

# The Research and Experimentation Tax Credit: Turning Up Your Bottom Line

Breakdown of Companies Claiming the R&E Credit by Industry

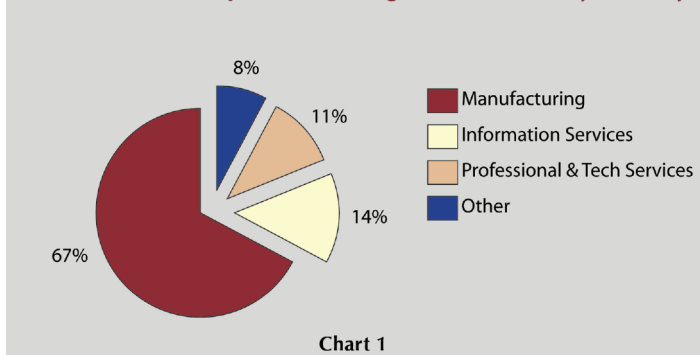


Chart 1

Authored by Adam Herman, CPA/ABV, CVA, ASA;  
Richard L. Wile, CMBA; and Doug Kolker, CPA

In a world of ever-increasing competition where America's machine shops are struggling to gain an edge over the mounting challenges of domestic and foreign competition, a little known benefit is available for those looking to boost their cash flow as an incentive for investing in their operations.

The Research and Experimentation (R&E) tax credit, also known as the Research and Development (R&D) tax credit, is now offered to machine shops, tool and die makers, fabricators, and other manufacturing companies involved with activities such as the development or improvement of machining processes, the design and layout of new or improved manufacturing capacity such as new machines and production lines, and the development of new or improved techniques for the machining of parts and components.

The R&E tax credit has been in existence since 1981, but recent regulations have relaxed the definition of qualified research activities and the associated record keeping requirements. Consequently, many companies that were not previously eligible may now take advantage of this federal tax credit. In 2003, the last year for which such statistics are available, a total of 4,924 companies filed the IRS form required to claim the R&E tax credit. Of these, 337 companies were in the fields of primary and fabricated metal manufacturing (Source: Statistics of Income Division: 2003 Corporate Returns Data).

The R&E tax credit is a wage-based credit available for the development or improvement of products, processes, techniques, formulas, inventions, or software. In addition to qualified wages, companies may capture supply costs for prototypes, as well as 65 percent of any contracted labor used during the development process. This tax credit is available to all entities filing a federal tax return. In addition, more than thirty states offer a modified R&E tax credit. Furthermore, the changes to the governing regulations are retroactive; meaning that companies may file amended returns to obtain refunds of

previously paid income taxes. In some cases, companies may recapture taxes paid up to four years ago.

Companies can benefit by deducting the research expenditures and by claiming the credit. While the research expenditures are a reduction of taxable income, the R&E tax credit is a dollar-for-dollar reduction of tax. Additionally, any fees paid to advisors for documenting the credit are deductible in the year in which they are paid. The R&E credit is calculated by comparing recent years' research activities to a base amount, with twenty percent of the increase in activities captured as the tax credit. Companies must first use the credit to offset the tax in the year that the credit is generated. However, if additional credit remains, the company may carry the credit back one previous tax year, or forward to the next twenty years.

There are four basic requirements for research activities to qualify:

1. Qualified research activities are defined as the development or improvement to a business component, which is defined as a product, process, technique, formula, invention, or software.

From an industry perspective, machine shops continually develop or improve processes used in the manufacture of machined parts. This can include advanced four and five axis machining, techniques for the machining of new alloys, and the design of fixtures and tooling. Companies are often concerned that since they do not design or produce proprietary products, they do not qualify for the credit. However, the regulations clearly classify the development and improvement of processes as qualified activities.

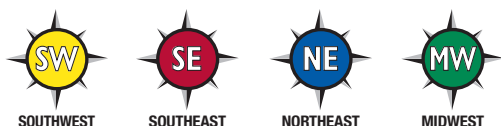
2. The research must be technological in nature. That is, the process of experimentation used to discover the information must fundamentally rely upon the physical or biological sciences, engineering or computer sciences. Furthermore, companies may use existing technologies and may rely upon existing principles to satisfy this requirement.

Machine shops rely heavily on the principles of physical sciences as well as those of metallurgical and mechanical engineering to develop or improve their products or processes.

3. The research must be intended to eliminate uncertainty concerning the development or improvement of a business component. Uncertainty exists if the capability or method for developing the business component is unknown, or if the appropriate design of the business component is unknown.

Machine shops are constantly searching for more efficient and effective ways to produce machined parts. There are many specifications and alternatives to be considered in the machining process—adhering to tight tolerances, meeting the re-

Reprinted from



# MANUFACTURING NEWS

quirements for complex profiles, experimenting with different tooling and cutters, and achieving specified mechanical properties—all of which are uncertain at the outset of the manufacturing process.

