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# Big Dog Motorcycles

## Leading motorcycle designer partners with Butler

by Kate Jones and Kelly Snedden

**R**emember the Jurassic Park movies? Remember the scene in Jurassic III when the young Associate Professor Billy Brennan, at the excavation site, opens a large refrigerator-sized piece of equipment to behold a 3D model of a raptor's "resonating chamber?" Remember when Billy blew into it and it gave our beloved Dr. Alan Grant the creeps?

We know we can't believe everything we see in the movies, however, that fancy piece of equipment Billy was so excited about really does exist and students at Butler County Community College are experiencing the same thrill; the thrill of seeing their work emerge as a true-blue, hold-in-your-hand example of drawings they have designed on paper. Over the past year, the thrill has spread from the movie screen, to the classroom, to a "big dog" player in the motorcycle industry headquartered right here in Wichita.

### Technology Upgrade

Butler's Engineering Technology/CAD department purchased a Z400 rapid prototype printer with the help of a Carl Perkins Technology Grant in Sept. 2002. The printer creates prototypes quickly, easily and inexpensively from computer-aided design (CAD) software. In the same way conventional desktop printers provide computer users with a paper output of their documents, three-dimensional (3D) printers provide CAD users with a physical model.

Many Fortune 500 companies use this technology to make prototypes ranging from toys for market feedback to fan blades for functional testing. With this technology upgrade, Butler joins the ranks of Sony, NASA, BMW, Harvard and MIT.

According to Mel Whiteside, Butler's lead Engineering Technology/CAD instructor, besides giving students a 3D design to hold in their hands, "Rapid prototyping

allows them to assess functionality of the parts and compatibility with other parts." Whiteside added, Butler students have prototyped a residential floor plan, a tractor piston, drill press base, chains and more.

### The Partnership

Big Dog Motorcycles, located in Wichita, the leading designer and manufacturer of high performance, highly-styled heavy-weight custom cruisers, is getting in on the prototype action through a partnership with Butler's Engineering Technology program. The partnership unfolded early in the spring 2003 semester when Whiteside arranged for students to tour Big Dog Motorcycles, witness first-hand applications of 3D software, and visit with engineering professionals. As they visited, the engineers at Big Dog Motorcycles were piqued by the hands-on, 3D-rapid prototyping experiences Butler students were receiving.

"The prototype printer is an absolutely wonderful tool for students because it helps them see the product or part before the customer receives it," said Dave Davis, mechanical engineer for Big Dog Motorcycles. "We're glad Mel contacted us," said Davis.

Big Dog Motorcycles uses external vendors for prototype creation. However, the opportunity to partner with Butler and enhance student learning experiences was priceless. Davis, along with fellow mechanical engineer Jerry Stoneking, and senior engineer Marvin Bachman, were soon emailing CAD files to Whiteside for prototype creation. Whiteside and his students have printed air cleaner and coil covers, an upper engine mount, a hand-control assembly and speedometer. Butler students will see the efforts of their work hit the marketplace with Big Dog Motorcycles' 2004 line.

Davis attributes the partnership with increased speed in production. The engineers use the prototypes to test specifica-

tions for functionality and compatibility with other parts, as well as to provide the sales team and upper management with visuals for approval.

"This type of technology makes great business sense," Whiteside said. "What used to take days or months to produce, now only takes a few hours or minutes. This technology drives down costs by providing designers, engineers and customers the opportunity to preview, measure and possibly test an inexpensive prototype before final production.

"In addition, students have been encouraged to reach new levels in their 3D modeling," Whiteside said. "Now that they have the opportunity to actually see their drawings in finished form, I think they feel challenged to produce a higher quality product."

Big Dog Motorcycles, too, has been pleased with the turn of events. "Mel wants to teach his students as much as possible about the industry. We appreciate his professionalism and we look forward to continuing our partnership," said Stoneking.

