

Ford unveils ceramic cutting tool

A new ceramic cutting tool that outperforms anything now commercially available for metal machining was demonstrated by Ford Motor Co. this week at its Manufacturing Processes Laboratory in Redford.

Dr. W. Dale Compton, Ford vice-president for research, described the new tool as a major breakthrough in cutting-tool technology, saying:

"It is a new class of advanced ceramic cutting tool that can operate at higher speeds than conventional coated-carbide tools, shows superior performance over high-technology ceramic tools and is more cost-effective than anything on the market today."

"Because the machining process represents a significant cost factor in producing components such as engine blocks, disc brakes or wheel hubs, improved performance of this magnitude will have a major favorable impact on our manufacturing productivity."

DR. MICHAEL Humenik Jr., director of the Manufacturing Processes Laboratory, showed results of

tests against competing classes of tools at speed and feed rates faster than those used in most machining operations in industry today.

After 20 minutes' cutting time, the S-8 tool, as it is called, had virtually no wear, while the others were scored and fractured.

"But even more important," Humenik said, "is the fact that when an S-8 insert wears out, it can be resharpened and reused — which reduces its cost even more."

"What happens is that a worn tool can be reground to the dimensions of the next smaller-sized tool, and then used in other manufacturing operations."

"But the most dramatic advantage of S-8 is the reduction in cutting or machining time." He demonstrated a turning-and-facing operation on an Escort direct-clutch cylinder in which machining time was reduced from 58 seconds to 18 seconds — a 220-percent improvement in overall productivity.

COMPTON NOTED that the cutting-tool material — silicon nitride — is a new high-technology ceramic developed by Ford's research staff.

He said Ford expects to complete the production evaluation and the first licensing agreements within the next several months, and could be making full use of the tools within two years.

"It actually is a spin-off from our advanced-ceramic-research programs supporting the development of gas-turbine engines," Compton said.

"This research has led to the development of new classes of high-strength ceramic materials and fabrication processes that will find many applications in future vehicles."

"Our experimental confirmation of these predictions led to a major program to develop its manufacturing applications."

ONE CHALLENGE of S-8, Compton said, is that it is capable of operating at speeds significantly higher than machine tools available commercially today.

"So, one of the major facets of our S-8 development program has been to design higher-speed machines. One of our messages is that we now have a cutting tool that allows high-speed cast-iron machining, but to obtain the maximum use of it, the machine-tool industry needs to design and produce equipment that will utilize its full potential."

He said Ford has applied for patents on S-8 and cutting-tools from certain embodiments of S-8 materials are undergoing testing under plant manufacturing conditions.

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Used car prices set new record

The nation's retail, used-car sales last year slipped 5.1 percent to 17.7 million units from 1980's record 18.7 million units. But inflation pushed total purchase prices to an all-time high of \$74.72 billion, a 5.5 percent advance from the prior year.

The annual estimate by Hertz Corp. still puts U.S. sales of second-hand autos ahead of new-car volume by more than two-to-one since 1981's new car total was just 8.4 million units.

"The data shows a fundamental change in the auto buying and driving habits of American motorists," Hertz reported. "Buyers of both used and new cars are purchasing smaller units with fewer options, keeping them longer and driving them less, primarily because they cannot afford — or choose not to spend — the money to buy as often or drive as far as in past years."

The new figures are based on a nationwide poll of used-car buyers by Hertz, which sells used vehicles from its lease-rental fleets and regularly reports on used-vehicle sales.

THE AVERAGE purchase price for second-hand units sold in 1982 hit a record \$4,773, some 13 percent above the 1981 average of \$4,218 and 33 percent more than 1979's price tag.

The price hikes came despite the fact that 1982's average used car sold was 4.25 years old, almost 16 percent older than the 1981 average of 3.67 years and 49 percent older than the 2.86 years in 1979, the lease-rental company's report said.

This year's typical used car purchased had run 47,111 miles, 37 percent more than last year and 51 percent above the 1979 average, according to the polls. Statistics on use units are not issued by industry or government.

The new Hertz poll shows 31 percent of used-car buyers have never bought a new car — up from 23 percent in 1979. And 75 percent give "low price" as the reason for buying second-hand, against 65 percent three years ago.

While used-car buyers averaged 2.2 cars owned now per family and had bought 2.1 new cars during the past 10 years, 75 percent of the buyers said the car they now consider the primary auto in the family was purchased used rather than new.

MOTORISTS purchasing used cars in 1982 now intend to keep these units 3.78 years, but in 1979 planned to keep them only three years.

Today, used-car owners plan to drive only 12,300 miles a year, against plans to drive 12,500 annual miles in 1979, Hertz reported.

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