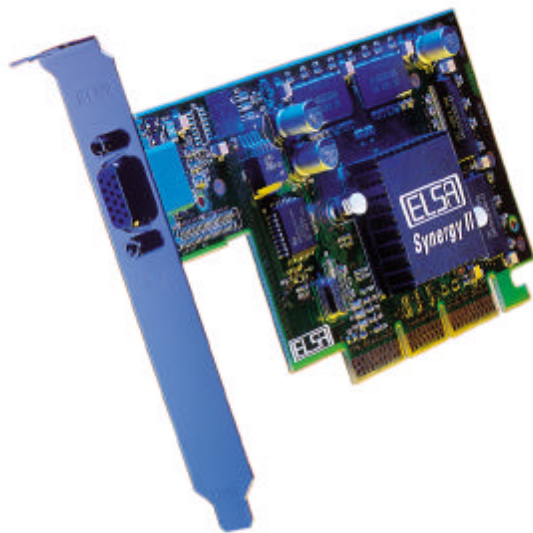


# PRESS KIT



## ELSA Synergy™ II

**Release: July 05, 1999**

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## 1 Introduction

Thank you for taking time to test *ELSA Synergy II*

To aid you in your editorial work, this ELSA Press Kit provides you with all the important data and information about *ELSA Synergy II* in condensed form. In Section 7, **Tips, tricks and hints**, we have tried, in advance, to answer some of the questions that could come up during testing, or when preparing your report.

## 2 Market positioning

The graphics solutions of the *ELSA GLoria™* and *ELSA Synergy™* lines were developed especially for commercial use in the field of professional 2D and 3D computer graphics. The products are optimized for these specific usage requirements. It is therefore important that market positioning should be driven by product use considerations. This ensures that the client receives a graphics solution with an optimal performance to price relationship.

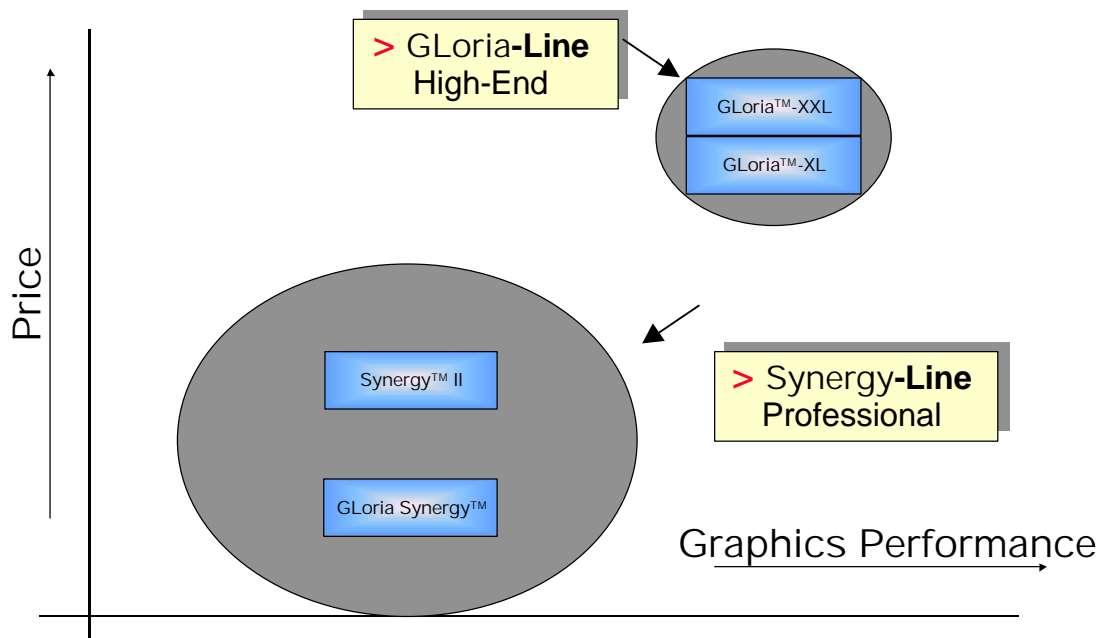
### 2.1 Positioning of ELSA Synergy II

The *ELSA Synergy II* is "the" high performance graphics solution – especially for 3D visualization, picture editing, desktop publishing and CAD. With its extremely high 128 bit acceleration and ELSA's proprietary OpenGL® driver *ELSA SIMDream™*, *Synergy II* performs convincingly in 2D, and is outstanding in 3D performance with professional graphics applications under Windows® NT 4.0, Windows® 95 and 98 and, for the future, under Windows® 2000.

### 2.2 Positioning of the ELSA GLoria™ and ELSA Synergy™ Lines

The launch of *Synergy II* is presented as part of our internationally successful *ELSA GLoria Synergy™* product line. The *Synergy* line, positioned as **professional**, includes products in the price category of entry level graphics solutions for NT workstations. Yet, they offer graphics performance that, up to now, has required mid-range investments of well over DM1,500. The products of the *Synergy* line cover about 90% of all graphics needs of professional users on NT platforms.

For the most demanding 3D requirements, e.g. stereoscopic views, we offer the high-end *ELSA GLoria* line.



### 3 Product description

Like all graphics solutions of the *ELSA GLoria* and *ELSA Synergy* lines, the *ELSA Synergy II* was 100% developed in Germany, on-site in Aachen. This holds true for hardware as well as software, like ELSA's proprietary OpenGL driver *SIMDream*, which deserves special mention. The high quality standards in manufacturing, in the entire process, and culminating in strict quality control, are the basis for the consistently high quality of our products.

#### 3.1 Special performance characteristics



- n 4 million polygons/second
- n 250 million texture-mapping pixels/second (bilinearly filtered)
- n 125 million texture-mapping pixels/second (trilinearly filtered)
- n supports the SSE (Streaming SIMD Extension) of the Intel Pentium III
- n supports AGP 2x and AGP 4x through universal card design
- n utilizes main memory for textures
- n supports Windows NT<sup>®</sup> 4.0, Windows<sup>®</sup> 95 and Windows<sup>®</sup> 98
- n special application drivers for Autodesk products
- n high ergonomic refresh rate, e.g. 96Hz at 1920 x 1200 in True Color
- n supports wide-screen monitors in 16:10 format

#### 3.2 Technical data

|                               |                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------|
| Graphics processor/clock rate | RIVA TNT2 (NVIDIA), 150 MHz memory clock                                                             |
| Color palette/pixel rate      | Integrated, max. 300 MHz                                                                             |
| Video memory                  | <i>Synergy II-16</i> : 16 MB SGRAM, 6 ns<br><i>Synergy II-32</i> : 32 MB SGRAM, 6 ns                 |
| BIOS                          | VESA 3 (Flash ROM)                                                                                   |
| Video Bus                     | AGP 2x / 4x (universal card design)                                                                  |
| Line frequency                | 31-300 kHz                                                                                           |
| Graphics standards            | OpenGL <sup>®</sup> 1.1<br>Direct X3 (Windows NT4.0)<br>Direct X5/6 (Windows 95/98/2000)             |
| 3D hardware features          | Single-pass multi-texturing<br>MIP mapping<br>Gouraud shading<br>Stencil<br>Fogging<br>and much more |
| Standards                     | VESA DPMS<br>DDC2B<br>Plug & Play                                                                    |
| Connectors                    | monitor: D-shell, 15 pin                                                                             |
| Design                        | NLX (standard: equipped with ATX slot receptacle)                                                    |
| Dimensions                    | 167 mm x 83 mm (plus slot)                                                                           |

#### 3.3 Resolution and refresh rate

All values in the overview marked with a " n" support Z-buffer and double buffering (3D hardware acceleration).

