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## Wohlers Report 2003

By David Cohn

“Years of growth and decline in rapid prototyping have become the norm. With companies constantly entering and leaving this industry, it is no wonder so many are unclear about the technology’s future. Yet RP continues to grab the interest and imagination of many around the world.

Once considered to be just a tool for prototyping, RP has expanded into an impressive range of industries and applications. In the future, it will find its way into organizations and industries in ways that are hard to fathom today.”

So begins the *Wohlers Report 2003: Rapid Prototyping, Tooling & Manufacturing State of the Industry Annual Worldwide Progress Report*, the latest edition of Terry Wohlers’ annual report, which was released in mid-May. Wohlers, the president of Wohlers

Associates in Fort Collins, Colorado, is widely regarded as the leading analyst and consultant covering rapid prototyping (RP), rapid tooling (RT), and the emerging field of rapid manufacturing (RM). His extremely comprehensive annual report is considered the definitive analysis of the RP world.

This year’s report, a 270-page study, addresses many aspects of rapid prototyp-

ing, including industries served, applications, revenues, unit sales, and forecasts. It also provides current information on industry trends and developments in the areas of service providers, advanced approaches to tooling, system manufacturers, and technology advances in the U.S., Europe, Asia, and other parts of the world.

The report covers research and development activities, growth trends in CAD solid modeling, rapid prototyping materials, medical modeling, rapid manufacturing, and reverse engineering. *Wohlers Report 2003* concludes with a discussion of the future of rapid prototyping—where it is headed and what to expect—to assist in strategic and tactical planning. To support the review and analysis, the report includes 27 charts and graphs, 31 tables, 97 photographs and illustrations, and seven appendices. Forty-five experts, 40 service providers, 26 system manufacturers, and countless others assisted with the development of this year’s report.

### Bright Spots

According to this year’s report, the average annual growth of RP over its entire history has been exciting. The last two years, however, have been a disappointment. Machine manufacturers and service providers continue to face a host of challenges that just will not go away. Revenues in nearly all areas of the industry were down, with the service sector being hit the hardest.

INSIDE  
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SPECIAL  
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featuring  
Wohlers  
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“On a positive note,” said Wohlers, “machine unit sales were up, with 3D printer sales faring especially well. The number of prototype parts built last year also increased. 3D printing was a bright spot in 2002,” said Wohlers. “However, there was a sharp contrast between the sales of 3D printers and conventional rapid prototyping systems. As the industry develops and matures, there will be a dramatic increase in the application of 3D printing technology, possibly at the expense of conventional systems,” he explained. One of the report’s many graphs, showing the annual unit sales of 3D printers, provides a clear picture of the rise of 3D printers

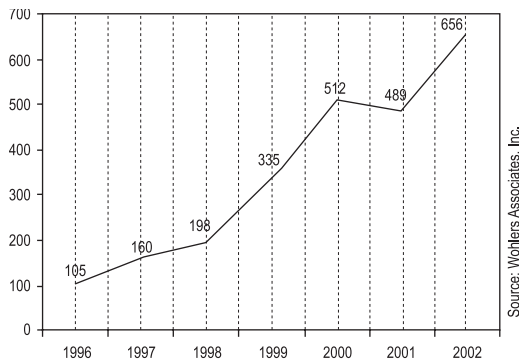
Organizations are now extending the application of RP technology to the production of finished goods, and the report notes that some believe that rapid manufacturing will some day overshadow the rapid prototyping and rapid tooling markets. According to Wohlers, “Rapid manufacturing systems, with the desired speed, cost, and quality, do not exist at present. They will in the future.”

### Research and Development

“A staggering number of R & D projects are underway around the world, and much of this work is turning into patents and products,” says Wohlers. According to the report, there has been a threefold growth in patent applications from 2001 to 2002. “The trend for the last few years has been toward improving existing RP methods, or exploring significant variations of them, rather than establishing entirely new technologies.”

Wohlers believes that the rapid prototyping industry is on the cusp of monumental change. “Advances in technology, materials, and operations will combine with new applications and processes to transform the RP industry.” While he sees small, incremental change over the short term, he envisions sweeping changes in seven to 10 years. “A revolution is quietly building. Over the next few decades, it will have taken hold and changed the way design and manufacturing are done. The revolution will sweep across industries as diverse as biomedicine and aerospace, where each will have their own specialized technologies. The new age is coming, and perhaps historians will document it as the digital industrial age.”

The *Wohlers Report 2003: Rapid Prototyping, Tooling & Manufacturing State of the Industry Annual Worldwide Progress Report* is useful for any company currently using rapid prototyping and tooling equipment or considering its use in the future, and is highly recommended. Copies of the report can be ordered from Cyon Research, the publisher of *EAReport*. The cost for this report is normally \$395 in the U.S. and \$425 outside the U.S. *EAReport* subscribers can save, however, by ordering copies directly from the *EAReport* website at [www.eareport.com/new-books.html](http://www.eareport.com/new-books.html). ■



most commonly used for concept modeling.

The U.S. continues to lead in terms of worldwide purchases and installations, although its share has dropped slightly, from 42.8% in 2001 to 40.9%, followed by Japan (14.9%). China edged ahead of Germany for the first time in the history of rapid prototyping. Wohlers predicts that the share held by the U.S. will decline in the years to come as China and other countries embrace the technology.

Through the end of 2002, 3D Systems dominated the installed base of RP machines at service bureaus, with its share growing from 57.3% in 2001 to 61.4% in 2002. 3D Systems’ technologies include stereolithography (44.7%), laser sintering (13.7%), and Multi-Jet Modeling (3%). Stratasy was the number two supplier of RP machines to service providers with 10.7% of the market, followed by EOS with 9.6%.

This year’s report includes a new section on the opportunities, applications, and benefits of rapid manufacturing, defined by Wohlers as the direct production of finished goods from a rapid prototyping device.



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