.9%	1.3	23.0	0.0%	0.0%
Line Boring (Blocks)	55.8%	1.2	15.2	1.9%	0.0%
Line Boring (OHC Heads)	25.0%	1.0	12.1	0.0%	0.0%
Micropolishing Equipment	23.1%	1.0	16.5	0.0%	0.0%
Pin-Fitting & Rod Reconditioning	90.4%	1.3	19.3	0.0%	0.0%
Pressure Testing	88.5%	1.1	11.6	0.0%	1.9%
Spray Washers	76.9%	1.4	14.2	3.8%	0.0%
Valve Guide and Seat Machine	90.4%	1.2	12.6	1.9%	5.8%
Valve Refacer	92.3%	1.5	15.7	3.8%	0.0%
Valve Seat Grinder/Cutter	84.6%	1.4	16.9	1.9%	0.0%

AVERAGE AGE OF ALL EQUIPMENT IS 15.2 YEARS IN 2008

PRESENT VALUE (DEPRECIATION INCLUDED) OF YOUR MACHINE SHOP EQUIPMENT

YEAR	AVERAGE	PERCENT CHANGE
2008	\$146,650	-7.3%
2007	\$158,135	-11.9%
2006	\$179,560	9.4%
2005	\$164,114	-0.8%
2004	\$177,686	-0.4%

It's certainly tempting to look at the glut of used equipment on the market as an engine builder's best option, especially in the current economic slowdown. However, shop equipment suppliers, as well as progressive shop owners, remind us that used equipment is often on the market for a reason that could include accuracy or safety concerns. "A piece of used equipment might be good for your shop," said one supplier of engine building machinery. "But it could also turn out to be nothing more than a problem for you."

Engine builders seem less eager to take the chance than in years past. Survey respondents say 56.2 percent of their purchases were of new equipment and 43.8 percent of equipment was used. In 2007 the numbers were 52.7 percent new and 47.3 percent used.

Wanting the latest technology and justifying it to your bottom line can be two entirely different things. It's a precarious fence to straddle, and shop owners are constantly faced with the prospect of upgrading to meet increasingly strict tolerances or sticking with what they have for one more year. However, results from our survey show that engine builders seem to be spending a bit more on the big ticket items.

The average amount spent on shop equipment in 2008 was \$13,684, an increase of 18.5 percent over the dismal 2007 figure of \$11,684. Large equipment suppliers admit that their business has suffered, and the current economic downturn has not helped.

Shops indicated that the average age of their equipment is around

Accurate ... and ... Versatile ...

**... RMC continues to make
the CNC choice easy ...**

And now they're even easier to afford!

RMC wants to help stimulate your business with one of its highly successful V-Series CNC Machining Centers. We've designed a plan to get you up and running on a new V30 or V40 with even more bang for your hard earned buck.

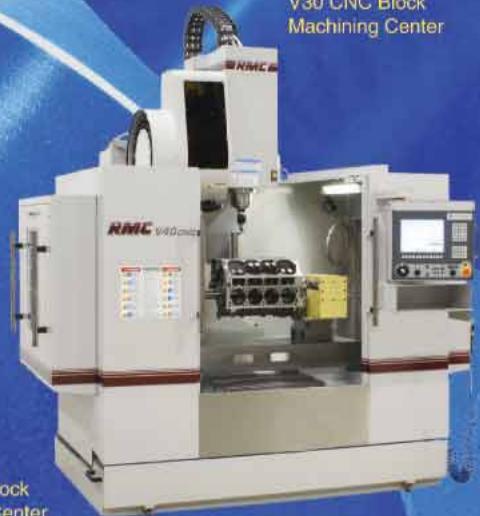
**Save up to \$10,000 or more
on add-on packages ****

That's right, it's **easier than ever** to get more engine building capabilities with your V30 or V40 CNC Block Machining Package! Hurry and you can **save \$10,000 or more** off the regular price of adding more capabilities and options ... more productivity and more cost effective engine building capabilities ... nobody does it better!

Nothing up your sleeve ... it may seem like magic to the competition, but it's really an RMC V30 CNC Engine Machining Center making quick work of machining before sleeving a horizontally opposed 4 cylinder Subaru engine ...



