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The rebuilt engine market has certainly been knocked around the past few years, but despite the bruises, it hasn't been knocked out. We at *Engine Builder* attribute this survival to one thing: diversity.

To us, diversity means a shop's ability to do an increasing amount of various types of engine builds and engine machine work in a variety of engine markets. CERs today are more and more capable of doing everything from a single cylinder gas or diesel slugger to a 16-cylinder marine, industrial or off-road engine to a high performance street rod or racing engine.

Diversity means a shop that's made investments in equipment capabilities to do their engine machine work or engine builds faster, cheaper and at consistent,

unmatched-quality levels.

It means shops that have invested in training, technical resources and developed relationships with their suppliers that make them the known experts in their fields. Their customers seek them out for all of these reasons

Part 1 of our annual Machine Shop Market Profile, presented in print in the June 2011 issue of *Engine Builder* magazine, gave information concerning all types of production data, looking at average monthly engine, head and crankshaft production, core sourcing, analysis of shop equipment ownership, previous equipment purchases and future buying intentions, as well as the percentage of production time spent in specific areas of engine disassembly, cleaning, machining and reassembly.

In this part, we're taking a look at

financial data, size of shop, years in business, employee information and customer-base analysis of the typical custom engine rebuilder (CER).

As we stated last month, we feel the numbers generated by the Machine Shop Market Profile are as pristine and reliable as possible. Consequently, data contained in this study reflects the most accurate trending information available to CERs and their suppliers.

Information contained in our study represents data for production year 2010. In our estimation, about a third of our subscribers – representing about 5,500 locations – are full-service automotive machine shops and engine builders capable of doing any type of machine work. The rest may be rebuilders with limited shop equipment, buying and installing parts, doing the machine work they



Shop Sales Profile

2010 GROSS SALES VOLUME (PARTS & LABOR)

GROSS SALES VOLUME	2010	2009	2008	2007
LESS THAN \$250,000	44.9%	61.1%	55.7%	50.0%
\$250,000 - \$499,999	25.2%	18.3%	20.6%	22.0%
\$500,000 - \$749,999	11.6%	6.1%	9.8%	11.4%
\$750,000 - \$999,999	4.1%	6.1%	2.1%	6.4%
\$1 - \$1.5 MILLION	5.4%	2.3%	3.6%	5.3%
\$1.5 - \$2 MILLION	4.8%	1.5%	2.1%	2.3%
\$2 - \$2.5 MILLION	0%	3.1%	1.5%	0.4%
MORE THAN \$2.5 MILLION	4.1%	1.5%	4.6%	2.3%
AVERAGE	\$567,969	\$475,160	\$527,657	\$506,098

2010 GROSS SALES VOLUME COMPARISON

	2010	2009	2008	2007
INCREASED	34.0%	31.0%	28.5%	32.1%
REMAINED THE SAME	37.5%	36.5%	31.6%	37.0%
DECREASED	28.5%	32.5%	39.9%	30.9%

PERCENT CHANGE IN GROSS SALES VOLUME

THOSE REPORTING AN:	INCREASE	DECREASE
UP TO 10%	67.3%	50.0%
11 - 20%	20.4%	21.1%
21 - 30%	6.1%	18.4%
31 - 40%	2.0%	2.6%
41% OR HIGHER	4.1%	7.9%
AVERAGE 2010	12.2%	17.3%
AVERAGE 2009	13.8%	16.4%
AVERAGE 2008	10.9%	15.6%

GROSS SALES VOLUME ATTRIBUTED TO MACHINE SHOP PARTS & LABOR WORK

PERCENT OF SALES VOLUME	2010	2009	2008	2007
UP TO 10%	7.2%	5.7%	4.4%	5.5%
11 - 20%	8.0%	9.8%	8.3%	5.1%
21 - 30%	6.5%	3.3%	2.0%	7.9%
31 - 40%	2.6%	4.1%	3.9%	2.8%
41 - 50%	9.4%	7.4%	5.5%	7.5%
51 - 60%	1.4%	4.1%	5.0%	3.6%
61 - 70%	3.6%	3.3%	2.2%	2.4%
71 - 80%	5.1%	5.7%	7.2%	8.7%
81 - 90%	4.3%	4.9%	8.3%	8.3%
91% OR MORE	50.7%	51.6%	47.5%	48.2%
AVERAGE	71.5%	73.2%	71.9%	74.1%
PERCENT CHANGE	-1.8%	1.8%	-2.9%	0.1%

can while jobbing out other service operations that they can't easily perform.

