

# M S M P

## 2010 MACHINE SHOP MARKET PROFILE

It is 2010, and in the movie world, that is “the year we make contact.” If you remember the sequel to the classic Stanley Kubrick movie of Arthur C. Clarke’s “2001: A Space Odyssey,” you’ll realize things haven’t turned out quite as predicted.

Of course, Hollywood is always making predictions about the future that don’t come true. Where are the colonies on the Moon? Cures for all major diseases? And what about those flying cars we’ve been promised?

This being real life, bold predictions can be fun to anticipate, but it’s the little changes that often have the biggest impact on our daily lives. Over time, a small drop of water can destroy stone – likewise, small changes can have a large effect on your business as well.

For more than two decades, *Engine Builder* magazine has tracked those changes to this industry by surveying the same machine shop/custom engine rebuilder (CER) population. Though the numbers, like the industry, aren’t as strong and robust as we remember from the past, the good news is, contact between shop owner and customer has

continued, and the resulting engines are used for basic transportation, business operations and management, racing and performance applications and everything in between.

Because of the twenty-plus years 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 1,557 appropriate usable outgoing question-

naires were sent out in early January.

A total of 140 completed questionnaires were returned, resulting in a return rate of 9%. Analysis of the data was completed by Babcox Market Research.

The survey information reflects data for production year 2009. Part 1 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.

Overall, the transportation industry has taken shots to the chin over the past couple of years. Engine builders have been feeling those blows for years. How are we doing?



# ENGINE PRODUCTION DATA

Based on the open-ended question “In operating and/or promoting your machine shop, what is the biggest problem you face?”, we find shop owners have a series of complaints. The economy in general is the problem most often cited, followed by criticism of government interference in shop operation. Unfair taxes and unnecessary regulations, while admittedly in the eye of the beholder, cause considerable consternation.

Other problems include employees: finding, training, trusting and keeping them, to be precise; customers: those with no money, those with no morals and those with no creativity; competition: the guy down the street, across town or, thanks to the growth of the Internet, the guy across the country; vehicle durability issues; and complaints about general shop operations including advertising: not being able to pay for it, not seeing the value in it and not recognizing the importance of it.

One shop owner, however, says his biggest problem is not having time to do it all. Quite a problem to have, eh?

Overall, the industry is still having a tough go, but all things being equal, in fact, we are doing pretty well. The results from this year’s survey show that many of the leading indicator numbers are higher than they were a year previously. Considering the 2008 survey results were fairly to moderately depressing, that’s very positive news.

Nationally, the numbers look like this: the average machine shop produced almost 15 gas and diesel engines monthly last year, up from 13 per month in 2008, back even with the 2007 report.

While the number of four-cylinder gas engines declined by about 6 percent, six-cylinder engines saw a 35 percent increase in 2009. The number of eight-cylinder engines climbed as well, from just under 5 per month to just over 6 per month, a 24 percent increase. The number of unspecified “other” gas engines climbed as well,

## AVERAGE NUMBER OF GAS/DIESEL ENGINES REBUILT PER MONTH IN 2009

	2009	2008	2007	2006
<b>GAS ENGINES</b>				
4 CYLINDER	2.9	3.1	3.1	3.1
6 CYLINDER	3.1	2.3	3.3	2.9
8 CYLINDER	6.1	4.9	5.3	7.1
OTHER	.13	0.08	0.2	0.11
<b>TOTAL</b>	<b>12.2</b>	<b>10.4</b>	<b>11.9</b>	<b>13.2</b>
<b>DIESEL ENGINES</b>				
4 CYLINDER	.68	.75	0.7	0.5
6 CYLINDER	1.2	1.4	1.2	0.8
8 CYLINDER	0.6	0.6	0.6	0.4
OTHER	0.06	0.4	0.4	0.02
<b>TOTAL</b>	<b>2.5</b>	<b>2.8</b>	<b>2.9</b>	<b>1.7</b>
<b>TOTAL NUMBER OF ENGINES</b>				
4 CYLINDER	3.6	3.9	3.8	3.6
6 CYLINDER	4.3	3.7	4.5	3.7
8 CYLINDER	6.7	5.0	5.9	7.5
OTHER	.19	.12	0.6	0.1
<b>TOTAL</b>	<b>14.8</b>	<b>12.7</b>	<b>14.8</b>	<b>14.9</b>