| Typical resolution in pixels | Refresh rate in Hz<br><br>for High Color or True Color | 3D resolution with double buffering |       |            |       |
|------------------------------|--------------------------------------------------------|-------------------------------------|-------|------------|-------|
|                              |                                                        | High Color                          |       | True Color |       |
|                              |                                                        | 16 MB                               | 32 MB | 16 MB      | 32 MB |
| 1920 x 1200*                 | 96                                                     | n                                   | n     | -          | n     |
| 1920 x 1080                  | 107                                                    | n                                   | n     | -          | n     |
| 1800 x 1440                  | 86                                                     | n                                   | n     | -          | n     |
| 1600 x 1280                  | 109                                                    | n                                   | n     | -          | n     |
| 1600 x 1200                  | 116                                                    | n                                   | n     | -          | n     |
| 1600 x 1000*                 | 139                                                    | n                                   | n     | -          | n     |
| 1280 x 1024                  | 170                                                    | n                                   | n     | n          | n     |
| 1152 x 864                   | 200                                                    | n                                   | n     | n          | n     |
| 1024 x 768                   | 200                                                    | n                                   | n     | n          | n     |
| 800 x 600                    | 200                                                    | n                                   | n     | n          | n     |
| 640 x 480                    | 200                                                    | n                                   | n     | n          | n     |

\* special resolution for 16:10 wide-screen monitors (e.g. *ELSA ECOMO 24H96*)

The values given are maximum values, and are not always achievable under all operating conditions. Under Windows, it is easy to switch to other graphics modes. Refresh rates above 200 Hz are entered as 200 Hz.

### 3.4 Supported processors

The *ELSA Synergy II* supports the following (and other) processors:

- n AMD K6
- n Cyrix M2
- n Intel® Pentium® II
- n Intel® Pentium® III

### 3.5 Supported operating systems

The *ELSA Synergy II* supports the following operating systems:

- n Windows NT® 4.0 (SP 4 required)
- n Windows® 95
- n Windows® 98

The *ELSA Synergy IIs* already prepared to support the following operating systems:

- n Windows® 2000
- n Linux

## 4 Software suite

Like all professional graphics solutions developed by ELSA, *Synergy II* comes with the *ELSA Software Advantage™* suite of drivers and software tools. All software components undergo constant quality control. They are continually optimized and maintained in ELSA's in-house development labs, even way past their marketable shelf life. Of course, ELSA provides all customers with the most up-to-date versions on the Internet, e.g. at *ELSA WINNERware*

#### 4.1 Driver scope and version status

The following overview shows the current software scope and version status:

| Driver                            | Version                         | Status*            | Description                                                          |
|-----------------------------------|---------------------------------|--------------------|----------------------------------------------------------------------|
| <i>SIMDream</i> incl. OpenGL® ICD | 4.07.06.069<br>1.1.0 build 0088 | Release<br>Release | Graphics driver for Windows NT ® 4.0<br>NT graphics driver component |
| Windows 9x driver                 | 4.11.01.0200-0025               | Released           | Graphics driver for Windows ® 95/98                                  |
| <i>POWERdraft</i> ™               | 14.03.05                        | Released           | Display list driver for AutoCAD ® R14                                |
| ELSAHDI driver                    | 1.00.03                         | Release            | HDI driver for AutoCAD ® 2000                                        |
| <i>MAXtreme</i> ™                 | 1.08.05                         | Released           | Driver for 3D Studio ® MAX R2.x and<br>3D Studio VIZ R2.x            |
| <i>MAXtreme</i> ™                 | 2.00.02                         | Released           | Driver for 3D Studio ® MAX R3                                        |
| <i>ELSAview 3D</i> ™              | 1.04.06                         | Released           | OpenGL based 3D viewer for AutoCAD R14                               |
| <i>ELSAview 3D</i> **             | 2.00                            | Beta               | OpenGL based 3D viewer for AutoCAD R14                               |

\*a beta driver is still going through release testing for quality assurance. Additional or other beta software can be sent to you upon request.

\*\* *ELSAview 3D* v 2.00 for AutoCAD ® 2000 may not work with all pre-release versions. If you run into problems, contact ELSA or ELSA technical support for further information.

#### 4.2 ELSA SIMDream™

##### Windows NT® 4.0 graphics driver with SSE support for the Intel ® Pentium® III

Besides the hardware, the graphics card driver is the heart of any graphics solution. It ensures perfect coordination between the operating system and the graphics hardware in use. In recent years, Windows NT has become the platform of choice for professional graphics workstations. ELSA has responded by focusing on the development of graphics drivers for this operating system.



OpenGL is closely associated with NT. It has established itself as the standard interface, because of the particular 3D requirements of the CAD, MCAD and visualization markets.

The performance of the NT driver depends directly on the performance of the OpenGL-ICD (installable client driver) used.

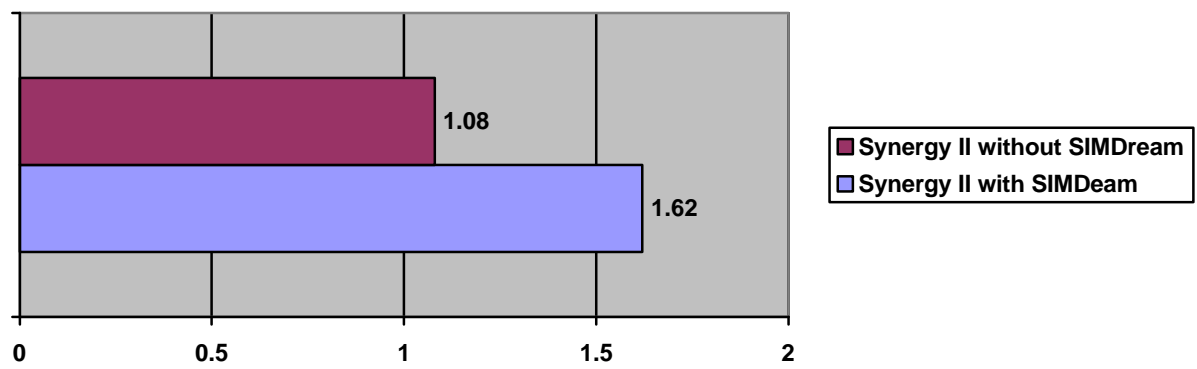
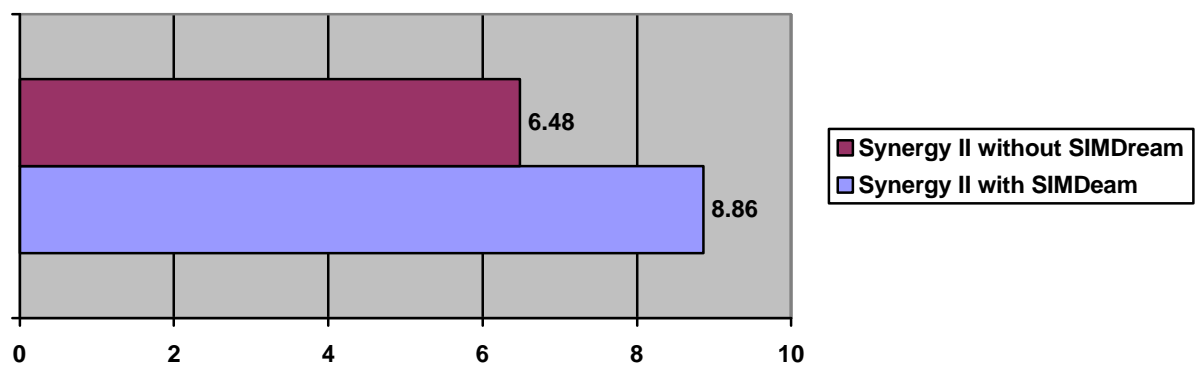
ELSA has years of experience in OpenGL programming, so we are able to develop the NT driver entirely on our own. The result is maximum graphics performance and functionality.

