

A man in a blue polka-dot shirt is using a vintage Hewlett-Packard computer. The monitor displays a graph with two data series (one solid blue line, one dashed blue line) and various numerical readouts. The keyboard is a standard beige HP model. The background is a solid blue wall.

The better crane.

You are aware of that situation: Inspection of the construction site, determination of the crane position, checking of access roads, preparing a sketch of the building contours with details of height and possible obstructions. Subsequently, the job is delineated on the drawing board with top and side views - a time consuming task with incomplete results since essential data such as supporting forces are missing. For more efficient planning, Liebherr now offers its customers the LICCON work planner, i.e. a software program on diskettes for planning, simulation and documentation of crane applications on the display screen.



The LICCON work planner - exclusively from Liebherr.

The work planner offers a fascinating range of applications.



LICCON computer system on the LTM 1300.

The prerequisite for the development of such comprehensive software was the data acquisition of any practicable operating mode of every Liebherr mobile crane equipped with the LICCON computer system. In other words, the software is configured and documented specifically for every individual crane. Hence follows the numerous facilities of the LICCON work planner, at present consisting of three

modules which are managed by a menu program.

The load capacity program

substitutes the chart manual. Only such equipment configurations can be selected which are also programmed in the respective crane. The graphical representation is practically identical with the representation on the LICCON display screen.

The crane selection program

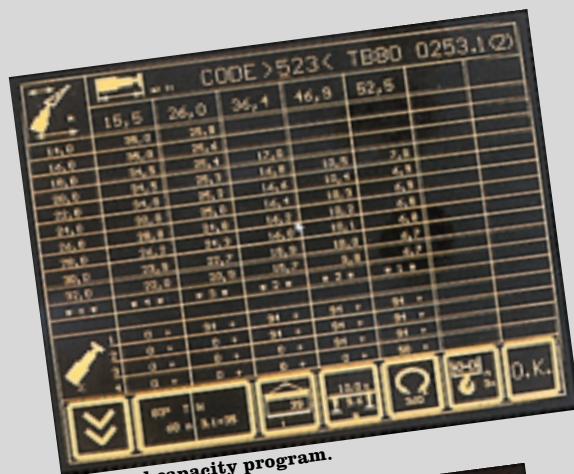
automatically searches the suitable crane for the entered load case. Crane selection also can be performed according to certain criteria such as ballast weight or boom length, either automatically or selectively.

The 2-D planner program

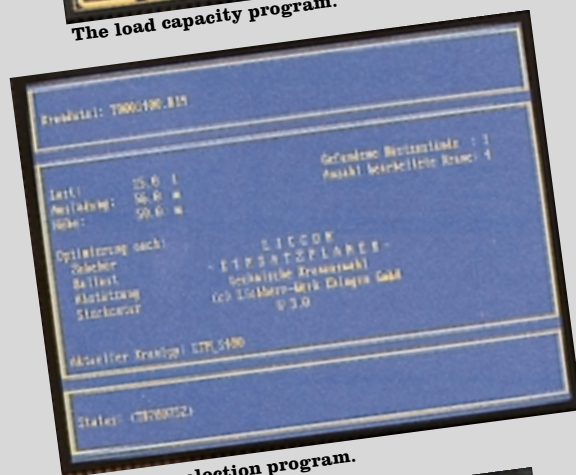
enables simulation and documentation of crane applications. Drawing functions permit to plot and letter a construction site into which a scale model crane can be implicated and moved through all its working motions. At any time, it is possible to have recourse to the actual supporting forces. The screen display can be documented by a connected printer. The symbol-oriented programs of the LICCON work planner are controllable with the mouse.

Calculation of the derrick ballast

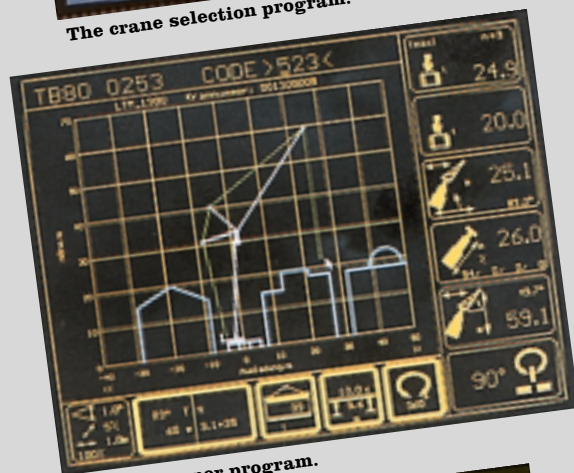
For large equipment with derrick ballast (crawler crane with suspended counterweight or counterweight trailer), the determination of the derrick ballast required at the construction site is an essential cost-reducing factor. Formerly, this determination has been possible only with the aid of a sheet of paper and pencil. That method is time consuming and subject to errors. By means of the work planner, the minimum and maximum required ballast is indicated continuously during the simulation. By the complete simulation of a load case on the PC, it is possible to determine the entire ballast required for that specific case.