Big Dog Motorcycles shared its enthusiasm for the partnership this past year in the form of a scholarship. The company established an annual \$2,000 scholarship for students enrolled in Butler's Engineering Technology/Pre-engineering program. Whiteside hopes to create additional partnerships within the business industry which will further learning experiences and garner scholarships for his program.

### ADDA Certification

Butler's Engineering Technology/CAD department received test site and Design/Drafter Level certification in July 2002 from the American Design Drafting Association (ADDA). Butler is currently one of only two higher-education schools in the state to be ADDA certified. Manhattan Area Technical College also shares this distinction.



Engineering and CAD students Jason Watts of El Dorado and Mitchell Klaassen of Valley Center prepare to print to the rapid prototyping printer. Butler introduced this technology to students in the spring 2003 semester.

"ADDA certification validates the quality of our curriculum, equipment and faculty," said Whiteside. "In addition, it recognizes our high standard of quality in providing the best learning resources and experiences for our students and



stakeholders." Whiteside added he is also seeking certification from the Accreditation Board for Engineering and Technology (ABET) which recently began granting accreditation to two-year schools.

### Enroll Now

Interested students may earn an Engineering Technician Certificate or Associate in Applied Science in Engineering Technology from Butler. Coursework familiarizes students with drafting and CAD software; residential, commercial and piping design; engineering design; and 3D application in CAD.

Upon completion, students are prepared to pursue further education and/or enter career fields such as building or landscape architecture, mechanical or CAD drafting, industrial or interior design, and aerospace or electrical engineering. For more information about Butler's engineering and CAD programs, contact Mel Whiteside at 316.322.3130 or 733.3130 from the Wichita/metro area.

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*Big Dog Motorcycle mechanical engineer Dave Davis provided Whiteside with CAD files for printing prototypes to the rapid prototyping printer.*

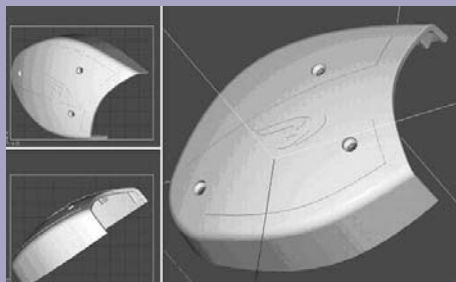
# bigdog

## MOTORCYCLES®

Big Dog Motorcycles, LLC, started production in 1994 and quickly became a leading designer and manufacturer of American heavyweight custom cruiser motorcycles. The company's entire line of six motorcycles uses high-performance V-twin 107 cubic inch engines, 6-speed transmissions, stretch tanks, wide tires, chrome components, and an extensive variety of custom paint colors and graphics. The 2004 line also includes new Big Dog Motorcycles custom-designed electronics, hand controls, foot controls, mirrors, air cleaner cover, coil cover, and other components.

Big Dog motorcycles are distributed through nearly 80 dealers throughout the United States – six are Big Dog Motorcycles branded dealerships. Designing and manufacturing is performed at the company's world headquarters in Wichita, Kansas. With over 270 employees, the company recently announced its eighth consecutive year of record sales and will celebrate its tenth anniversary year in 2004. For more information, contact Big Dog Motorcycles at 316.267.9121 or visit the award-winning website at [www.bigdogmotorcycles.com](http://www.bigdogmotorcycles.com).

## Evolution of an Air Cleaner Cover...



*Creation:* Big Dog Motorcycles mechanical engineer Jerry Stoneking designed the air cleaner cover using computer-aided drawing (CAD) software.



*Prototyping:* Engineers then emailed the CAD file to Butler's Engineering Technology/CAD department. A life-size model was printed on the Z-Corp rapid prototyping printer.



*Testing:* The prototype was used to check fit and aesthetics then an inexpensive aluminum sand casting was produced for further testing. Prototype testing allows engineers to test near-production-quality pieces before producing \$25,000 production tooling.



*Production:* After approval, the production tooling was made, parts were chromed and laser-etched with the logo, then assembled onto the 2004 Big Dog Motorcycle models.