## ENGINE PRODUCTION INCREASES/DECREASES

RESPONSE	2009	2008	2007	2006
INCREASED	15.8%	9.6%	26.9%	32.4%
REMAINED THE SAME	47.4%	57.7%	48.1%	39.4%
DECREASED	36.8%	32.7%	25.0%	28.2%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
AVERAGE INCREASE	29.7%	12.5%	15.1%	12.6%
AVERAGE DECREASE	20.8%	22.3%	16.5%	13.3%

## REBUILT ENGINE SALES – DOMESTIC AND IMPORT

GAS	2009	2008	2007	2006
DOMESTIC	71.8%	73.2%	72.5%	77.3%
IMPORT	28.2%	26.8%	27.5%	22.7%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
DIESEL	2009	2007	2006	2005
DOMESTIC	88.8%	84.1%	91.8%	80.7%
IMPORT	11.2%	12.9%	8.2%	19.3%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**PERCENTAGE OF ENGINE REBUILDING  
FALLING INTO THE FOLLOWING CATEGORIES**

	2009	2008	2007
AUTOMOTIVE GASOLINE	46.9%	48.3%	37.1%
PERFORMANCE	27.6%	20.5%	28.6%
INDUSTRIAL ENGINES	8.3%	7.2%	8.3%
MEDIUM-DUTY DIESEL	2.5%	6.5%	5.5%
AUTOMOTIVE DIESEL	3.7%	5.5%	3.4%
MARINE ENGINES	3.7%	2.7%	2.6%
MOTORCYCLE/MOWER/OTHER SMALL	2.8%	1.7%	2.4%
HEAVY-DUTY DIESEL	3.7%	7.2%	9.6%
OTHER TYPES	0.9%	0.4%	2.5%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**PERCENTAGE OF SHOPS THAT REBUILD  
THE FOLLOWING CATEGORIES**

	2009	2008	2007
AUTOMOTIVE GASOLINE	95.7%	100%	86.3%
PERFORMANCE	78.3%	81.3%	84.3%
INDUSTRIAL ENGINES	60.9%	65.6%	52.9%
AUTOMOTIVE DIESEL	60.9%	65.6%	49.0%
MARINE ENGINES	60.9%	43.8%	37.3%
MOTORCYCLE/MOWER/OTHER SMALL	47.8%	46.9%	41.2%
MEDIUM-DUTY DIESEL	52.2%	62.5%	52.9%
HEAVY-DUTY DIESEL	21.7%	40.6%	52.9%
OTHER TYPES	13.0%	12.5%	17.6%

**PERCENTAGE OF TOTAL REBUILT ENGINE SALES  
RETURNED AS WARRANTY**

	2009	2008	2007	2006
Returned	1.8%	1.3%	1.5%	1.8%

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

	2009	2008	2007	2006
Returned	70.4%	77.1%	71.6%	72.8%
Percent change	-8.6%	7.1%	-1.6%	-5%

to around .13 engines per month, meaning a yearly average of about 1.5 engines.

Overall, gas engine production increased 17 percent in 2009, a climb held in check only by the four-cylinder 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. However, the numbers from last year were somewhat mediocre.

Across the board, the number of diesel engines produced was flat or down from 2008 to 2009, though they remain at a fairly robust level historically.

Posting big gains in 2007 after a lackluster 2006, diesel engines have remained strong and engine builders have continued to explore how compression ignition engines can play a part in their shop's market make-up. The International Big R Show, co-sponsored by the Automotive Parts Rebuilders Association (APRA) and *Engine Builder*, will feature a full-day of seminars devoted to increasing your awareness of the diesel opportunities. For information see page 64 of this issue, or visit [www.apra.org](http://www.apra.org).