The load capacity program.



The crane selection program.

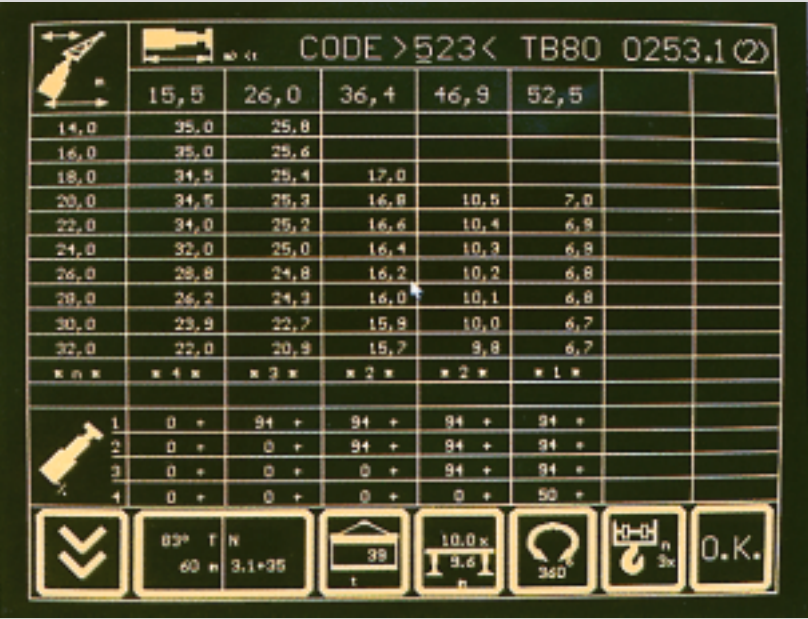


The 2-D planner program.



Calculation of the derrick ballast.

The load capacity program.



- It enables the representation of all load charts of a crane. The following actions can be performed by means of a symbol bar:
- Representation of a briefing in reference of the program.
 - Display of all programmed charts and operating modes.
 - Page forward/backwards of charts.
 - Media copy by a connected printer.
 - Display of the chart values for every telescoped condition of the boom sections subject to the radius.
 - Information regarding to locked/unlocked boom sections

Prerequisites of the hardware.

For installing the LICCON work planner into your PC, it should be equipped with the operating system MS-DOS 3.3 or a higher version. For the most efficient utilization of the program, you should employ at least an IBM-compatible, 386 DX personal computer with co-processor and colour monitor. Moreover, your PC should have a hard disk, a VGA graphic card and a micro soft compatible mouse, the min. storage capacity of the main memory should be 4 MB.

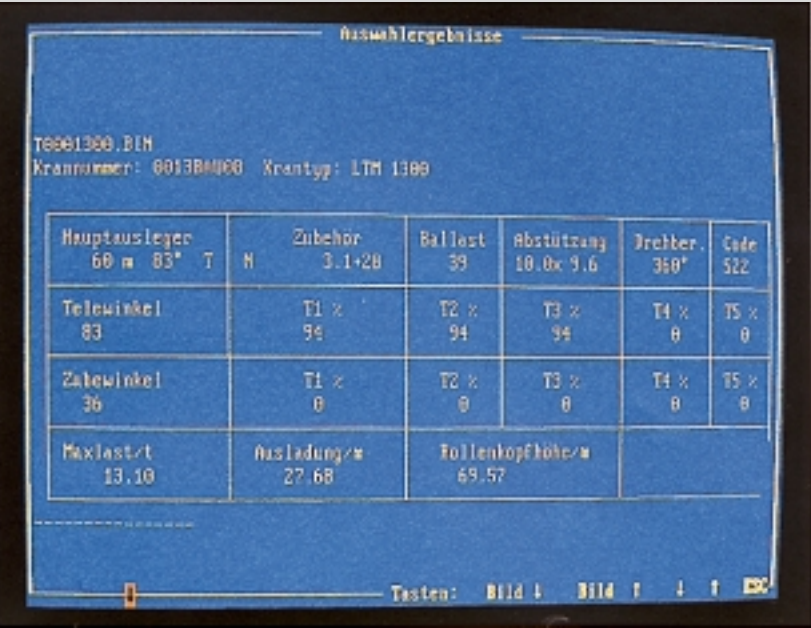
The crane selection program.