##### Graphics performance by optimizing Intel ® Pentium® III SSE

SSE stands for Streaming SIMD Extension, as Intel calls the new command extension of Pentium III. SIMD stands for Single Instruction Multiple Data, a processor technology concept used in the Pentium III.

OpenGL-ICD, integrated in the Windows NT driver for *Synergy II*, has been completely matched to the SIMD architecture of the Pentium III. It utilizes the high calculating power of the new Intel flagship in an optimal way. The clearly higher performance is illustrated in the two figures below. The first shows a test result of the GLPerf test. This test measures speed at the graphics chip level. The number of triangles calculated per second is measured. The second result shows a ProCDRS-01 application benchmark from Viewperf 6.1. Both results were achieved at the same processor clock rate of 500MHz. For these applications, they show a definite increase that can only be credited to the *SIMDream* driver's optimal compatibility with the Pentium III.



**GLPerf Benchmark** (10 pixel triangle, Gouraud-shaded with a light source)**ProCDRS-01**



## Functionality and user-friendliness with ELSA WINman Suite™

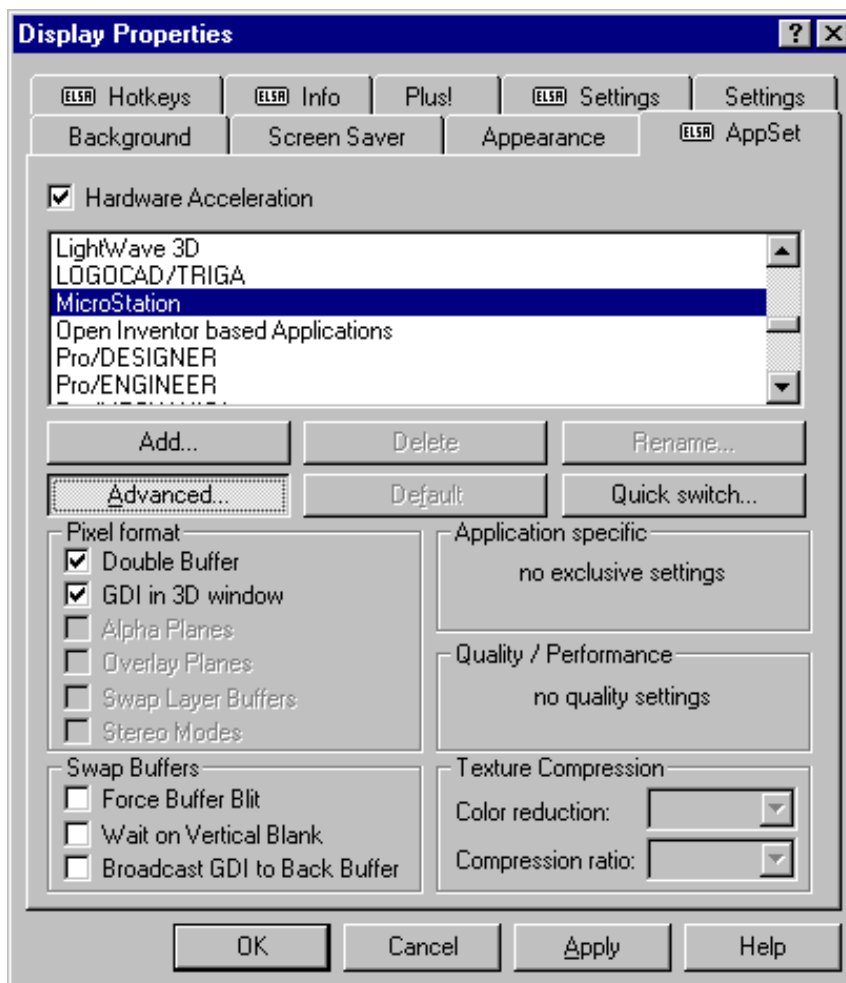
Besides pure graphics performance, functionality is important for a graphics solution. It should be user-friendly. For the professional user, it is especially important that the graphics system be easy to configure for the individual requirements of the graphics workplace. This has an appreciable effect on professional earnings. The *Synergy II/Windows NT* driver *SIMDream* is equipped with an array of tools for such purposes, called the *ELSA WINman Suite*

- n *ELSA Application Settings*
- n *ELSA Settings*
- n *ELSA Hotkeys*
- n *ELSA Info*

### ELSA Application Settings

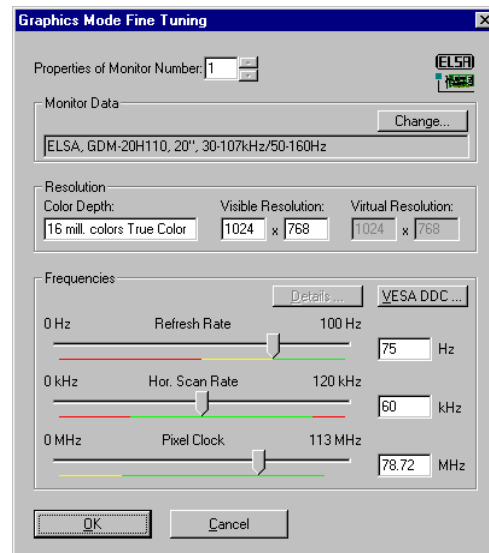
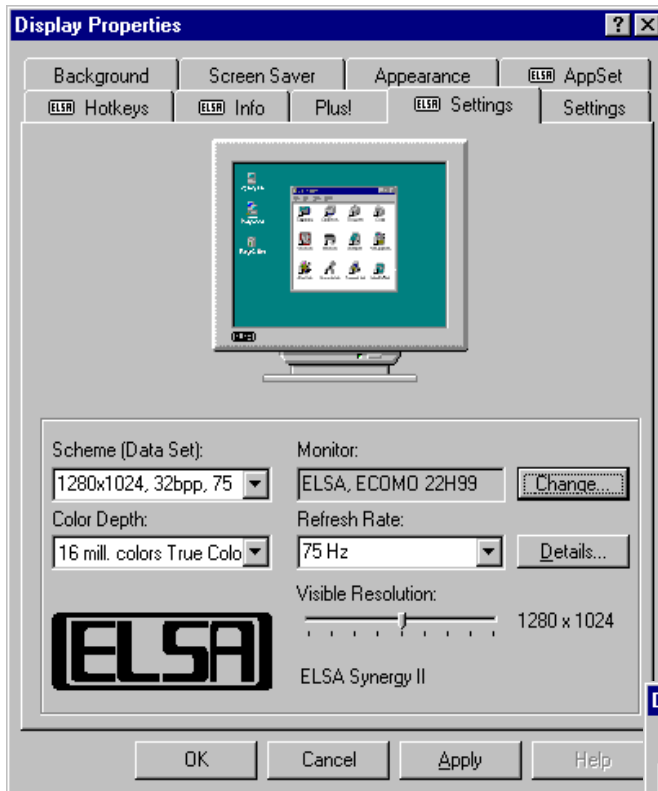
To enjoy optimal graphics performance, some OpenGL settings specific to the application are needed. Manual configuration would require specialized OpenGL know-how for the application, and would cost a noticeable amount of time for a user working regularly with two

or more graphics applications. With *ELSA Application Settings* (formerly *ELSA GLoria Settings*), the user has a tool for configuring the optimal OpenGL settings simply by selecting the application in use.