The average national monthly gas and diesel engine production of nearly 15 units translates to 180 engines produced annually. This is up from the 156 reported last year, and 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 720,000 to 990,000 gas and diesel engines built during production year 2009. 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 slightly larger universe. Last year the market scope was 624,000 to 858,000 units.

If you add in the estimated 450,000 engines remanufactured annually by the approximately 30 U.S. production engine



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

	2009	2008
SHORT BLOCKS	15.9%	10.9%
LONG BLOCKS	18.4%	13.0%
COMPLETE ENGINES	18.9%	27.7%
HEADS*	36.1%	40.2%
CRANKS	10.7%	8.3%

\*Not used on long blocks or complete engines

## PERCENTAGE OF TOTAL DIESEL ENGINE REBUILDING PRODUCTION IN FOLLOWING CATEGORIES

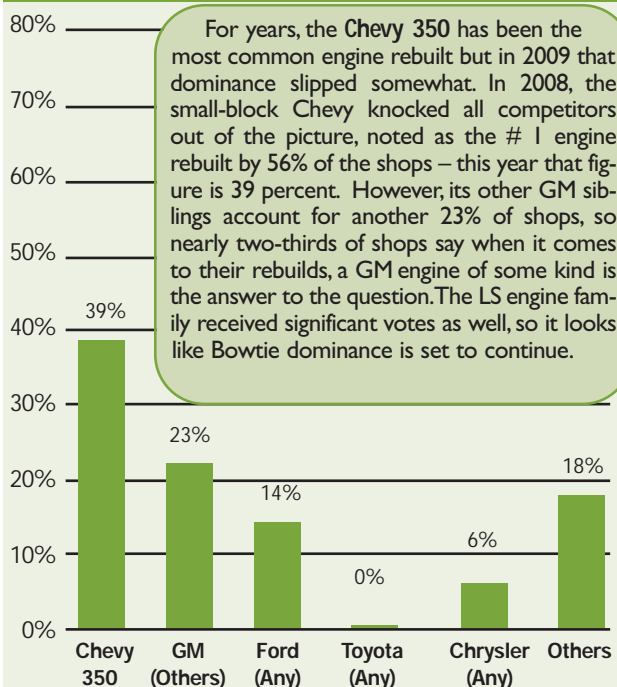
	2009	2008
SHORT BLOCKS	8.3%	9.0%
LONG BLOCKS	8.8%	6.3%
COMPLETE ENGINES	18.2%	11.7%
HEADS*	52.1%	61.3%
CRANKS	12.6%	11.7%

\*Not used on long blocks or complete engines

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

	PERCENTAGE OF RESPONDENTS
One to 10%	26.4%
11% to 20%	13.2%
21% to 30%	6.6%
31% to 40%	6.6%
41% to 50%	12.1%
51% to 70%	9.9%
More than 70%	13.2%
None/no answer	12.1%

## PERCENTAGE RANKING AS #1 ENGINE REBUILT



remanufacturers (PERs), the combined total number of engines rebuilt in 2009 by CERs and PERs would be approximately 1.17 million to 1.44 million units. This compares to approximately 1.07 million to 1.31 million engines produced by PERs and CERs during production year 2008.

Over the past few years we have recognized that the number of full-service machine shops has declined. As evidence, industry participation as well as our own circulation have changed. However, it may be time to retire the word “traditional” from the aftermarket lexicon. As you’ve read in these pages for a decade or more, traditional is obsolete. Doing things the old-fashioned way is the fastest way to not doing them at all. We continue to believe that there are many engine building outlets providing machine shops additional sales and service that are not necessarily reflected in these “complete engine” numbers, and we support those non-traditional efforts.

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 \$3.04 billion and \$3.74 billion in rebuilt engine sales in 2009.

By breaking the engine building business into five basic categories 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) – we asked shops for the percentage of business they did in each. In gas engines, the percentage of production of short blocks, long blocks and crankshafts showed an increase. Complete engines and cylinder head work decreased from last year’s report. For diesel engine builders, cylinder head work and short block production decreased while long blocks, complete engines and crankshaft production increased in 2009.

