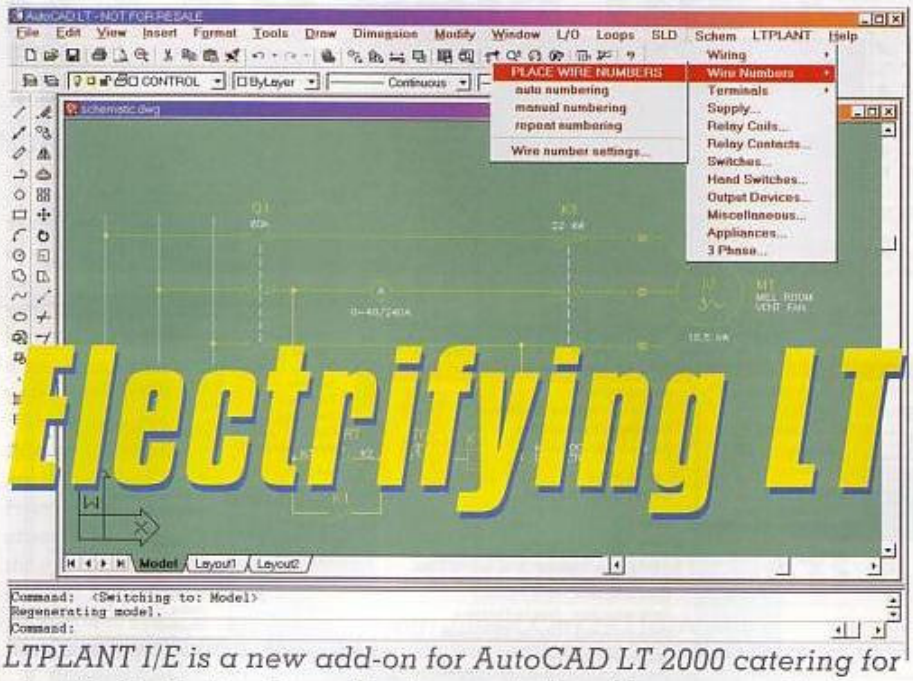
Electrifying LT

For a long time there has been a need for a low-cost, specialised system for drawing electrical, electronic and instrumentation diagrams.

And as so many drafters in those fields have adopted AutoCAD LT, a demand has existed for a specialised add-on for use with LT. On its own, LT can do handle those fields of work, but not so quickly and efficiently as if it were customised for them.

Hence, the LTPLANT I/E system has been developed by a user in those fields, Ian DePassy. There are other modules also for other types of plant diagram work, but the I/E package reviewed here covers instrumentation, electrical and electronic diagramming, plus drawing layouts to show the physical arrangement of the equipment.

