Cadkey's DataCAD

By Victor E. Wright

I am regularly asked the question, "What is the Best CAD system?" I rarely give a direct answer, because there are so many good CAD systems, each of which has its strengths and weaknesses. If the question is qualified as to a discipline or field of interest, it is somewhat easier to discuss. Even general purpose CAD systems seem to be better suited to some disciplines or fields than others.

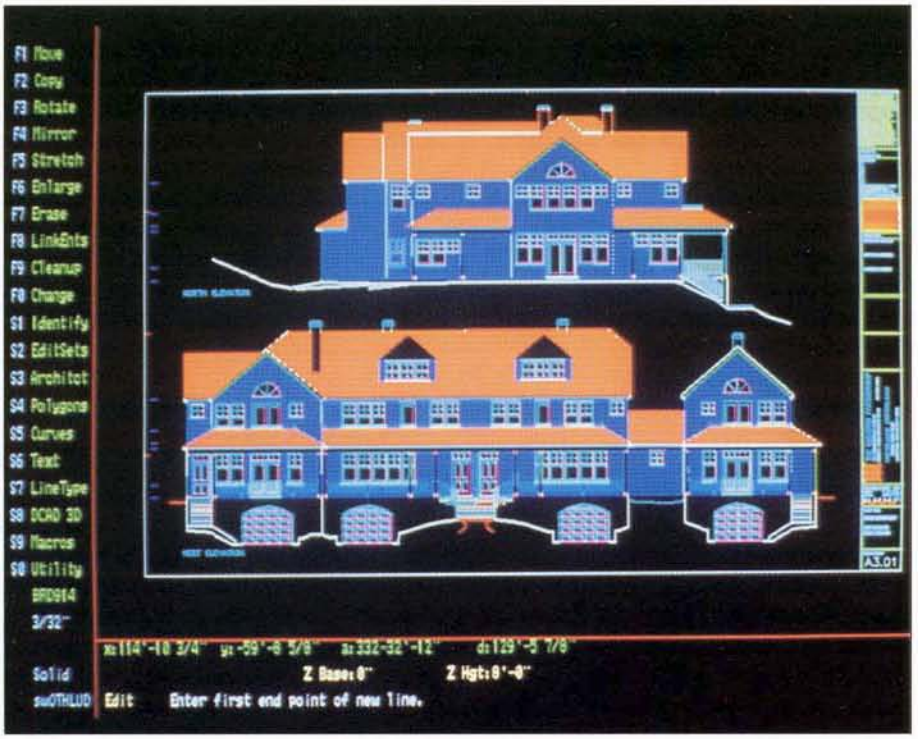
An architectural CAD package should include facilities that automate the design and detailing of those components that are common to all buildings – walls, doors, windows, openings, ceilings – so that the designer can think in terms of the building's components and systems rather than lines, circles and arcs. It should address the management of sets of drawings, as opposed to single drawings, as few architectural designs can be documented in a single drawing. And, it should address the issue of communicating the elements of the design to a diverse audience, ranging from those who are adept at reading drawings to those who are about to encounter their first set of architectural plans.

CADKEY's DataCAD

CADKEY's *DataCAD* is an architectural CAD system. It bears a strong resemblance to CADKEY, but has those touches that make it better suited to architectural design than to other fields – electronic circuit board design and layout, for example.

DataCAD includes all the expected drawing and editing commands. Primitives include points, lines, circles, arcs, polylines, text, spline curves and various surfaces. The system expects data points for lines, unless another command is in progress. Editing commands include move, copy, rotate, mirror, stretch, enlarge (scale), erase, cleanup (trim) and change (properties), as one might expect. Actually, each one of those editing commands is the name of an editing command menu – the total number of editing commands is much larger.

In addition to the basic drawing commands and primitives, *DataCAD* includes a menu of architectural options. This menu includes commands to draw double-line walls, doors, windows and openings. An option is provided to "clean up" wall intersections automatically as they occur and another option is provided to cap the ends of walls or leave them open. Windows and doors can be inserted with a single command – *DataCAD* breaks the wall, caps the ends of the opening, and draws a window or door symbol in the opening. Similarly, a door, window, or raw opening can be removed with a



CADKEY's DataCAD is an architectural CAD system. It bears a strong resemblance to CADKEY, but contains features that make it better suited to architectural design.

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single command – *DataCAD* removes the symbol and repairs the wall opening. The door and window symbols are parametric and can be configured from the menu. Although one generally works in the plan view, *DataCAD* draws walls, doors and windows in three dimensions, adding an extrusion height to two-dimensional drawing primitives. The Z-coordinate values of various components – sills, jambs, etc. – can be set from the menu.

DataCAD restricts drawing operations to the plan view (either the plan view, or a user-defined construction plane such as an elevation of the building), but incorporates a comprehensive 3-D viewer. With this facility, you can select orthographic, parallel, perspective, and oblique views, and select the viewing direction (eye-target line) interactively. The program provides several methods to set the viewing parameters, including controls to define the eye-target line directly, to rotate the model and to walk through the model. The portion of the model that is to be visible can be selected with a 3-D "clipping cube."

In addition to the list of 21/2-D drawing entities available from the basic *DataCAD* 2-D menu, *DataCAD* includes a set of true 3-D entities, which are accessed through the *DataCAD* 3-D menu. From this menu, you can enter 3-D lines, polygons, blocks, slabs, arcs, cylinders, cones, domes, contours (space curves), general surface meshes and surfaces of revolution. 3-D entities other than 3-D lines are opaque when processed with the HIDE command. With the 3-D drawing and editing features provided, one can construct complex surface models.

DataCAD incorporates several drawing management features. The system stores project related information in each drawing project name or number, employee name, billing rate, department, phase, service, drawing name, current drawing size and time statistics. This data can be written out to a file, which can in turn be used as input for a time accounting system.

A *DataCAD* drawing can contain up to 1,000 layers that can be turned off and on and configured with various settings. Layer settings include line width, display grid size, grid angle, scale, snap grid size, snap on/off, ortho on/off, text display on/off and color. Thus, you can tailor a layer to the type of information it will contain – a layer for block walls could be set for a snap grid of 8-inches, while a layer for HVAC ductwork could be set to 1-inch. You can store a layer from the current drawing in a special drawing file, and import that file into another drawing file later, in much the same manner that one designer furnishes a slick of a mylar overlay to a designer in another department.

Symbols are stored in template files. An active template can be displayed on the screen, from which you can select symbols to insert in the drawing. You can create and edit template files from the active drawing. Each symbol in a template file contains six predefined attributes, or data fields – item name, manufacturer, model number, cost and two remark fields. You can define any number of other fields for a symbol, and set the field type to text, dollar or number. You can then define report forms to generate reports from drawings, counting the instances of symbols and summarizing the attributes.

The template facility is part of *DataCAD* AEC, which also includes a number of macros that automate tedious drafting tasks. *DataCAD* AEC includes routines to draw borders, columns, walls, windows, doors, elevator cores and stairs; to insert symbols and labels; and to automate the construction of 3-D models and the production of 3-D slide shows. *DataCAD* AEC is not as comprehensive as some of the add-ons for other CAD systems, but contains some interesting routines.

DataCAD is clearly aimed at the architectural designer. It incorporates a number of features in the basic package that must be added to other CAD systems via external application packages. Menus, drawing defaults and documentation are tailored to architectural design, making the product one that is easy to learn and easy to use. I can recommend *DataCAD* as an architectural design solution without hesitation.

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