Performance-related work continues to be an important part of today’s engine production mix. More than 23 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.

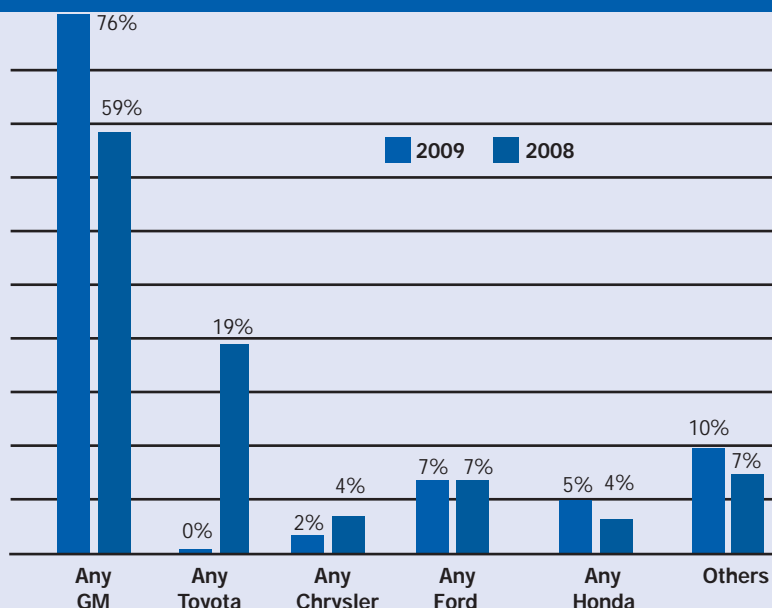
# CYLINDER HEAD PRODUCTION DATA



## AVERAGE NUMBER OF GAS/DIESEL CYLINDER HEADS REBUILT PER MONTH IN 2009

	2009	2008	2007
<b>GAS CYLINDER HEADS</b>			
4 CYLINDER	13.4	13.8	16.7
6 CYLINDER	8.0	7.1	10.0
8 CYLINDER	14.9	12.4	14.9
OTHER	.15	.25	0.8
TOTAL	36.4	33.6	42.4
<b>DIESEL CYLINDER HEADS</b>			
4 CYLINDER	2.2	2.7	2.4
6 CYLINDER	2.9	3.2	3.6
8 CYLINDER	2.1	1.6	1.6
OTHER	0.3	0.4	0.2
TOTAL	7.5	7.9	7.8
<b>TOTAL NUMBER OF CYLINDER HEADS</b>			
4 CYLINDER	15.6	16.5	19.1
6 CYLINDER	10.9	10.3	13.6
8 CYLINDER	17.0	14.0	16.5
OTHER	0.45	0.7	1.0
TOTAL	43.9	41.5	50.2

## PERCENT NAMING AS NUMBER ONE CYLINDER HEAD REBUILT



## PERCENT OF CYLINDER HEAD REBUILDING THAT IS ALUMINUM

Average 2009 58.1%

Average 2008 56.3%

## PERCENT OF CYLINDER HEAD REBUILDING THAT IS DIESEL

Average 2009 22.8%

On a national basis, combined gas and diesel cylinder head production increased 6 percent, climbing from a total of 42 units rebuilt monthly in 2008 to 44 units rebuilt monthly in 2009.

Gas head production increased about 7.6 percent, going from 33.6 units monthly in 2008 to 36.4 units produced last year. Across the board, the numbers were mixed: four-cylinder head production declined 3 percent; six-cylinder production increased 11 percent and eight-cylinder head rebuilding increased 17 percent in 2009. "Other" cylinder heads (likely small heads for kart motors or other types of small engines) saw a further production decrease in 2009. The decline is likely the result of the continuing changes in the industry.