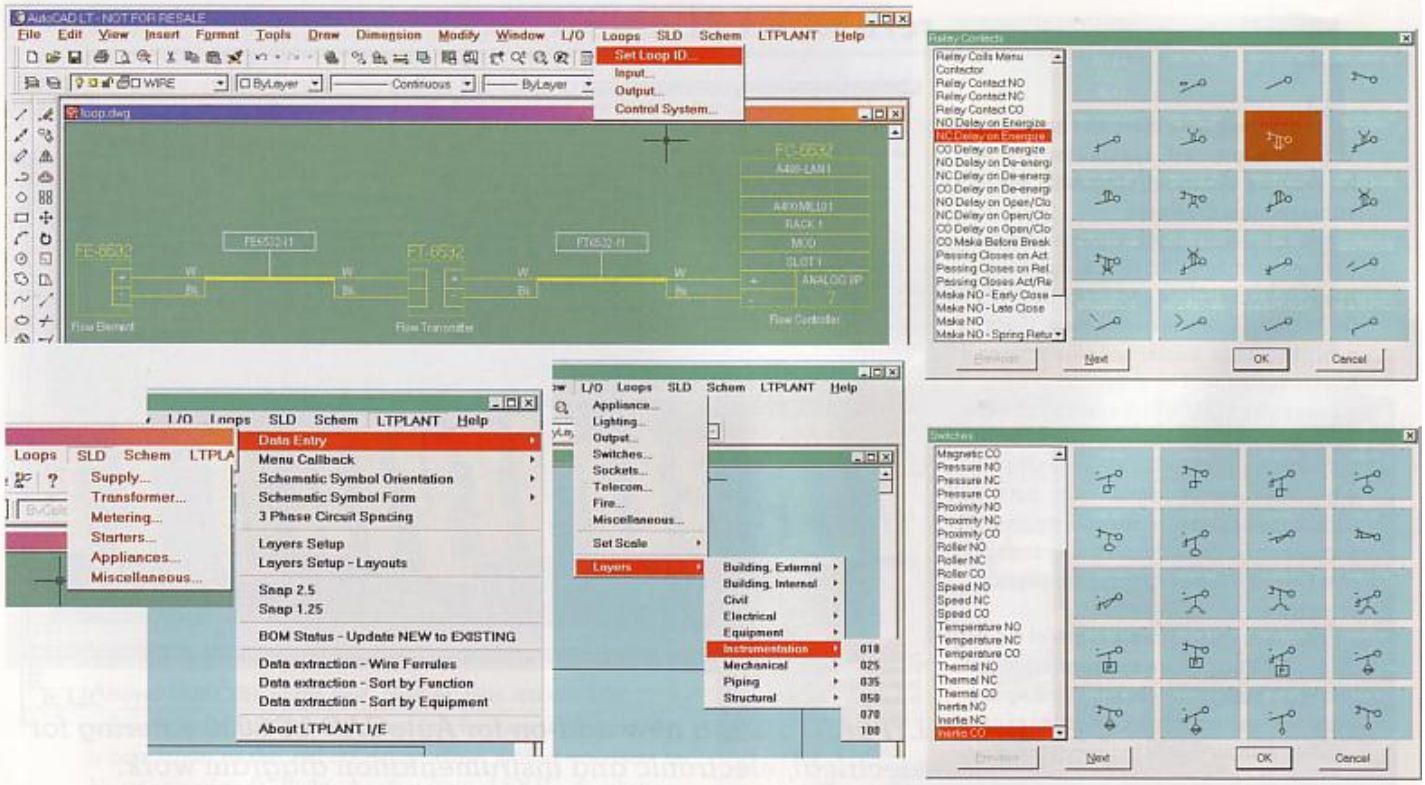
Schematic diagram work is one of the few fields of drafting where scale and representation of 3D space is irrelevant. The diagrams show the functional interconnection of components without regard to their actual physical form and layout.



LTPLANT I/E is a new add-on for AutoCAD LT 2000 catering for electrical, electronic and instrumentation diagram work.

Usually, other drawings are also needed to show the physical forms and layout, and cabling arrangements. There are various conventions for layout of schematic diagrams, and especially in the electric power field, there are two main layout schemes; where the components are arranged either horizontally between vertical main busses, or vertically with horizontal busses. Electronic diagrams are usually arranged in a mainly horizontal form, and in both cases components and connections are usually arranged on a modular grid. This system provides for all these common schemes.

Most electrical add-ons to AutoCAD are American made and most often provide only for USA (ANSI & JEDEC) electrical diagram standards, which differ drastically from the standard symbols used almost everywhere except the USA, Canada and Japan. In Australia we use the SAA (Standards Association of Australia) standards, which are effectively the same as the international ISO standards derived from European practice. New Zealand does similarly. Being an Australian product, LTPLANT-I/E uses the ISO/SAA/IEC standards fully and correctly. >>



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Since AutoCAD LT does not have the programming facilities found in AutoCAD, there are problems designing an add-on system that works they way the developer would really like. LTPLANT's developer has used the customising facilities that do exist in LT to the maximum, including extensive use of Diesel, which is the only part of AutoCAD's programming facilities retained in LT.