This program permits automatic selection of the suitable crane by entering the load case parameters such as load, radius and lifting height. The following actions are practicable within the program:

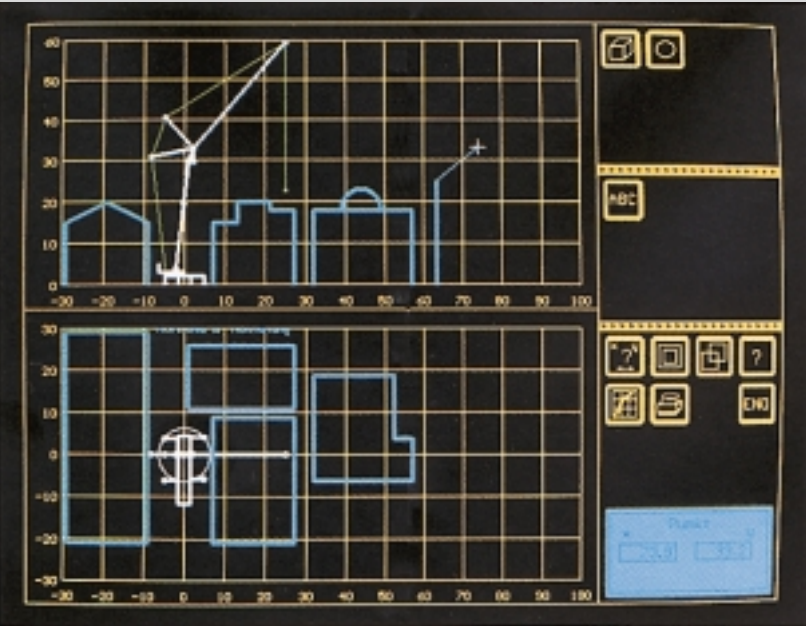


- Listing of all cranes available for which data diskettes are existing.
- Editing of crane list, i.e. automatic crane selection or selection of an individual crane.
- Optimization of crane selection according to various criteria, e.g. shortest boom, minimum counterweight or smallest supporting basis.
- Allowing for an existing obstructing contour entered by the 2-D planner.



The modular design of the LICCON work planner warrants further extensions.

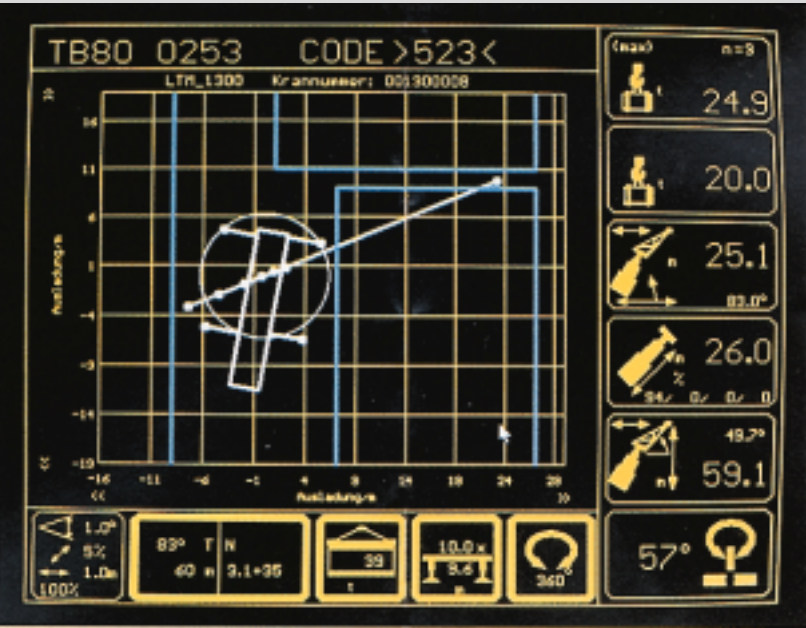
The 2D-Planner-Program.



