CAD goes for the checkered flag

Lola Cars of Cambridgeshire, England, world's largest producer of race cars, is now drawing, revising, and testing new aerodynamic racing designs with a CAD system provided by Prime Computer. Lola was the top racing car in the 1985 U.S. CART racing series with drivers that included Al Unser, Jr., and Mario Andretti.

The key software component of the system is Ford Motor Company's Product Design Graphics System (PDGS), a three-dimensional modeling system for the design and numerically controlled machining of curved body surfaces. PDGS is marketed exclusively by Prime.

Lola founder Eric Broadley called CAD technology "a tremendous aid to better and faster design. And in this business, that's critical." Race car designers don't enjoy the long production cycle of the passenger car industry, contending instead with a concept-to-production cycle that is only four to six months.

"We anticipate that the computer system will allow us to move through the design process more quickly and let us consider far more data and configurations than we normally would," said Broadley. "Eventually we plan to take the PDGS output and transmit it directly to our pattern-making machinery for the manufacturing of body shapes and suspension parts."

The Prime equipment was installed at Lola's design facility in Cambridgeshire last October. In addition to the PDGS software, it includes a Prime 2550 computer; SAMMIE, 3D CAD modeling software that can test the comfort, viewing parameters, and movements of a person within a racing car cockpit; and additional networking and database management programs.

The Prime/Lola connection is the result of a five-year agreement between Prime and Carl Haas, a Chicago businessman and the US distributor of Lola cars. Haas is also co-owner of Newman-Haas Racing for the US CART series and owner of Team Haas USA for the Formula One racing series.

Adage to acquire Lexidata

Adage and Lexidata have signed a definitive merger agreement that provides for the acquisition of Lexidata by Adage. Initial plans call for Lexidata to operate as a division of Adage.

Adage is a leading manufacturer of graphics terminals that are plug-compatible with IBM hardware, and also supplies high-performance graphics products to other end-user markets. Lexidata, on the other hand, manufactures graphics products targeted primarily at the OEM marketplace.

Because of this complementary relationship, the merger is "a natural union of two graphics companies," said Kurt Dossin of Lexidata.

According to Adage President and CEO Richard N. Spann, the merger addresses two of Adage's corporate imperatives: reducing dependence on the IBM plug-compatible market and pursuing external opportunities that will further long-term growth.

The proposed transaction has to be approved first by the Securities and Exchange Commission and then by the the shareholders of each company. A Lexidata spokesman said the special shareholders' meetings are expected to be held in late February.

Both Adage and Lexidata are located in Billerica, Massachusetts.

Erratum

Good Research Pictures Ruined

Some excellent pictures showing research results were ruined during the printing process of the December 1985 issue of IEEE CG&A. The pictures appeared on pages 40 and 41 in the article "Surface Shading in the Cuberille Environment," by Lih-Shyang Chen, Gabor T. Herman, R. Anthony Reynolds, and Jayaram K. Udupa. We are reprinting those pictures on the following two pages as they should have appeared in the original article. CG&A extends sincere apologies to the authors and to our readers. We also want to tell you what went wrong in the printing process because it might be of help to future authors.

These pictures were black and white photos, taken from the VDT, and as is almost always the case with such pictures they showed horizontal scan lines. It is these scan lines that caused the problem. They darkened and turned vertical. This is a likely outcome if such pictures are not given special handling.

Rudolph Ubach, president of In & Out Litho Plate, the house that prepares CG&A for the final printing process, explains that when scan lines are in the pictures they cannot be halftoned for printing the same way pictures without such lines are handled. In this case the scan lines were so faint, they failed to call attention to themselves.

Authors who submit such photos for publication, in any magazine, need to flag the editor that the pictures will have to be given special handling. It is too risky to assume somebody will notice the lines, particularly if there is a fairly large number of photographs, as there were in this case.

With this information in hand, the photographic preparation expert will know that the line screen to be used should be no fewer than 150 lines per inch and must be done at a 45° angle. A square-dot halftone, rather than eliptic, is also needed, which is an unusual procedure.

The final and very important step is sending a special note to the printer, informing its people that a 150-line screen has been used. The printer must know that the differences between the highlights, middle tones and shadows should be the same.

This all constitutes an unusual procedure, but it is the one Ubach recommends for producing the pictures like those you now see on the next two pages. If you compare these with the ones appearing in the December 1985 issue, you will see that warning the editor your pictures need special attention, which will result in a procedure like this one, can produce dramatically better results.
Figures 3, 4, 5, and 6 show images produced by six shading methods: (a) Distant-only shadings; (b) constant shading; (c) image-based contextual shading; (d) normal-based contextual shading; (e) Phong shading; and (f) gradient shading.

Figure 3. 3D displays of polygonal facets.

Figure 4. 3D displays of a sphere.
Figure 5. 3D displays of a skull.

Figure 6. 3D displays of a spine.