4. The company must utilize a process of experimentation to eliminate the uncertainty associated with the function, performance, reliability or quality of a business component.

Machinists typically engage in a process of experimentation when developing or improving their products or processes. For instance, they may engage in systematic trial and error in determining speeds and feeds and optimum tool paths, they may run prototypes, or they may utilize CAM simulation software to model the machining process—all of which satisfy the process of experimentation criteria.

### Example of a Research & Experimentation Study

The following is a fictional example of what a Research and Experimentation study might look like for a medium-sized machining operation.

For the hypothetical study years of 2004-2007, the following qualified projects took place at ABC Precision Machine (ABC's owner had postponed the improvement of his operation for several years). The following list summarizes the projects used to improve the processes at ABC Precision Machine:

1. Selection and installation of an automatic bar feeder for an existing CNC lathe.
2. Selection and installation of a new 5-axis vertical machining center with an automatic pallet changer.
3. Selection and implementation of a new CAD/CAM system.
4. Conversion to cellular manufacturing concepts.
5. Design of a Clean Room for the machining of cryogenic parts and improvement of environmental controls including a new baghouse.
6. Design and installation of a new organically-based parts washing system.
7. Welding process improvement project.
8. Testing of new products such as cutting tools and fluids.
9. Development and testing of heat treatment processes to obtain special mechanical properties and microstructures.

Several members of the ABC Precision Machine staff participated in these projects in various capacities. The owner was involved in the process development and improvement projects, working with key personnel including the plant engineer and production manager, on process and equipment design. Because the R&E credit is a wage-based credit, the time spent by the ABC staff working on these and other similar projects would be considered qualifying research expenditures. The same analysis would apply to other ABC employees including tooling and process engineers, plant engineers, CAD designers, and machinists.

The key points for the determination of eligibility for the credit are the focus on time spent on qualified research activities and the definition of these activities. For example, if ABC Precision Machine decided to replace a CNC machine by simply removing an existing machine and setting an identical unit in its place, this would not be considered a qualified ex-

### Examples of R&E Credits Realized by Manufacturing Companies:

<i>Type of Company</i>	<i>Annual Sales</i>	<i>Size of R&amp;E Credits (multi-year basis)</i>
Aluminum Diecaster	\$22 million	\$108,000
Gray and Ductile Iron Foundry	\$10 million	\$162,000
Machine Tool Shop	\$25 million	\$230,000
Machine Tool Shop	\$8 million	\$75,000
Plastic Injection Molder	\$20 million	\$382,000
Tool and Die Shop	\$4 million	\$250,000
Boat Manufacturer	\$110 million	\$650,000
Scale Manufacturer	\$40 million	\$360,000
Survey Instrument Manufacturer	\$30 million	\$288,000

Chart 2

penditure. However, to improve their production process, if ABC's maintenance and engineering department developed design criteria for a new machine considering multiple variables such as capacity, location, power requirements, and tooling options, this would be considered a qualified activity. The Qualified Research Expenditures (QREs) dedicated to this project could be included in the R&E credit calculation. Further, if ABC decided to engage a tooling consultant to assist with the research on live tooling options for the machine, a percentage of these costs would qualify as well, as would the cost of any supplies that were purchased for this project.

Chart 1 illustrates that most of the companies claiming the R&E Tax Credit are in the field of manufacturing, with professional and technical services making up most of the rest of the companies (Source: Joint Committee on Taxation Calculations from the Internal Revenue Service, 2002).

A sampling of projects (Chart 2) indicates that companies as small as a tool and die shop with \$4 million in annual sales can obtain meaningful boosts to company cash flow through the use of the Research and Experimentation Tax Credit.

Although the Research and Experimentation credit has been in existence since 1981, it has expired thirteen times since its inception. The latest renewal expired at the end of 2007, although a bill was introduced in the House of Representatives last May proposing to make the R&E credit permanent (the Investment in America Act of 2007 [HR 2138 IH], Source: The Library of Congress Website, 2007).

Machine shop owners are challenged enough with survival in the current environment without the added difficulty of justifying expenditures for research and development expenditures. The Research & Experimentation Tax Credit was created to increase the competitiveness of the American manufacturing industry and can be a valuable resource to our nation's precision machining operations.

The authors, Adam Herman, CPA/ABV, CVA, ASA, Doug Kolker, CPA, and Richard Wile, CMBA, are members of MPP&W, P.C.'s R&E Tax Credit Group, a division of a regional, St. Louis-based CPA and business advisory firm. The R&E Tax Credit Group specializes in assisting manufacturers and their advisors in maximizing the R&E tax credit. For more information about the firm, visit [www.mppw.com/re](http://www.mppw.com/re). Contact Chad Staller at [chad@vault-group.com](mailto:chad@vault-group.com) or Jeb Johnson at [jebj@altamachinetools.com](mailto:jebj@altamachinetools.com) of the Vault Group for details on taking advantage of the R&E tax credit.