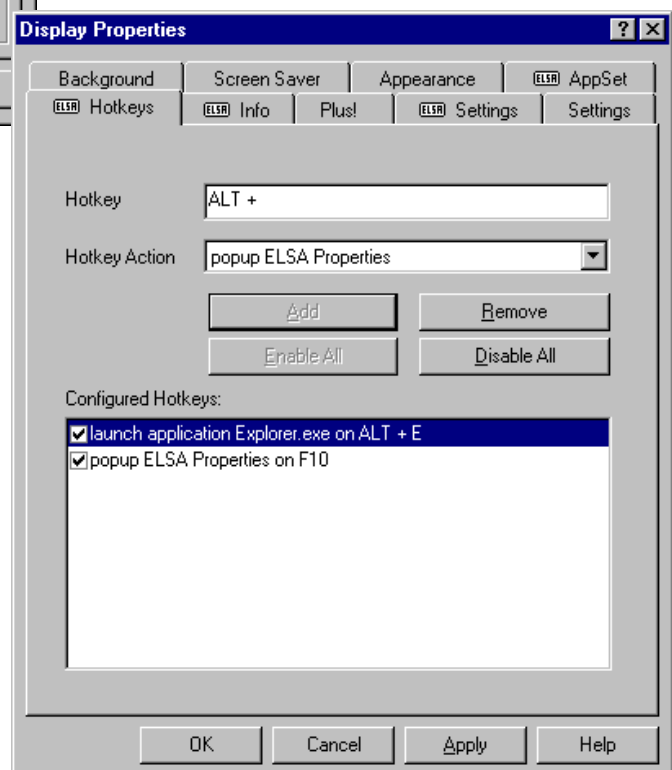
## ELSA Settings

The settings in *ELSA Settings* are equally intuitive and user-friendly. All configurations from the resolution and the refresh rate to the color depth are quickly and easily set. Furthermore, further details (Details ... button) about the timings used can be displayed and modified. That means that in addition to the standard resolutions any resolution and refresh rate that is possible in principle can also be configured. Users with older, fixed-frequency monitors profit especially from this feature, since they can continue to use their old monitors.

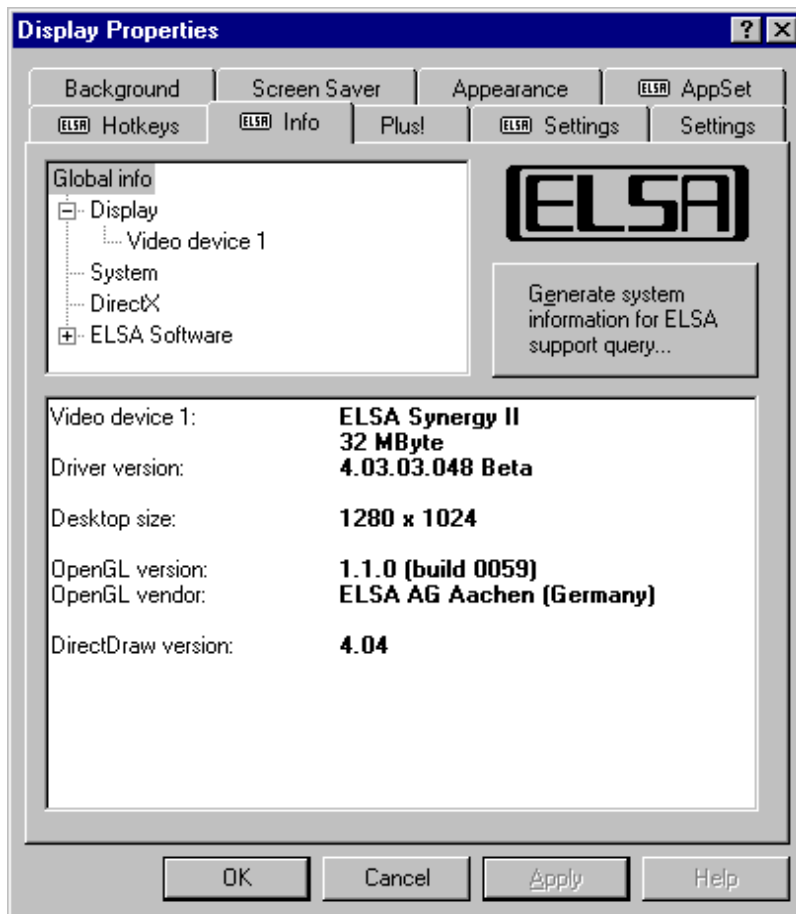


## ELSA Hotkeys

This tool, first introduced in the *ELSA GLoria Synergy* driver, makes it much simpler for the user to interact with the system. It also belongs to *Synergy II's WINman Suite*. Frequently recurring operations, like opening an application, can be associated with hotkeys, and can be started very quickly with a key combination. It is completely intuitive to set up, and requires no programming skills.



## ELSA Info

**Information**

*ELSA Info* is a support information tool that gives detailed information about the current configuration of the graphics system. Besides data about the installed graphics card, *ELSA Info* tells which drivers are installed in which versions, and provides further details about the PC system.

The support it offers relieves the system administrator or user of the graphics system tasks, since all data can be called up centrally.

**Help with a technical support case**

If the user needs to call To locate the error as

ELSA Technical Support, our goal is to help as quickly as possible. quickly as possible, the support analyst needs the problem description, plus all product, driver capacity and version data, as well as information on the PC system.

*ELSA Info* generates all this data simply and quickly (Generate system information ... button). On the interactive query, the user only has to enter the error description, with some data on the motherboard, and perhaps some other critical hardware components. All other data is automatically read and listed in a text document. The text file can then be saved and printed, providing all data for the call to technical support.

### 4.3 Graphics card driver for Windows<sup>®</sup> 95/98

#### Windows 95/98 graphics driver with SIMS processor architecture support

Although the *ELSA Synergy II* definitely emphasizes Windows NT, an exceedingly high-performance graphics driver for Windows 95/98 users is also available.



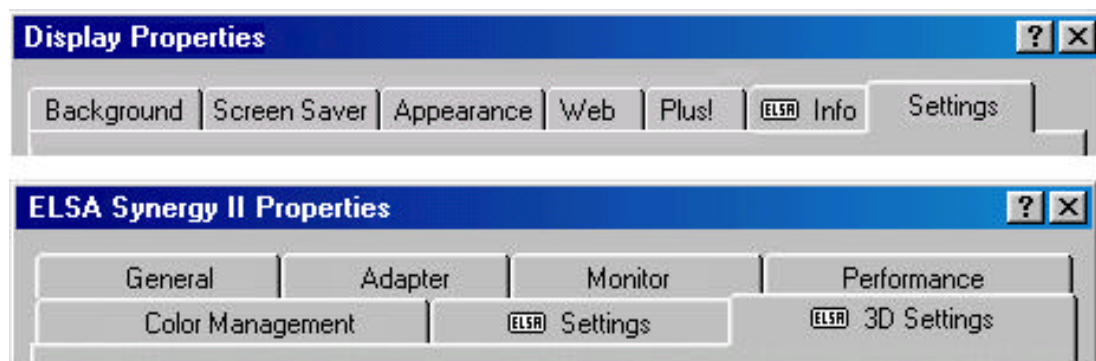
Besides the SSE support for Intel Pentium III, the Windows 95/98 driver is also optimized for AMD K6 3DNow! technology. With *Synergy II*, users of both processors enjoy the performance advantage of SIMD technology. The driver development for Windows 95/98 focuses on hardware support for Direct3D.