Based on a universe of 3,500-4,000 full-service automotive machine shops, this market segment built 924,000-1.32 million gas and diesel engines during production year 2010. During production year 2009 the national average gas and diesel engine production by the custom engine builder and rebuilder ranged between 720,000 and 990,000 units.

Adding in the estimated 450,000 engines remanufactured annually by approximately 30 U.S. production engine remanufacturers (PERs), would place the combined total number of engines rebuilt in 2010 by CERs and PERs at 1.37 million to 1.77 million units. This compares to approximately 1.17 million to 1.44 million engines produced by PERs and CERs during production year 2009.

At an average retail cost of \$2,600 per engine, that indicates the machine shop market generated between \$3.56 billion and \$4.6 billion in rebuilt engine sales in 2010.

To recap the production specifics: From speaking with engine builders at recent trade shows, individually things seem to be better for many shops than they've seen in a long time. All things being equal, we are doing pretty well.

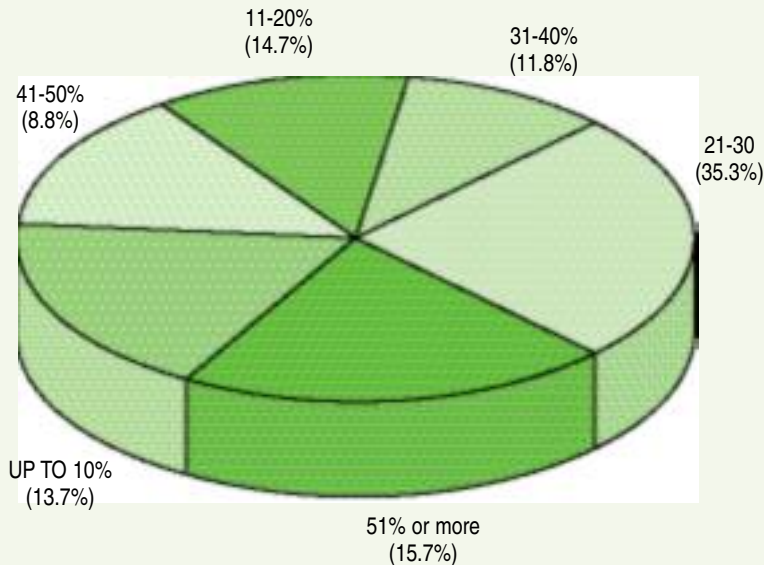
The results from this year's survey show that many of the leading indicator numbers continue to trend higher than they were last year. And considering the hole we've been trying to climb out of, we think that's great news.

Nationally, the numbers look like this: the average machine shop pro-



Shop Sales Profile

2010 GROSS PROFIT MARGIN ON MACHINE SHOP PARTS AND LABOR



2010 AVERAGE: 33.1% 2009 AVERAGE: 35.0% 2008 AVERAGE: 35.0%

duced 22 gas and diesel engines monthly last year, up from 15 per month in 2009, the highest number we've seen in several years; in fact, it's the highest combined total we've tabulated since 1992!

Increases were seen virtually across the board. Four-cylinder and eight-cylinder gas engines posted gains of 28 and 40 per cent, respectively. The number of four cylinders produced climbed by slightly more than 1 per month while the number of eight-cylinder engines jumped from just over 6 per month to just more than 10. Last year's big growth market, six-cylinder engines, saw a more modest, but still respectable, 6 percent increase in 2010. The number of unspecified "other" gas engines climbed as well, from a yearly average of about 1.5 engines in 2009 to slightly more than 6 per year in 2010.

Overall, gas engine production increased 32 percent in 2010.

The diesel engine segment continues to impress, and more than redeemed its flat-to-down trend we've seen the past few years.

In all categories, the number of diesel engines increased from 2009 to 2010. An impressive 40 percent increase in diesel engines produced translates into nearly 1-1/2 more per month. Respondents say diesel engines account for just over 4 engines per month.

Average total gross sales volume (attributed to parts and labor) in 2010 was up 16 percent from the previous year. Sales volume for the average shop was almost \$568,000 in 2010, up from \$475,000 in 2009. This survey reversed last year's decline (a drop of 10 percent was reported in 2009) and, in fact, is the highest total gross sales volume we've seen in at least five years.