Diesel heads rebuilt monthly saw a generally downward trend, reversing increases seen last year. Total diesel cylinder head production fell slightly from 7.9 units rebuilt monthly in 2008 to 7.5 units in 2009, bringing with it a mix of results. Four-cylinder diesel head production fell 19 percent; six-cylinder diesel head production dropped 9 percent; eight-cylinder head production jumped 19 percent over 2008 numbers and "other diesel cylinder heads" dropped 25 percent, a reduction from .4 cylinder head per month in 2008 (4.8 per year) to .3 cylinder head per month (3.6 per year) in 2009.

The percentage of cylinder head rebuilding that is aluminum continued to increase in 2009. In 2007, 48.9 percent of cylinder head work was done in aluminum; in 2008, 56.3 percent of repaired cylinder heads were aluminum, and the 2009 results show that 58.1 per-



# CYLINDER HEAD PRODUCTION DATA

## CYLINDER HEAD PRODUCTION INCREASES/DECREASES

RESPONSE	2009	2008	2007	2006
INCREASED	32.5%	33.3%	36.4%	43.3%
REMAINED THE SAME	50.0%	38.9%	41.8%	40.5%
DECREASED	17.5%	27.8%	21.8%	16.2%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
AVERAGE INCREASE	18.4%	11.9%	15.4%	13.0%
AVERAGE DECREASE	25.7%	21.2%	20.0%	16.4%

## CRACK REPAIR ON CYLINDER HEADS

REPAIR ALTERNATIVE	Diesel Heads	Aluminum
DO REPAIRS OURSELVES	43%	63%
SEND OUT FOR REPAIR	57%	37%

## PERCENTAGE OF CYLINDER HEAD CRACKS WELDED VERSUS PINNED

REPAIR ALTERNATIVE	Diesel Heads	Aluminum
WELD CRACK	14.4%	75.4%
PIN CRACK	85.6%	24.6%

## PERCENTAGE OF CYLINDER HEADS REPAIRED VERSUS SCRAPPED

	Diesel Heads	Aluminum
REPAIR CYLINDER HEAD	75.9%	79.4%
SCRAP CYLINDER HEAD	24.1%	20.6%

## PERCENTAGE OF TOTAL CYLINDER HEAD PRODUCTION THAT IS PERFORMANCE RELATED

	PERCENTAGE OF RESPONDENTS
One to 10%	30.8%
11% to 20%	17.6%
21% to 30%	13.2%
31% to 40%	7.7%
41% to 50%	8.8%
51% to 70%	3.3%
More than 70%	12.1%
None/no answer	6.6%

cent of cylinder heads rebuilt are aluminum, continuing to push the percentage higher than we have ever seen in this report.

As with complete engines, General Motors continues to dominate in the cylinder head rebuilding market according to our survey respondents, and it's not even a fair fight. When asked what the number one cylinder head rebuilt in their shop was, 76 percent named a GM product.

"Other" types of cylinder heads climbed into second place with 10 percent of shops naming any one of several heads as their top product. Ford remained in third place with the same number as last year's survey: Ford was named Number 1 by 7 percent of rebuilders.

Honda climbed in popularity, according to 2009 survey respondents. Honda was ranked Number 1 by 5 percent of rebuilders, up from 4 percent last year. Chrysler's popularity declined, with 2 percent of rebuilders naming Mopar Number 1, down from 4 percent in 2008.

The big surprise this year involved Toyota. Though we know there are shops rebuilding Toyota cylinder heads, they were not named as No. 1 by any shop, plummeting from 19 percent and a second-place ranking last year.

Respondents tell us that the percentage of cylinder head rebuilding that is diesel is 22.8 percent. Since this is the first time we have reported these results it will be interesting over time to watch how the diesel cylinder head work changes.

According to our survey results, recycling in the machine shop continues to be strong, and fewer heads are being scrapped each year. We found that just under one-quarter of diesel heads (24.1 percent) are being scrapped while even fewer aluminum heads (20.6 percent) are being scrapped. Increasingly, rebuilders say they are doing fewer of these repairs themselves. Our survey results indicate that nearly two-thirds of



# CRANKSHAFT PRODUCTION DATA

respondents say they do aluminum cylinder head crack repairs themselves and 43 percent do their own diesel head repair. Some rebuilders have expressed a concern that once they send part of a repair out they are at risk for losing even more of the job.