#### Functionality and user-friendliness with ELSA WINman Suite<sup>™</sup>

Functionality and user-friendliness are requirements with any operating system platform. So, like its NT counterpart, the Windows 95/98 graphics driver comes with the *ELSA WINman Suite*, and consists of these tools:

- n *ELSA 3D Settings*
- n *ELSA Settings*
- n *ELSA Info*

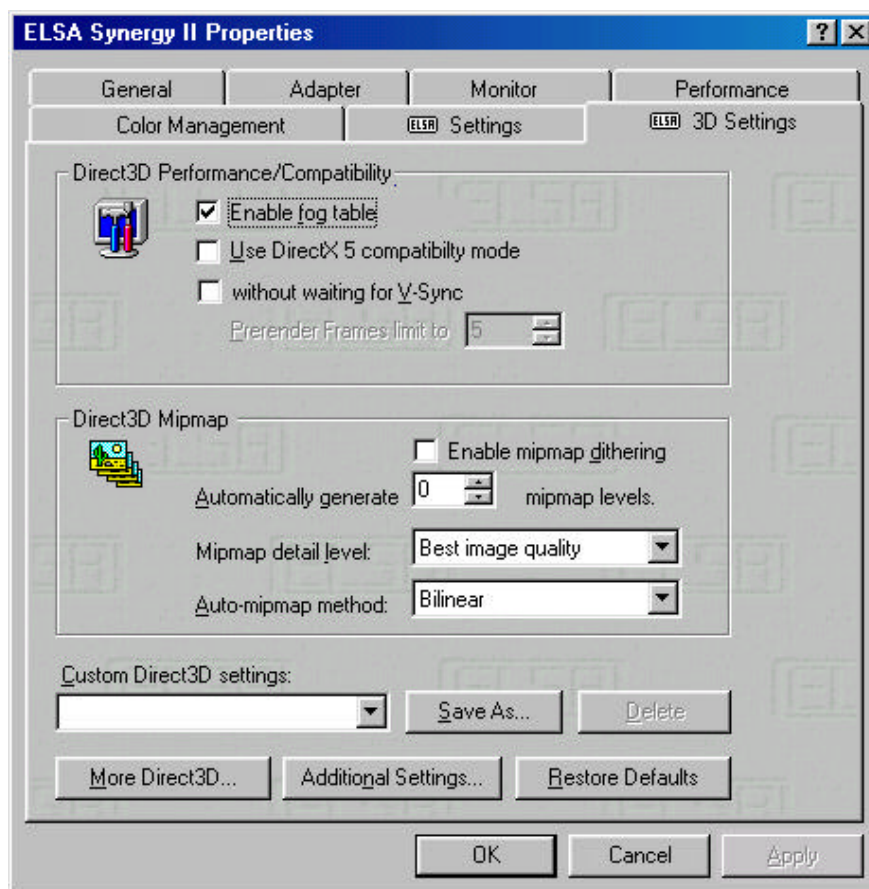


#### ELSA Settings and ELSA Info

Because these tools are similar in use and function to the NT driver *WINman Suite*, refer to Sec. 4.2 for their description.

## ELSA 3D Settings

Requirements under Windows 95/98 differ from those under NT. The *ELSA 3D Settingstool* takes this into account. This very extensive tool offers the possibility of modifying all Direct3D settings in detail.



## 4.4 ELSA POWERdraft™

### ELSA display list driver for improving productivity with AutoCAD® R14<sup>1</sup>

*ELSA POWERdraft is the fastest 2D display list driver for AutoCAD R14. It offers users unexcelled performance, and an exceptionally user-friendly interface. ELSA POWERdraft is available for Synergy II, as with all ELSA GLoria and ELSA Synergy graphics accelerators. It is used in place of the standard AutoCAD driver. It sets the standard for increased productivity with AutoCAD.*

*With ELSA POWERdraft, ELSA is also the only graphics card manufacturer in the world to develop a hardware accelerator for AutoCAD® R14 users. In addition to higher speed, the applications driver offers an overview and close-up function, plus joystick-type control for real-time pan and zoom actions. This is why ELSA graphics solutions, combined with ELSA POWERdraft and other user-friendly ELSA tools are the professional AutoCAD user's tools of choice.*



### Special features enhance user convenience

<sup>1</sup> The *POWERdraft* which supports AutoCAD 2000, is in preparation. Planned release is in summer 1999.

## Smart Focus

*Smart Focus technology integrates ELSA POWERdraft into AutoCAD. Smart Focus keeps the AutoCAD drawing area in the center of focus, by bringing new design input automatically and immediately into the AutoCAD window. The ELSA POWERdraft is a seamless expansion of AutoCAD, not a separate, cumbersome auxiliary program.*



## Cockpit

As a favorite auxiliary program among AutoCAD users, Cockpit offers dynamic panning and zooming of AutoCAD data, simply with the mouse. The user-friendly interface fits into your application window. It is easy and flexible to use. Navigation is easy with drag and drop operation. In association with Smart Focus, Cockpit is completely integrated into AutoCAD, and is transparent to the user. Cockpit offers a graphical navigation interface, providing the user with improved AutoCAD performance.

## MultiView

Within the AutoCAD window, MultiView features a configurable visual log of up to 100 saved views. MultiView displays each view as a clickable icon in Cockpit. AutoCAD users can display a selected view immediately with a mouse click.

## MagniView

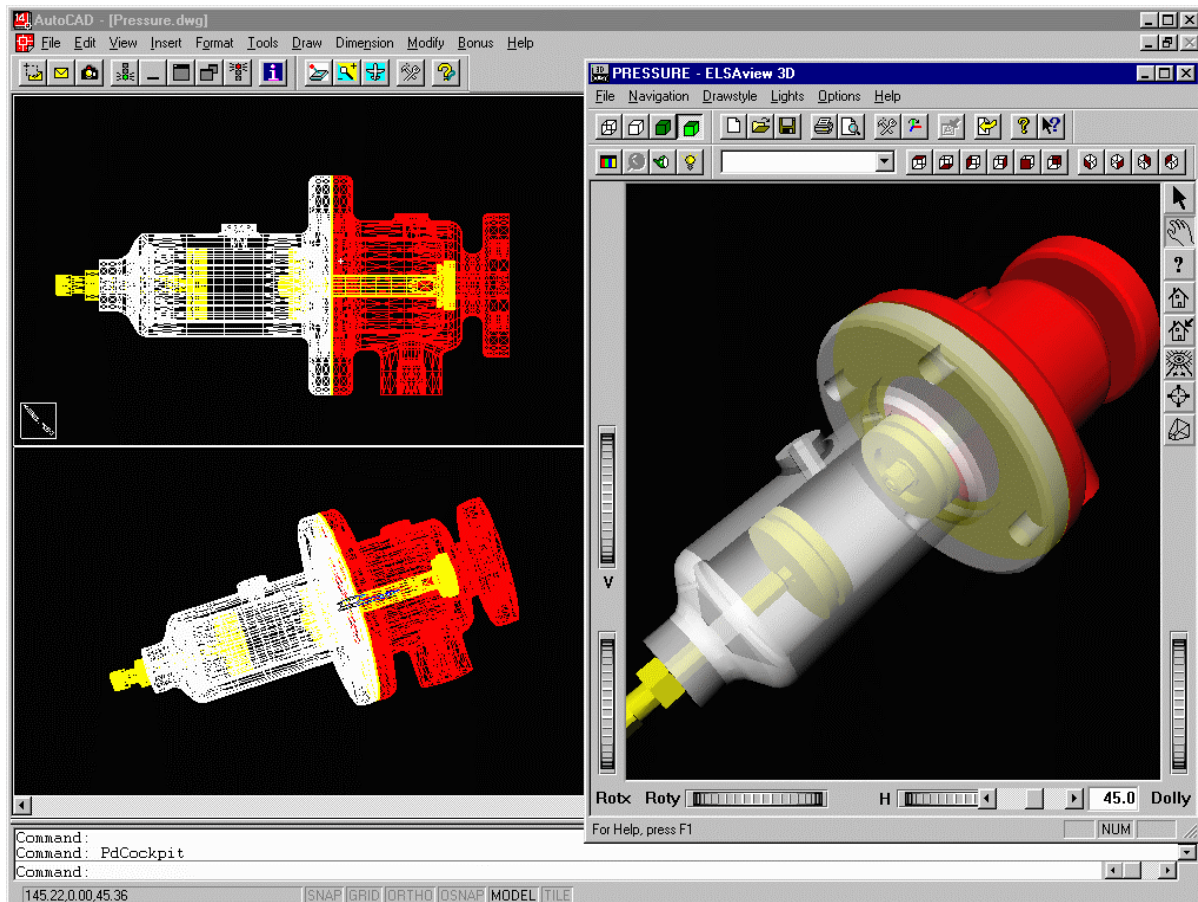
The magnifier for AutoCAD users, MagniView shows a magnified view at the current cursor position without changing the main AutoCAD view. Since this is dynamically updated, the user has only once to position the AutoCAD cursor on the selected area of the drawing. In MagniView, the exact cursor position is visible. Even without zooming, AutoCAD elements can be edited precisely, targets selected, and special information can be found in the drawing.