Of course, blips occur, even when the news is good. Moderate decreases in parts and labor sales were seen in 2010 at the lowest end of the scale (less than \$250,000 in sales) and in

2010 GROSS PROFIT MARGIN COMPARISON

PERCENT OF SHOPS WHOSE PROFITS:

	2010	2009	2008	2007
INCREASED	16.9%	22.7%	16.7%	16.7%
REMAINED THE SAME	56.5%	53.6%	57.7%	60.8%
DECREASED	26.6%	23.6%	25.6%	22.5%

PERCENT CHANGE IN GROSS PROFIT MARGIN*

RANGE	SHOPS SEEING:	INCREASE	DECREASE
UP TO 10%		71.4%	65.4%
11 - 20%		14.3%	15.4%
21 - 30%		4.8%	11.5%
31 - 40%		0.0%	0%
41% OR HIGHER		9.5%	7.7%
AVERAGE		13.5%	13.8%

PRETAX PROFIT

	2010	2009	2008	2007
AVERAGE	\$46,951	\$38,974	\$53,590	\$43,001
MEDIAN	\$29,500	\$28,000	\$28,000	\$25,000
PERCENT CHANGE	20.4%	-27.3%	24.6%	-1.7%

*While relatively few shops gave a profit figure (for the middle table above), just over 85% of respondents who saw an increase in profit margin saw an increase of 20% or less.



Shop Sales Profile

the middle of the scale (\$750,000-\$999,999); But those moderate to significant drops were not able to drag down the rest of the field.

On the whole, the average increase in business for those shops reporting an increase tallied just over 12%, down from last year's survey. The average decrease (for those shops reporting a decrease in gross sales) rose slightly, from 16.4% to 17.3%. We've unfortunately seen this side of the ledger continue to lean in this direction for the past several years.

According to respondents, in 2010 machine shop parts and labor work accounted for an average of 71.5 percent of shops' gross sales volume. This is a decrease of about the same 2 percent it increased last year. During the same period, the national average gross profit margin on machine shop parts and labor declined a bit from the previous year's number. The 2010 figure is 33.1 percent, down slightly from the past few years.

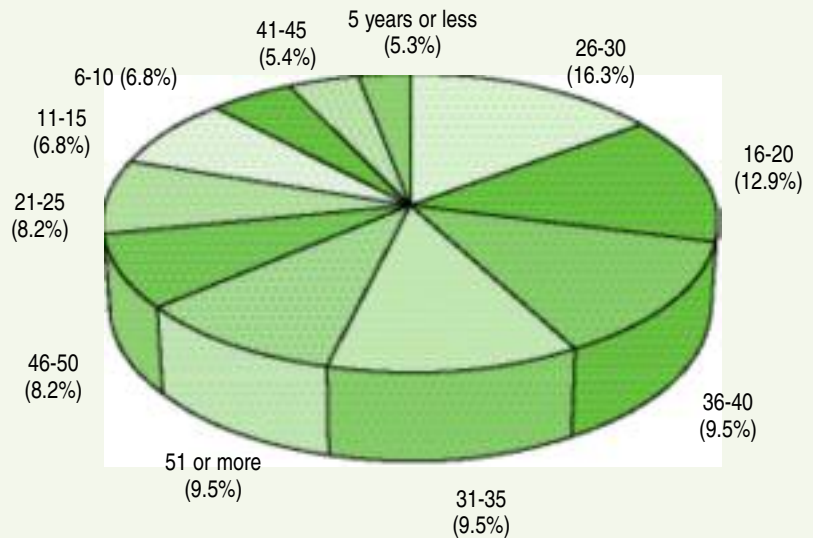
Actually, the report from 2009 showed the dollars were still strong – a true indicator, according to many industry watchdogs who say this market (at least the discretionary part of it) lags behind the overall economy both on the negative and the positive side. In other words, when things get bad, we don't necessarily feel the effects immediately. Not do we feel the rebound when things get better (or when indications seem to lead that way).

According to respondents, more say things have stayed the same than decreased, so that's a good thing, but fewer say gross profits actually increased.

Overall, the average increase in gross profit margins in 2010 (according to those who reported an increase) was about 13.5 percent.