But some of the LTPLANT special items do not operate quite as 'slickly' as would be possible if use could be made of Lisp. In some of the special functions, the user is presented with some standard AutoCAD LT prompts or option questions that seem irrelevant. The limitations placed on customising LT by Autodesk make such minor annoyances unavoidable. The LTPLANT Help system explains what responses are required to prompts in the special functions, and they are quickly learnt.

Despite these programming limitations, the end result is a system that is highly usable and productive once its special operational sequences have become familiar. It makes the job of producing these types of drawings vastly faster and more consistent than doing them with the basic AutoCAD LT.

LTPLANT-I/E comprises a large number of blocks, script, and menu files. It does not need any Windows program installation and does not affect the Registry.

Installation consists of copying the supplied files (or expanding them from a ZIP archive) into a new folder. Then you need to start LT and use its Options menu to add that folder to AutoCAD's support files search paths, and to use the AutoCAD Menu Customise menu to add the LTPLANT partial menu files to LT's pulldown menu bar. It adds five pulldowns, as can be seen in the full screen illustration *(previous page)*.

The five added menus are labelled for the several types of work that LTPLANT-I/E supports: 'L/O' (Layouts), 'Loops' (Instrumentation), 'SLD' (Single-Line Diagrams), 'Schem' (Circuit diagrams), and 'LTPLANT' (the main LTPLANT menu). The natural order for describing those seems to me to be in the reverse order, as follows:

The **LTPLANT** menu provides controls for various system settings, such as whether certain menu actions will auto-repeat or not.

Depending on the way you work, auto-repeat, or Callback as it is called here, may speed up the job. You can also select two alternative forms of the ISO/IEC symbols as per the standards definitions. One is a more 'skeletal' form without hinge circles. Here you can set whether you want to work with the horizontal or vertical styles of diagram layout, which affects the symbol blocks used and their label positioning.

Bill of Materials

You can see from the LTPLANT menu *(above)* that this also contains controls for Bill of Materials and other forms of data extraction. That works by using AutoCAD Attributes for symbol labels.

The **Schem** menu is shown on the previous page, along with a sample schematic diagram on the full-screen display illustration. This menu mostly pops up symbol selection menus, which take the form of AutoCAD image menus from which you can pick the desired symbol either by its image or name. Two examples of symbol menus are shown here *(above right)*. This menu also has controls for the auto or manual wire numbering system and terminal numbering.

The **SLD** menu *(also shown)* pops up several symbol selection image menus specifically for drawing single-line diagrams.

The **Loops** menu is used for drawing Instrumentation diagrams. An example drawing is shown above together with the menu. Three menu items pop up symbol selection image menus. The other provides for initialising the auto labelling system for the instrumentation loops.

The **L/O** menu pops up image menus for representations of components in their actual physical form for placement on layout drawings. As this is the one situation where scale is relevant, this menu also provides for scale setting, and a layering scheme.

The extra menus for LTPLANT can be left permanently loaded in AutoCAD LT, even when you use LT for other types of drawing work. They do not interfere with other types of usage. But they can be removed and replaced at any time by the AutoCAD menu load facility, if desired.

LTPLANT is a very well thought out system for these types of drafting and implements the special facilities very well indeed, especially considering the severe limitations of add-on programming that Autodesk build into LT. Instructional and reference documentation is provided in the form of a quite thorough HTML Web-browser-based manual.

For anyone who is presently coping with plain LT 2000 to do these types of work, LTPLANT I/E will certainly greatly facilitate the work. For those looking for a complete system to purchase, the LTPLANT and AutoCAD LT 2000 combination will supply a very good solution, and have the extra benefit of providing AutoCAD LT for other types of work with the assurance of full compatibility with the general 2D drafting system most commonly used by work associates. The price is A$500.

A PowerPoint demonstration is available by request on CD or from www.ltplant.com. Contact: technical@ltplant.com.❖

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