## 4.5 ELSAview 3D™

### Real-time 3D visualization of CAD models and textured objects

Like *POWERdraft*, *ELSAview 3D* is supplied with *Synergy II*. Users of Autodesk products like AutoCAD® and Autodesk® Mechanical Desktop especially profit from it. This special application for drawing 3D models can also be used as a stand-alone application, or with other CAD programs. It distinguishes itself through a large range of functions, intuitive mouse and keyboard operations, and outstanding performance.





### Full integration into AutoCAD

ELSAview 3D can be fully integrated into AutoCAD or Autodesk Mechanical Desktop. In real-time, the object you have developed appears three dimensionally and almost photo-quality in an AutoCAD Viewport, or in a separate window on your desktop.



### Application-independent

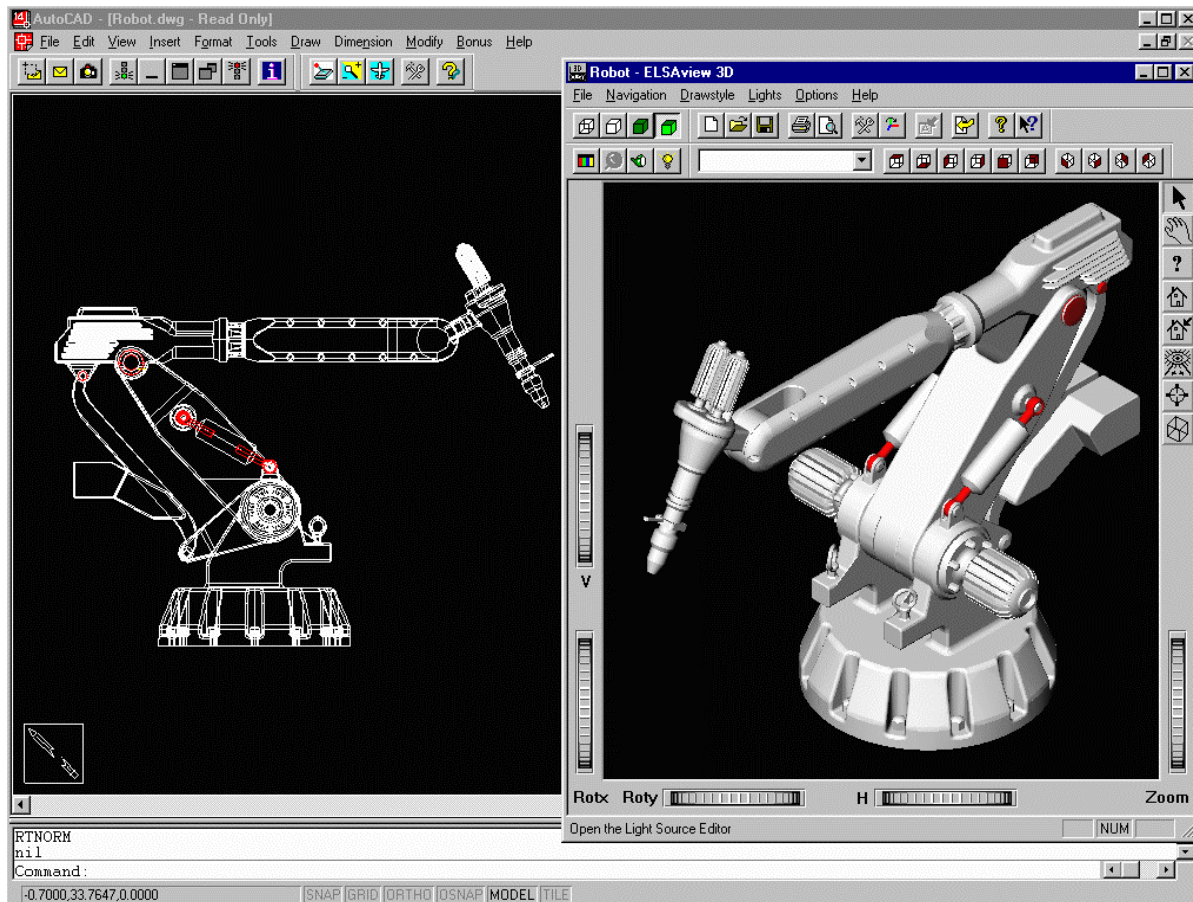
ELSAview 3D is compatible with many CAD and animation applications, and supports both VRML and Open Inventor data formats. Therefore, the 3D models can be called up and presented independent of the original programs.

### Special performance features

- n define desired perspectives by mouse dragging
- n add light sources
- n vary color palette
- n intuitively rotate models at user-definable speed
- n fully orientable axes
- n easy zooming for detail views

Modifications in ELSAview 3D can either be made without refreshing the AutoCAD window, or by simultaneously updated.

The results can be presented immediately and effectively, or integrated into other applications. Of course, the generated models can be output as a bitmap or VRML file for e-mailing or Internet presentation, if desired.



### General features

- n full support of OpenGL<sup>®</sup> with high 3D performance
- n multithreading and multiprocessor support
- n intuitive user interface
- n visualization configurable for individual requirements
- n hardware acceleration of numerous drawing modes, e.g.: wire models, hidden lines, flat shading, Gouraud shading and texture mapping

### Stand-alone functions for CAD and visualization

- n performance gain through real-time visualization of 3D models
- n light sources can be generated with the viewer, and freely adjusted
- n toggle between perspective and orthogonal projection
- n read and write to VRML 1.0 and Open Inventor file formats
- n 3D models can be called up on the computer, even without the CAD program.

### Special AutoCAD functions

- n full integration into AutoCAD and Autodesk Mechanical Desktop.
- n *ELSAview 3D* window moveable on the desktop, ideal for multiple monitor operation, for example.
- n *ELSAview 3D* views dynamically refreshed during AutoCAD editing
- n 3D pan, zoom and rotation in *ELSAview 3D*, without need for AutoCAD regeneration
- n import light sources and views from AutoCAD
- n toggle between perspective and orthogonal projection with a mouse click; no need to regenerate
- n save and export AutoCAD models in VRML and Open Inventor formats



## 4.6 ELSA MAXtreme™

### ELSA's proprietary driver technology for 3D Studio MAX/VIZ R2.x and 3D Studio MAX R3 productivity improvement

3D Studio MAX R2.x and 3D Studio VIZ R2.x and the new 3D Studio MAX R3 are high-performance applications for modeling, rendering, visualization and animation of 3D objects. The software suite comes with two contrasting standard graphics drivers with different performance characteristics:



- n HEIDI driver (Software Z-Buffer/SZB)
- n OpenGL® driver (for hardware acceleration).

ELSA is the only graphics card manufacturer that has developed new technology to increase user productivity, and fully utilize performance potential. *ELSA MAXtreme is a special application driver for 3D Studio MAX/VIZ Version R2.x. It uses the special performance capability of the ELSA Synergy II in an optimal way.* With many improvements over the standard drivers, it brings appreciable increases in performance and productivity to these applications.