The national average for the number of years a shop has been in business was almost 30 years – a positive

YEARS SHOP HAS BEEN IN BUSINESS



The typical shop has been in business for 29.6 years.

SHOPS EMPLOYING SHOP FOREMAN

	2010	2009	2008	2007
YES	40.9%	44.4%	52.8%	38.2%
NO	59.1%	55.6%	47.2%	61.8%
If "Yes," is foreman a working machinist?		Yes 77.8%	No 22.2%	

SHOP FOREMAN TYPICAL YEARLY EARNINGS

	2010	2009	2008	2007
EARNINGS	\$42,264	\$45,000	\$45,863	\$43,947
PERCENT CHANGE	-6.1%	-1.7%	4.4%	2.2%

AVERAGE HOURLY WAGE OF EMPLOYEES

TITLE	2010	2009	2008	2007
EXPERIENCED MACHINE OPERATOR	\$18.60	\$17.89	\$17.70	\$18.36
NEWLY HIRED MACHINE OPERATOR	\$11.90	\$9.88	\$10.13	\$11.34
COUNTERMAN/SALES	\$13.80	\$13.73	\$12.43	\$12.81
CORE DISASSEMBLY PERSON	\$10.30	\$9.32	\$9.25	\$10.45



Shop Description Profile

TOTAL NUMBER OF EMPLOYEES IN COMPANY

NUMBER OF EMPLOYEES	2010	2009	2008	2007
1-5	69.4%	83.3%	75.0%	72.7%
6-10	22.2%	4.2%	15.6%	16.4%
11-15	0%	8.3%	3.1%	7.3%
16-20	2.8%	4.2%	6.3%	1.8%
21 OR MORE	5.6%	0.0%	0.0%	1.8%
AVERAGE	5.6	4.9	4.4	4.4
PERCENT CHANGE	14.8%	11.4%	0.0%	-20.3%

NUMBER OF MACHINE SHOP EMPLOYEES PER SHOP

MACHINE SHOP EMPLOYEES	2010	2009	2008	2007
1	20.6%	12.5%	30.3%	22.9%
2	38.2%	41.7%	30.3%	37.5%
3	8.8%	33.3%	12.1%	16.7%
4	8.8%	0%	24.2%	8.3%
5	8.8%	4.2%	0%	2.1%
6-10	11.8%	4.2%	0%	12.5%
11 OR MORE	2.9%	4.2%	3.0%	0%
AVERAGE	3.3	3.1	2.8	2.8
PERCENT CHANGE	6.5%	-3.1	3.2	2.8

AVERAGE LENGTH OF MACHINE SHOP EMPLOYMENT AT ONE LOCATION

NUMBER OF YEARS	2010	2009	2008	2007
1	5.6%	7.7%	3.2%	2.1%
2	2.8%	7.7%	6.5%	2.1%
3	8.3%	0%	16.1%	8.5%
4	2.8%	11.5%	3.2%	10.6%
5	11.1%	3.8%	9.7%	2.1%
6-10	13.9%	16.1%	16.1%	27.7%
11-20	44.4%	23.1%	29.0%	23.4%
21 OR MORE	11.1%	15.4%	16.1%	23.4%
AVERAGE (YEARS)	12.7	12.0	12.1	13.4
PERCENT CHANGE	5.8%	-0.8%	-9.7%	-1.4%

SHOPS WITH SERVICE BAYS FOR INSTALLATION/REPAIR

PERCENT WHICH HAVE BAYS	2010	2009	2008	2007
YES	20%	22.2%	22.2%	23.2%
NO	73.3%	74.1%	70.4%	75.1%
NO ANSWER	6.7%	3.7%	7.4%	1.7%
AVERAGE (FOR THOSE THAT HAVE)	4.3	3.2	2.7	4.7

aging trend we've watched for the past few years. But a bright spot too, is the number of new or young shops responding to our survey. More than 20 percent of shop owners indicate they have been in business less than 15 years. At the other end of the spectrum, more than half of shops (58.4 percent) have been in operation for more than 26 years and an amazing 23 percent have been building and rebuilding engines since at least the early '70s.

Obviously, many business practices have changed since those veterans first hung out their shingle, and one that we've been watching over the past few years has been the number of employees. The average number of total company employees increased nearly 15 percent last year (from 4.9 company employees in 2009 to 5.6 in 2010) and the average number of machine shop employees climbed to 3.3 per shop, up to the highest number we've seen in at least six years.