It's interesting to look at HOW cracked cylinder heads are repaired. On aluminum heads, cracks are welded 75.4 percent of the time. For diesel heads, welding is performed just 14.4 percent of the time. Pinning is dominant in repairing cast iron cylinder heads.

The national average number of gas and diesel crankshafts reground monthly by the typical CER continued to decline for the third year in a row, falling from 19.9 units in 2008 to 19.6 units in 2009.

Diesel crank production actually increased in 2009 compared to 2008. Reground diesel cranks rose from 2.5 to 3.1 total units per month, while gasoline crankshaft regrinding fell about 4 percent, going from almost 17.4 total units produced monthly during 2008 to 16.6 total units produced in 2009.

Gas crankshaft production fell in all segments but diesel crankshaft production saw a modest increase across the board. Despite gains, however, both gas and diesel crank production is well below the numbers from previous years.

In 2009, customer returns accounted for more than 66 percent of engine blocks rebuilt. In 2008 that number was over 71 percent. With cylinder heads, 61 percent of cores come from customer returns, down from 2008's number of 71.1 percent.

New castings have seen a dramatic increase as a source of cores for both engine blocks and cylinder heads: in 2008 they accounted for 8.7 percent of the engine blocks and 11.5 percent of heads; in 2009 they stood at 15.6 percent of blocks and 22.6 percent of heads. Rapidly advancing manufacturing capabilities now means that if it's not available anywhere else, a new version of a hard-to-find core can be made.

In testament to the steep decline in the scrap metal market, engine builders who once complained that certain cores weren't available because they were being shipped overseas say they can once again get what they need. In 2009, salvage yards accounted for 9.3 percent of engine cores and 8.6 percent of cylinder heads, up from 4.1 percent and 5.7 percent, respectively, in 2008.

At the other end of the spectrum, the number of cores being sourced from

## AVERAGE NUMBER OF GAS AND DIESEL CRANKSHAFTS GROUND PER MONTH IN 2009

	2009	2008	2007	2006
<b>GAS CRANKSHAFTS</b>				
4 CYLINDER	5.6	5.9	4.4	5.6
6 CYLINDER	4.0	4.2	4.3	4.9
8 CYLINDER	6.7	7.2	8.4	8.9
OTHER	.26	0.09	0.2	0.3
TOTAL	16.6	17.4	17.3	19.7
<b>DIESEL CRANKSHAFTS</b>				
4 CYLINDER	1.0	0.7	0.9	1.5
6 CYLINDER	1.2	1.1	1.4	2.3
8 CYLINDER	.7	0.6	0.5	1.0
OTHER	.17	0.08	0.1	0.05
TOTAL	3.1	2.5	2.9	4.9

## TOTAL AVERAGE NUMBER OF GAS AND DIESEL CRANKSHAFTS GROUND PER MONTH

	2009	2008	2007	2006
<b>TOTAL NUMBER OF CRANKSHAFTS</b>				
4 CYLINDER	6.6	6.6	5.3	7.1
6 CYLINDER	5.2	5.3	5.7	7.2
8 CYLINDER	7.4	7.8	8.9	9.9
OTHER	.43	.17	0.3	0.4
TOTAL	19.6	19.9	20.2	24.6

## CRANKSHAFT PRODUCTION INCREASES/DECREASES

RESPONSE	2009	2008	2007	2006
INCREASED	9.1%	12.5%	20.9%	21.9%
REMAINED THE SAME	69.7%	62.5%	60.5%	56.2%
DECREASED	21.2%	25.0%	18.6%	21.9%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
AVERAGE INCREASE	12.7%	10.6%	20.0%	8.8%
AVERAGE DECREASE	14.3%	22.0%	22.1%	14.4%