#### Advantages of HEIDI

The HEIDI driver is especially fast when only one object is to be drawn in a scene. Almost all graphics operations are done in the computer CPU and main memory. Data is only sent to the graphics card when it is screen-ready. This driver is also suitable for a powerful computer with a simple graphics card.

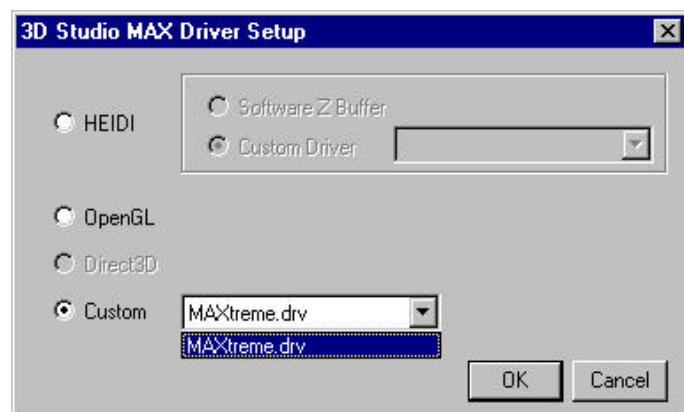
#### Advantages of OpenGL

OpenGL, together with 3D graphics cards like ELSA GLoria or ELSA Synergy, is capable of extremely fast hardware-accelerated drawing of shaded and textured scenes. With ELSA Gloria XXL, the entire 3D geometry processing is done by the graphics accelerator. Even the moving of individual objects in complex surroundings is extremely fast with ELSA graphics cards, when using the OpenGL driver, since ELSA NT drivers support a special Kinetix-defined expansion of OpenGL functionality. With the OpenGL hardware accelerator, complete scenes and complex textures can be modeled and animated much faster than with the HEIDI software driver in 3D Studio

#### Advantages of ELSA MAXtreme

*ELSA MAXtreme combines the advantages of HEIDI and OpenGL within a single driver. The ELSA MAXtreme driver technology was developed for the special performance characteristics of the ELSA graphics cards. It has further expansions (Plugins) to increase the productivity of the ELSA accelerators, in conjunction with 3D Studio MAX/VIZ.*

*With these expansions, ELSA MAXtreme can produce many effects, that otherwise would only become visible at the final video rendering.*



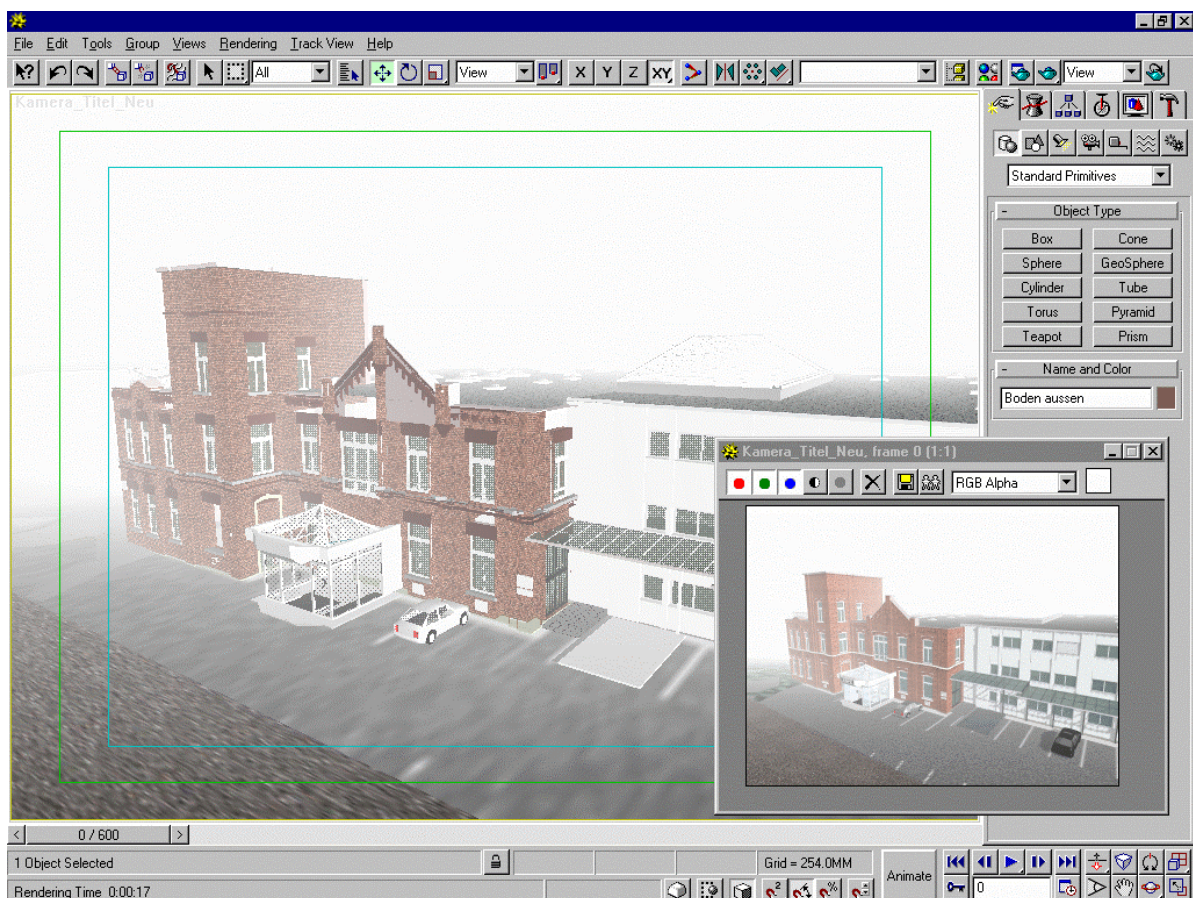
## Transparency

Normally, 3D Studio MAX/VIZ represents transparent objects by more or less dense clouds of points ('stippled' or 'screen door' method). This portrays the transparency of an object. In fact, the visual impression is not really of a transparent object. *ELSA MAXtreme* offers you the choice:

- n whether or not to portray transparent objects as transparent
- n whether or not to use the aforementioned standard methods
- n whether or not *ELSA MAXtreme* should portray transparent objects realistically. This can be done in two ways:
  - n by blending the color of the transparent object with the color of the object behind it
  - n by also sorting the transparent objects spatially before displaying (sorted blending). This gives the perfect transparent impression, even with many transparent objects in the scene.

## Fogging

Usually, no fogging is shown in the task views. However, *ELSA MAXtreme* supports the standard fogging of 3D Studio. This produces the realistic impression of a foggy scene, even in the early stages. Of course, it is also animated.



## Rendering views

Usually the 3D Studio views produce “only” an approximation of what is visible with a production or draft renderer. Especially when atmospheric effects or separate renderers are used, the views may give only a rough approximation of these effects. *ELSA MAXtremeRender transfers the renderer images directly into a view.* This is a simple and exact means of checking work output.

