

Wohlers Report 2003



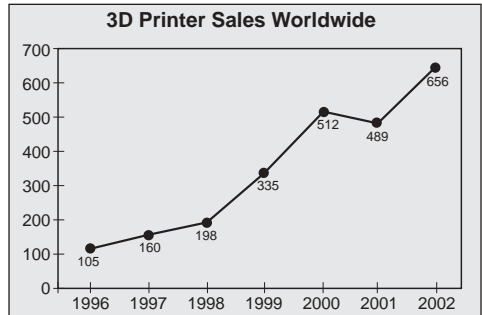
Rapid Prototyping,
Tooling & Manufacturing
State of the Industry

Annual Worldwide
Progress Report

TERRY WOHLERS

State of the Industry

As the rapid prototyping industry develops and matures, it will undergo a dramatic increase in the application of the technology for early concept models and finished manufactured parts. As shown in the following graph (showing annual unit sales), the rise of 3D printers, most commonly used for concept modeling, has begun.



How long will it take for 3D printers to reach their full potential? What will this do to the current role of rapid prototyping? To determine if this is an opportunity or a threat, and to address a host of other difficult questions about the industry, *Wohlers Report 2003* provides thorough research, analysis, and insight.

“Whether one is thinking of purchasing a system, checking into the performance of a company for investment purposes, or just desiring more information, Wohlers delivers at every level.”

— Joe Greco, *Desktop Engineering Magazine*

About the Report

This annual market study has established a tradition of offering high-quality analyses that cover all facets of rapid prototyping, tooling, and manufacturing. Forty-five experts, 40 service providers, 26 system manufacturers, and countless others assisted with its development. To support the review and analysis, the 270-page softbound publication includes 27 charts and graphs, 31 tables, 97 photographs and illustrations, and seven appendices.

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ACKNOWLEDGMENTS

ABOUT THE AUTHOR

FOCUS OF THIS REPORT

INTRODUCTION TO RAPID PROTOTYPING

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- Installations by country

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- Communication
- Engineering changes
- Good ideas and powerful proposals
- Concept models
- Verifying CAD databases
- Styling, ergonomic studies
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- Metal castings
- Early input from suppliers, toolmakers
- Quote requests
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- Unlimited potential

PART 2: INDUSTRY GROWTH

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SERVICE PROVIDERS

- Growth and location
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- Number of models produced annually
- Working with service providers
- Challenging times
- Change threatens service providers

What lies ahead?

PART 3: TOOLING

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- DMLS
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ARCAM

BEIJING YINHUA

CONCEPT LASER

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ENVISIONTEC

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F&S

GENERIS

KINERGY

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SHANGHAI UNION TECHNOLOGY

SOLIDICA

SOLIDSCAPE

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WUHAN BINHU

Z CORP.

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Denmark
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Belgium

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South Africa
Australia
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Fused Deposition Modeling

MANUFACTURING

Industrial products, processes, components
Medical, biotechnology, and chemistry-related products
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Optomec's M3D

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MESO, MICRO, AND NANO TECHNOLOGIES

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EFAB from MEMGen

MIT'S 3DP TECHNOLOGY

3DP process
Major areas of focus
Metal Matrix Cast Composites
ProMetal
Z Corp.
Soligen
Specific Surface
Therics

U.S. GOVERNMENT-SPONSORED R&D

National Science Foundation
Educational funding
Traditional research programs
Small business research programs
Collaborative, cooperative, and consortium research
Research instrumentation awards

Career grants
Department of Defense
Department of Commerce
Department of Health and Human Services

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Sintered parts for space
Formula 1
Military tanks
Hearing instruments
Submarine part
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Tip of the iceberg

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Technology and applications advance

LONG-TERM

Rapid manufacturing
RM changes the process
RM changes business processes
Speed of change
A new age

WHERE TO LEARN MORE

Internet mailing list
GARPA
RPA/SME

APPENDICES

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France
Germany
Israel
Japan
Singapore
Sweden
United States

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About the Author



Industry consultant, analyst, and speaker Terry Wohlers is the principal author of *Wohlers Report 2003*. He has authored more than 275 books, articles, reports, and technical papers on rapid product development. Also, he has presented to thousands of engineers and managers and has been a keynote speaker at major industry events around the world.

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