V30 CNC Block
Machining Center



V40 CNC Block
Machining Center



Cylinder sleeving made easy ... like this Nissan VQ35 engine block sleeved on an RMC V40 by Altered Atmosphere Motorsports in Gaithersburg Maryland ...
Photo courtesy of Altered Atmosphere

RMC

RMC Engine Rebuilding Equipment, Inc.

5775 Bridgeview Center
Saginaw, Michigan 48604

Phone (989) 754-3611
Fax (989) 754-1696

www.rmcequipment.com

(800) 248-5062

Circle 39 for more information

**** (The Fine Print) ...** RMC's 2009 Stimulus Promotion will expire on August 31, 2009. It requires purchase of a new V30 or V40 machine and RMC's 360° Block Machining Package B. This offer can not be combined with any other existing offer, promotion or product quote made by RMC or its representatives.

PERCENT OF TOTAL PRODUCTION TIME SPENT IN THE FOLLOWING AREAS

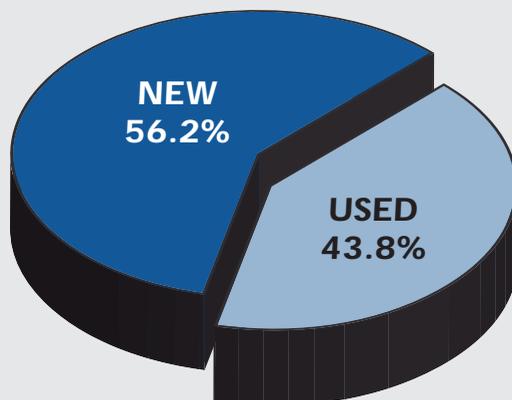
CATEGORY	2008	2007	2006	2005	2004
DISASSEMBLY/CLEANING	13.2%	12.3%	14.8%	13.2%	12.6%
BLOCK RESURFACING	8.4%	7.4%	6.5%	5.5%	6.2%
CYLINDER BORING	12.0%	11.8%	12.1%	12.9%	10.3%
CYLINDER HEAD RESURFACING	17.7%	14.9%	13.8%	17.7%	16.5%
VALVE GUIDE AND SEAT WORK	15.4%	13.8%	13.3%	15.3%	13.6%
CYLINDER HEAD CRACK REPAIR	2.3%	2.2%	2.7%	2.1%	2.9%
CONNECTING ROD RECONDITIONING	5.5%	7.9%	5.3%	6.4%	5.7%
VALVE RECONDITIONING	10.0%	10.5%	12.5%	10.3%	9.6%
FLYWHEEL GRINDING	5.3%	4.4%	4.7%	6.7%	5.2%
CLUTCH RESURFACING	0.4%	0.2%	0.5%	0.2%	0.1%
CRANK GRINDING/POLISHING	4.7%	8.4%	8.9%	6.1%	8.7%
CRANKSHAFT WELDING	0.2%	0.7%	1.3%	0.7%	0.9%
OTHER	4.7%	5.5%	4.6%	3.0%	7.7%

AVERAGE AMOUNT SPENT ON MACHINE SHOP EQUIPMENT

Year	Average Amount Spent	Percent Change*
2008	\$13,684	+18.5%
2007	\$11,548	-36.8%
2006	\$18,285	+21.8%
2005	\$15,009	-27.7%
2004	\$20,740	+5.9%

*From previous year

PERCENT OF EQUIPMENT PURCHASED THAT IS NEW AND USED



15 years old, and our survey results show that several types of equipment remain of interest for purchase in 2009.

According to our survey, popular items on our respondents' wish lists include ultrasonic and solvent cleaning equipment, cylinder honing machines, head and block resurfacing equipment, spray washers and valve refacers (3.8 percent say they are likely to purchase in the next year). Additionally, two percent of respondents say they are likely to purchase aqueous cleaning equipment, blasting equipment, CNC machining centers, cylinder boring bars, engine balancing equipment, flywheel grinders and block line boring machines.

Valve guide and seat machines remain popular: last year, 6 percent of our respondents purchased such equipment and another 2 percent say they'll likely buy the machines in 2009.

Shop owners say they're spending more time performing many of the necessary tasks to doing a complete engine build than last year, including disassembly and cleaning, block resurfacing, cylinder head resurfacing and valve guide and seat repair.

They are spending less time reconditioning connecting rods and valves and less time welding, grinding or polishing crankshafts.

For a downloadable version of this survey with additional information, visit www.enginebuildermag.com. **EB**