## 5 Benchmark results

### 5.1 System environment

All benchmark results for the *ELSA Synergy II* were obtained in the following system environment. If your test results are significantly different, we would appreciate your notifying us.

| System environment          |                                          |
|-----------------------------|------------------------------------------|
| Test date:                  | 21.04.1999                               |
| Computer                    | Single PIII 500 MHz 256 MB               |
| NT version:                 | NT4.0, SP4, Pentium III SSE installation |
| NT driver version:          | 4.04.03.052                              |
| OpenGL® version:            | 1.1.0 build 0062                         |
| OpenGL® driver manufacturer | ELSA AG                                  |

### 5.2 Viewperf 6.1 results

| Viewperf 6.1                                                    |                            |
|-----------------------------------------------------------------|----------------------------|
|                                                                 |                            |
| Parametric Technology's Conceptual Design and Rendering System  |                            |
| CDRS-04: weighted geometric mean                                | <b>100,83</b>              |
| Resolution, color depth                                         | 1024 x 768 @ 75 Hz, 16bpp  |
|                                                                 |                            |
| Parametric Technology's Pro/DESIGNER industrial design software |                            |
| ProCDRS-01: weighted geometric mean                             | <b>8,68</b>                |
| Resolution, color depth                                         | 1280 x 1024 @ 75 Hz, 16bpp |
|                                                                 |                            |
| IBM's Data Explorer                                             |                            |
| DX-04: weighted geometric mean                                  | <b>10,08</b>               |
| Resolution, color depth                                         | 1024 x 768 @ 75 Hz, 16bpp  |
|                                                                 |                            |
| Intergraph's Design Review                                      |                            |
| DRV-05: weighted geometric mean                                 | <b>7,13</b>                |
| Resolution, color depth                                         | 1024 x 768 @ 75 Hz, 16bpp  |
|                                                                 |                            |
| Alias/Wavefront's Advanced Visualizer                           |                            |
| Awadv-02: weighted geometric mean                               | <b>15,06</b>               |
| Resolution, color depth                                         | 1024 x 768 @ 75 Hz, 16bpp  |
|                                                                 |                            |
| Lightscape Technology's Lightscape Visualization System         |                            |
| Light-02: weighted geometric mean                               | <b>1,43</b>                |
| Resolution, color depth                                         | 1280 x 1024 @ 75 Hz, 16bpp |

### 5.3 Indy 3D V 3.0 results

| Indy 3D v 3.0                 |                            |
|-------------------------------|----------------------------|
|                               |                            |
| MCAD 40 (fps)                 | <b>11,56</b>               |
| MCAD 150 (fps)                | <b>3,55</b>                |
| Animation (fps)               | <b>14,48</b>               |
| Simulation (fps): (Trilinear) | <b>34,04</b>               |
| Resolution, color depth       | 1280 x 1024 @ 75 Hz, 16bpp |

### 5.4 WinBench 99 V 1.0 (Winmarks)

| WinBench 99 V1.0 (Winmarks)         |                           |
|-------------------------------------|---------------------------|
|                                     |                           |
| Business Graphics WinMark 99 NT 4.0 | <b>222</b>                |
| High-End Graphics WinMark 99 NT 4.0 | <b>387</b>                |
| Resolution, color depth             | 1024 x 768 @ 75 Hz, 16bpp |

## 6 Distribution, pricing and service

Like all ELSA products, *ELSA Synergy II* is marketed exclusively through retail, so it is only available in computer-stores.

### 6.1 Supplied package

The card is supplied in a package containing:

- n *ELSA Synergy II*
- n a manual in German and English
- n an installation guide in German, English, French, Italian, Spanish and Dutch
- n the *ELSA WINNERware* CD-ROM with all required drivers and software-tools

### 6.2 Service and support

ELSA provides all customers with service and support without charge, even after the guarantee expires. The following media are available:

- n Service hotline
- n Service fax line
- n Support hotline
- n Internet
- n ELSA LocalWeb

For telephone and fax numbers and other access, refer to Sec. 8, **ELSA addresses and telephone numbers.**

### 6.3 Guarantee

ELSA guarantees the *ELSA Synergy II* for 6 years.

## 7 Tips, tricks and hints

### 256 Color Mode

*ELSA Synergy I* has the capability to display all resolutions at least in High Color. The 256 color mode has not been optimized, since professional 3D computer graphics is generally done in High Color or True Color resolution.

### PCI design

Currently, the *ELSA Synergy IIs* offered exclusively in AGP technology. A PCI design is planned for summer 1999.

### Multiple monitor operation

Since computers only have one AGP slot, and the *ELSA Synergy IIs* currently not offered in PCI design, it is not possible to operate with multiple monitors. The *ELSA GLoria Synergy* is a currently available system with extensive functionality for multiple monitor operation.

### Direct3D

The *ELSA Synergy I* supports hardware accelerated Direct3D under Windows<sup>®</sup> 95 and 98. Microsoft will release Direct3D for Windows<sup>®</sup> NT only with Windows<sup>®</sup> 2000.

### Multithreading support

With current graphics drivers, the *ELSA Synergy I* can be integrated into multiple processor systems without a problem. A graphics driver with dedicated multithreading support and corresponding performance gain is planned for summer 1999.

### Driver and software updates

Updated software is downloadable from the file area of our ELSA server ([www.elsa.com](http://www.elsa.com)). In addition, software still in the quality assurance cycle is available in a special media or beta folder.

## 8 Supported applications

The following is a selection of the 3D-CAD/CAM/CAE and DCC applications supported by the *ELSA Synergy II*

- n 3D Studio MAX and 3D Studio VIZ
- n ALLPLAN
- n ANSYS
- n AnySIM
- n AutoCAD
- n Autodesk® Mechanical Desktop
- n AVS/Express
- n CADdy++
- n dVISE NT
- n EDS Unigraphics
- n HiCAD
- n I-DEAS Master Series
- n Lightscape
- n LightWave 3D
- n LogoCAD
- n MICROCADAM Helix
- n MicroStation
- n Open Inventor
- n Pro/ENGINEER
- n Solid Edge
- n SolidWorks
- n Visplan
- n WorldToolKit/World Up

## 9 ELSA addresses and telephone numbers

The following addresses, telephone, and fax numbers, and other access modes are released for publication.

### 9.1 ELSA International

#### ELSA Head Office

|              |                          |
|--------------|--------------------------|
| ELSA AG      |                          |
| Sonnenweg 11 |                          |
| 52070 Aachen | Tel.: +49-(0)241-606-0   |
| Germany      | Fax: +49-(0)241-606-1199 |

#### ELSA Branch Offices

|                       |                       |
|-----------------------|-----------------------|
| ELSA, Inc.            |                       |
| 2231 Calle De Luna    | Tel.: +1-408-919-9100 |
| Santa Clara, CA 95054 | Tel.: +1-800-272-ELSA |
| USA                   | Fax: +1-408-919-9120  |

|                        |                           |
|------------------------|---------------------------|
| ELSA Asia, Inc.        |                           |
| 7F-11, NO. 188, Sec. 5 |                           |
| Nanking East Road      |                           |
| Taipei 105             | Tel.: +886-2(2)-768 57 30 |
| Taiwan, R.O.C.         | Fax: +886-2(2)-766 08 73  |

|                          |                        |
|--------------------------|------------------------|
| ELSA Japan, Inc.         |                        |
| Mita Suzuki Building 3F  |                        |
| 5-20-14 Shiba, Minato-ku |                        |
| Tokyo 108-0014           | Tel.: +81-3-5765-739 1 |
| Japan                    | Fax: +81-3-5765-7235   |

### 9.2 ELSA service and support

|                  |                          |
|------------------|--------------------------|
| Service hotline  | Tel: +49-(0)241-606-5112 |
| Service fax line | Fax: +49-(0)241-606-5199 |

|                                                |                          |
|------------------------------------------------|--------------------------|
| Support hotline for high-end computer graphics | Tel: +49-(0)241-606-6132 |
| Support hotline for monitors                   | Fax: +49-(0)241-606-6135 |

|                                                         |                           |
|---------------------------------------------------------|---------------------------|
| Internet <a href="http://www.elsa.com">www.elsa.com</a> |                           |
| LocalWeb (PPP access)                                   | Tel: +49-241-606-93 88 00 |



## 10 Press releases