

AutoDesk Keeps Bushido Racing Ahead of the Pack

Problem:

Increasing efficiency with design capabilities limited to two dimensions (2D) on paper or computer screen.

Solution:

Using latest release of AutoCAD software in conjunction with Microsoft Windows NT workstation.

Payoff:

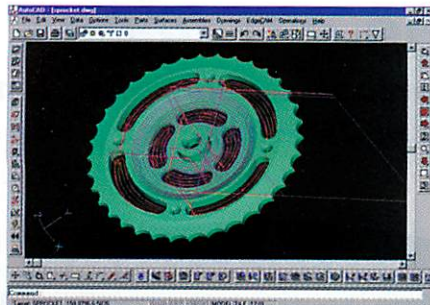
The company was able to achieve a 400% increase in productivity over last four years; ability to work in 3D design; project development times cut from months to hours.

Bushido Racing doesn't design your typical off-road bicycle, or even your average high-end racing bike. For about \$6,500 per item, customers get world-class customized parts made with such advanced materials as carbon fibers, ceramic composites, and titanium. Each year the Santa Monica, Calif., bike boutique produces only four styles of racers that are extremely light, durable, and stunning to behold.

In fact, Bushido has among its clients many celebrities and bicycle collectors. Given the precision and care that go into each of the 70-plus parts that comprise a Bushido bicycle, it may seem surprising that the company has been turning out its new designs faster and more cheaply each year.

How does Bushido do it? Since 1987, Bushido designer and co-owner Bill Townsend has used consecutive releases of Autodesk Corp.'s, San Rafael, Calif., AutoCAD, a computer-aided design package, in conjunction with successive Microsoft operating systems.

Most recently, Bushido upgraded to using Windows NT workstation and AutoCAD Release 14 software designed to run on NT. While there is no substitute for sheer ingenuity and dedication,



by Marty Weil
staff writer

Townsend attributes the production increase to this combination of operating system and software package.

"We've had a 400% increase in productivity during the last four years," he observes, "mainly because of the equipment we use."

While Townsend cannot release exact figures, he will say that profits have been extremely high and are getting higher all the time.

When Bushido began in 1985, Townsend relied on manual drafting techniques. Working with paper and pencil, he would develop a design for each part of the bike, and then construct a physical prototype for testing.

During the test phase—each of the prototype parts needed to be tested and modified many times—the entire process could take up to two months.

Now, running AutoCAD 14 on Windows NT workstation, Townsend works entirely on his monitor—from concept to design to tolerance testing—and then moves to production, sometimes in a matter of hours. "Projects that once took me 200 hours under Release 12 of AutoCAD on DOS now take me a few hours," he says. This dramatic boost in efficiency has lowered Bushido's costs and helped its profits to skyrocket upward.

In addition, explains Townsend, Windows NT workstation actually lets him construct much larger models than he could using earlier versions of Windows.

"Five years ago, a 'massive' drawing or set of drawings would have meant one that took up five megabytes," he says. "Using NT, I can routinely work with drawings that take up 40-60 MB—the kind that previously would have choked the computer."

The move from earlier releases of AutoCAD and Microsoft products have enabled Bushido to enter the world of three-dimensional design, as compared with just the two dimensions of paper or even the computer screen. This significantly frees up creativity because the screen actually becomes an extension of Townsend's own mind and helps him visualize a product.

Although generally delighted with each new release of AutoCAD and Microsoft products, Townsend says he felt



somewhat limited working in two dimensions. But with the one-two punch of Windows NT workstation and AutoCAD 14, which allow for 3D, a whole new level of versatility has been opened for him.

"I'm no longer stuck with the screen trying to figure out what's behind the image," he explains. "Using 3D modeling, I can make any size or shape very quickly. I have no constraints on my ability to design a part or a line of bikes, and I can make it available to people rapidly." With this new-found efficiency, Bushido now saves thousands of dollars a week.

It helps that working in a Windows NT environment is virtually foolproof. The Bushido PCs stay on around the clock without a glitch. "NT works first time, every time," says Townsend. "Installation is quick and easy, and software installs fast and smoothly. It gives us so much more freedom—the system doesn't care what we do!"

Bushido is beginning to venture beyond the world of bicycles to do 3D modeling of steam locomotives still running in China and Siberia. These drawings will be incorporated into a video for a nationally syndicated science show.

The company is also designing go-cart engines and motorcycle chassis.

The world of 3D design opened up by AutoCAD 14 and Windows NT workstation seems limitless, and Townsend eagerly anticipates new versions of both products because the previous releases have been so exceptional. "This equipment has put us five years ahead of the competition and kept us there," he says. "All we need is our imagination and the computer." □

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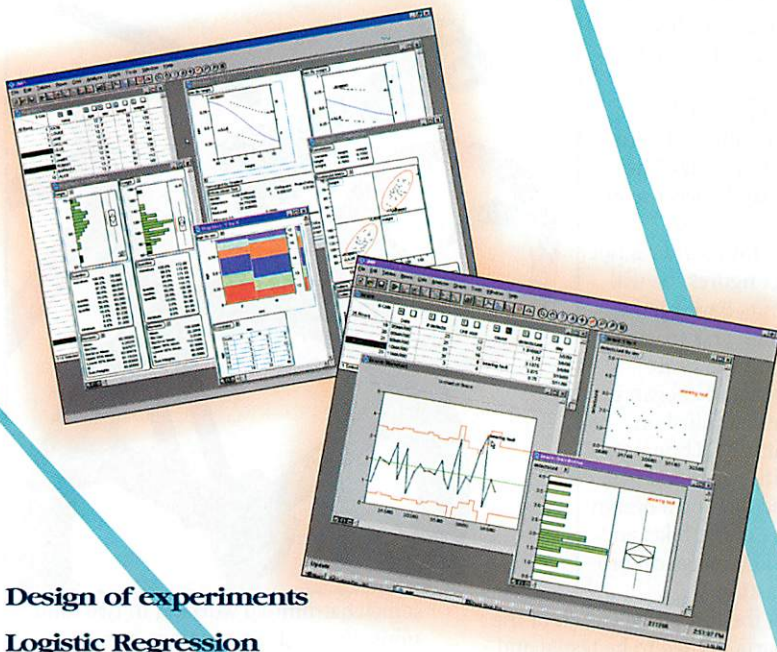
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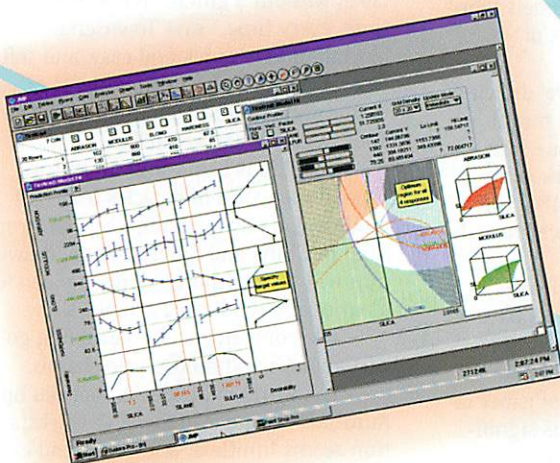
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