# SHOP EQUIPMENT DATA

## SHOP EQUIPMENT PROFILE

TYPE OF EQUIPMENT	% OF SHOPS WHO OWN	AVG. NO. OWNED	AVG. AGE	% LIKELY TO PURCHASE	% PURCHASED LAST YR.
Aqueous Cleaning	47.1%	1.8	13.2	0.0%	2.9%
Ultrasonic Cleaning	8.8%	1.0	7.0	0.0%	2.9%
Solvent Cleaning	76.5%	1.6	16.1	0.0%	2.9%
Aluminum Head Welding	32.4%	1.2	12.7	0.0%	2.9%
Blasting Equipment	88.2%	1.3	16.4	0.0%	2.9%
Cam Grinder	11.8%	1.0	15.0	0.0%	2.9%
CNC Machining Center	14.7%	1.0	5.5	2.9%	2.9%
Crack Detection	94.1%	1.7	16.1	0.0%	0.0%
Crankshaft Grinder	58.8%	1.1	21.4	0.0%	0.0%
Crankshaft Polisher	76.5%	1.0	15.9	0.0%	0.0%
Crankshaft Straightener	47.1%	1.0	19.9	0.0%	0.0%
Crankshaft Welder	20.6%	1.1	19.5	0.0%	0.0%
Cylinder Boring Bar	85.3%	1.2	17.4	2.9%	0.0%
Cylinder Honing Machine	91.2%	1.1	15.1	2.9%	0.0%
Dynamometer	17.6%	1.0	12.7	0.0%	0.0%
Electrical Testers	14.7%	3.2	7.3	0.0%	2.9%
Engine Balancing	50.0%	1.0	10.4	0.0%	0.0%
Flywheel Grinder	88.2%	1.1	17.4	2.9%	0.0%
Head/Block Resurfacers	94.1%	1.3	13.6	0.0%	0.0%
Heat Cleaning	41.2%	1.3	20.6	0.0%	0.0%
Lathe	76.5%	1.3	18.0	2.9%	2.9%
Line Boring (Blocks)	50.0%	1.1	15.3	0.0%	0.0%
Line Boring (OHC Heads)	20.6%	1.0	11.4	0.0%	0.0%
Micropolishing Equipment	17.6%	1.0	11.3	0.0%	0.0%
Pin-Fitting & Rod Reconditioning	91.2%	1.1	18.4	0.0%	0.0%
Pressure Testing	79.4%	1.1	12.1	0.0%	2.9%
Spray Washers	76.5%	1.2	16.0	0.0%	0.0%
Valve Guide and Seat Machine	94.1%	1.1	15.5	0.0%	0.0%
Valve Refacer	97.1%	1.4	14.0	0.0%	0.0%
Valve Seat Grinder/Cutter	70.6%	1.2	14.5	0.0%	0.0%

**AVERAGE AGE OF ALL EQUIPMENT IS 14.7 YEARS IN 2009**

## PRESENT VALUE (DEPRECIATION INCLUDED) OF YOUR MACHINE SHOP EQUIPMENT

YEAR	AVERAGE	PERCENT CHANGE
2009	\$179,066	22%
2008	\$146,650	-7.3%
2007	\$158,135	-11.9%
2006	\$179,560	9.4%
2005	\$164,114	-0.8%

core suppliers has seen a steep decline. In 2009, core suppliers accounted for 8.8 percent of engine cores and 7.8 percent of cylinder heads, down from 15.8 percent and 11.5 percent in 2008.

According to the Automotive Aftermarket Industry Association (AAIA), the forecast for this industry's future is "slower than anticipated" growth. Last year AAIA anticipated growth of 4.5 percent in 2010. The latest AAIA Industry Factbook, however, says that totals have been revised down slightly, with the 2009 growth rate forecast to be -1.7 percent. For 2010, the growth rate is now at 3.8 percent, compared to last year's expectation of 4.5 percent growth.

As this market continues to shrink, shops close and the avenues for advertising, selling and buying used equipment continue to expand, 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.

Engine builders continue to express reluctance to take a chance on used equipment. 2009 Survey respondents say 60.2 percent of their purchases were of new equipment and 39.8 percent of equipment was used. In 2008 the numbers were 56.2 percent new and 43.8 percent used.

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. Despite the need to stay up-to-date with the best equipment possible, the economic downturn has had its belt-tightening effect in this area as well.