When we asked shops what some of their biggest challenges were in operating and promoting their machine shops, the open-ended question prompted a wide variety of responses.

Just to summarize the major concerns of today's CER and automotive machine shop:

The Internet: Especially in the case of passenger car and light truck engine builds, the Internet is increasingly used to source parts by the engine builder's or machine shop's customers and they are being brought into the shop rather than purchased from the shop. In the past, most CERs were combination machine shops and engine jobber/retail parts stores. Today we see more and more shops exiting the parts business and focusing on the



Shop Purchasing & Customer Profile

shop business. It becomes a business decision of where the most work AND profit be generated.


Employees: Finding them, paying them and keeping them. Health insurance, training and making a decent wage are on the minds of even the one-man shops. The number of qualified schools for engine machinists and rebuilders has declined significantly. Ironically, the several that remain tell us they have no problems in placing their graduates in qualified and good shops.

Customers & Markets: If a shop hasn't found a profitable market and customer base or has expanded its capabilities into other engine markets they are likely doing things the way they have always done them and won't be around for the long term.

Technology: Having access to the technical information needed to build modern engines and having the money to invest in the equipment to build these motors efficiently, cost effectively, and profitably,

Management: It's a fact that many CERs and automotive machine shops are owned by mechanics or engine builders first and businessmen second. They continue to ask for help in running their business.

This survey and its results were performed by Babcox Research, the market research division of Babcox.

If you would like additional information about trends in the machine shop market through the years, you may contact Bob Roberts, Babcox Marketing Research manager, at 330-670-1234, ext. 252 (broberts@babcox.com) or Doug Kaufman, editor, at 330-670-1234, ext. 262 (dkaufman@babcox.com). 

AMOUNT SPENT ANNUALLY FOR THE PURCHASE OF INTERNAL ENGINE COMPONENTS

	2010	2009	2008	2007
AVERAGE	\$75,000	\$68,534	\$78,884	\$93,104
PERCENT CHANGE	9.4%	-13.1%	-15.3%	6.0%

PERCENTAGE OF PARTS PURCHASED FOR REDISTRIBUTION OR RESALE

	2010	2009	2008	2007
AVERAGE	53.1%	51.3%	48.7%	36.7%
PERCENT CHANGE	3.5%	5.3%	19.1%	-22.4%

ENGINE COMPONENTS PURCHASED FROM ONE SUPPLIER OR MULTIPLE SUPPLIERS

	2010	2009	2008	2007
ONE SUPPLIER	32.6%	22.2%	35.2%	28.3%
MULTIPLE SUPPLIERS	67.4%	77.8%	64.8%	71.7%

ENGINE COMPONENTS PURCHASED IN BULK OR CUSTOM-ASSEMBLED KITS

	2010	2009	2008	2007
SEPARATELY OR IN BULK	54.8%	63.8%	55.9%	62.8%
CUSTOM-ASSEMBLED KITS	45.2%	36.2%	44.1%	37.2%

SALES OF ENGINE KITS TO DIY/PRO INSTALLERS

PERCENT WHOSE SALES TO:	DIY	PROFESSIONALS
INCREASED	11.1%	11.1%
REMAINED THE SAME	70.4%	77.8%
DECREASED	18.5%	11.1%

PERCENTAGE OF REBUILT ENGINE SALES TO THE FOLLOWING

	2010	2009	2008	2007
DO-IT-YOURSELF CUSTOMERS	59.0%	53.0%	56.0%	45.8%
SERVICE GARAGE/INSTALLER	15.6%	20.0%	20.8%	27.4%
JOBBER	3.8%	5.6%	3.8%	7.2%
AUTOMOTIVE DEALERS	2.7%	3.3%	2.0%	4.3%
HEAVY DUTY FLEETS	5.5%	5.5%	6.0%	4.1%
AUTOMOTIVE FLEETS	1.6%	3.4%	3.5%	3.1%
WAREHOUSE DISTRIBUTORS	0.0%	0%	0.1%	0.5%
GOVERNMENT FLEETS	0.6%	0.32%	2.1%	0.8%
TRUCK DEALERS	1.6%	0.68%	0.8%	10.0%
MASS MERCHANDISERS/RETAILERS	0.0%	0%	0.0%	0.1%
OTHER	9.7%	0.0%	0.1%	10.4%