The average amount spent on shop equipment in 2009 was \$10,566,



## PERCENT OF TOTAL PRODUCTION TIME SPENT IN THE FOLLOWING AREAS

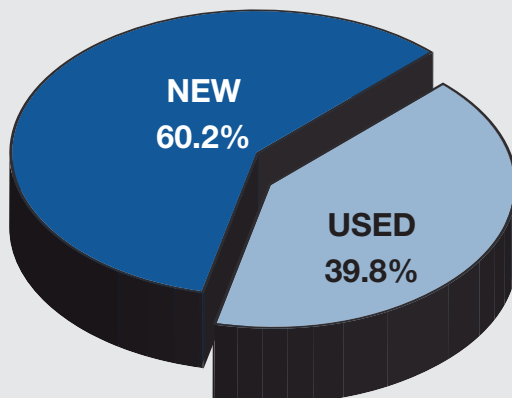
CATEGORY	2009	2008	2007	2006	2005
DISASSEMBLY/CLEANING	17.1%	13.2%	12.3%	14.8%	13.2%
BLOCK RESURFACING	6.9%	8.4%	7.4%	6.5%	5.5%
CYLINDER BORING	11.0%	12.0%	11.8%	12.1%	12.9%
CYLINDER HEAD RESURFACING	15.4%	17.7%	14.9%	13.8%	17.7%
VALVE GUIDE AND SEAT WORK	12.6%	15.4%	13.8%	13.3%	15.3%
CYLINDER HEAD CRACK REPAIR	2.6%	2.3%	2.2%	2.7%	2.1%
CONNECTING ROD RECON	5.8%	5.5%	7.9%	5.3%	6.4%
VALVE RECONDITIONING	10.8%	10.0%	10.5%	12.5%	10.3%
FLYWHEEL GRINDING	3.9%	5.3%	4.4%	4.7%	6.7%
CLUTCH RESURFACING	0.3%	0.4%	0.2%	0.5%	0.2%
CRANK GRINDING/POLISHING	5.1%	4.7%	8.4%	8.9%	6.1%
CRANKSHAFT WELDING	1.2%	0.2%	0.7%	1.3%	0.7%
OTHER	7.3%	4.7%	5.5%	4.6%	3.0%

## AVERAGE AMOUNT SPENT ON MACHINE SHOP EQUIPMENT

Year	Average Amount Spent	Percent Change*
2009	\$10,566	-22.8%
2008	\$13,684	18.5%
2007	\$11,548	-36.8%
2006	\$18,285	21.8%
2005	\$15,009	-27.7%

\*From previous year

## PERCENT OF EQUIPMENT PURCHASED THAT IS NEW AND USED



a drop of 22.8 percent over a resurgent 2008 figure of \$13,684. In fact, last year's numbers are the lowest we've seen in some time. Many large equipment suppliers can attest to the accuracy of this.

The increase in 2008 sales may be responsible for two different sets of numbers, a lower 2009 sales figure and a higher 2009 equipment value. Shops indicate that the present value of their equipment (including depreciation) averages \$179,066, a 22 percent increase over 2008's figure.

Shops indicated that the average age of their equipment is around 15 years old, and our survey results show that several types of equipment remain of interest for purchase in 2010.

According to our survey, popular items on our respondents' shopping lists include aqueous, ultrasonic and solvent cleaning equipment, aluminum head welding equipment, blasting equipment, cam grinding equipment, CNC machining centers electrical testers, Lathes and pressure testing equipment (2.9 percent say they purchased at least 1 of these machines last year). Additionally, another nearly three percent of respondents say they are likely to purchase CNC machining centers, cylinder boring bars, cylinder honing equipment, flywheel grinders and lathes.

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, valve reconditioning and crankshaft welding, but less time with valve and seat work, block resurfacing and cylinder head resurfacing.

A complete downloadable version of this report can be found at [www.enginebuildermag.com](http://www.enginebuildermag.com). Part 2 of the Machine Shop Market Profile will be available in July. **EB**