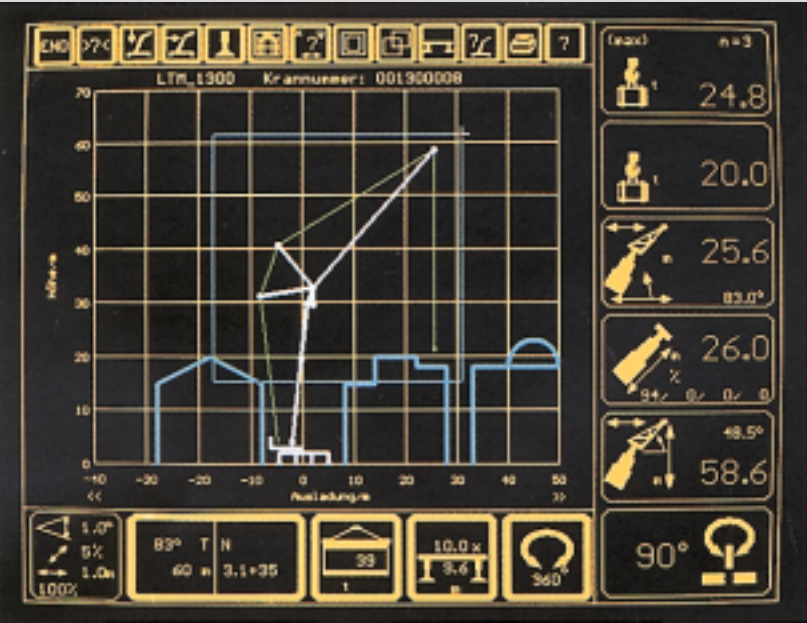
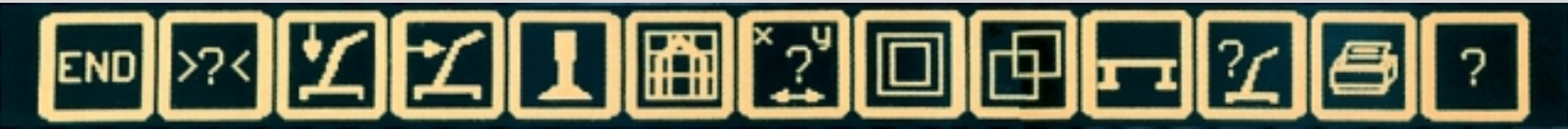
Plotting of buildings and text writing.
Side and top views of complete buildings can be plotted. Equally the representation of circles and circular arc profiles as well as writing of texts for lettering of the representation is possible.

Rotation of carrier.

For exact positioning of the carrier with outriggers, it can be slewed around the center of the slewing ring, the position of the crane superstructure remains unchanged.

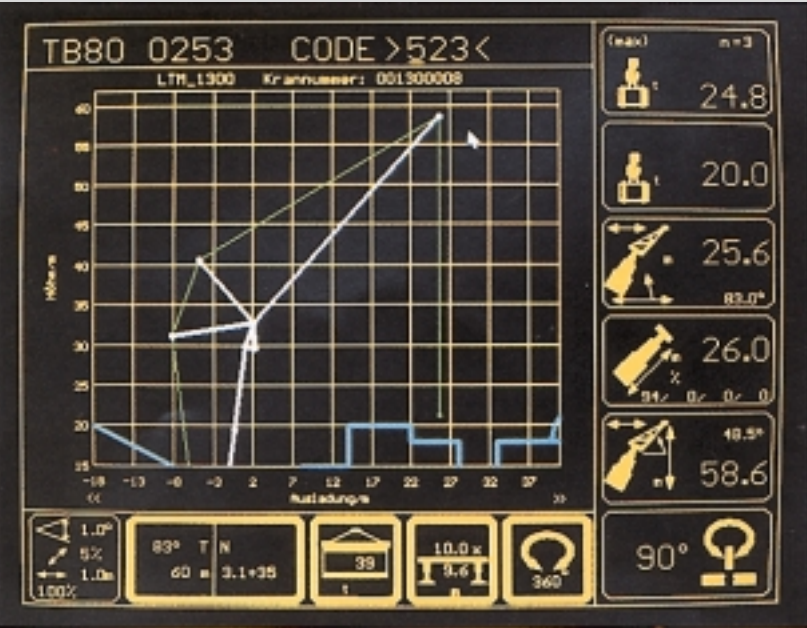


By means of a symbol bar, this program enables to perform a multitude of actions and to plan crane applications close to reality. Drawing functions permit to plot a construction site. A simplified scale model crane can be displaced over a grid. The crane motions can be represented and the most essential parameters such as max. load, radius, lifting height, etc. are

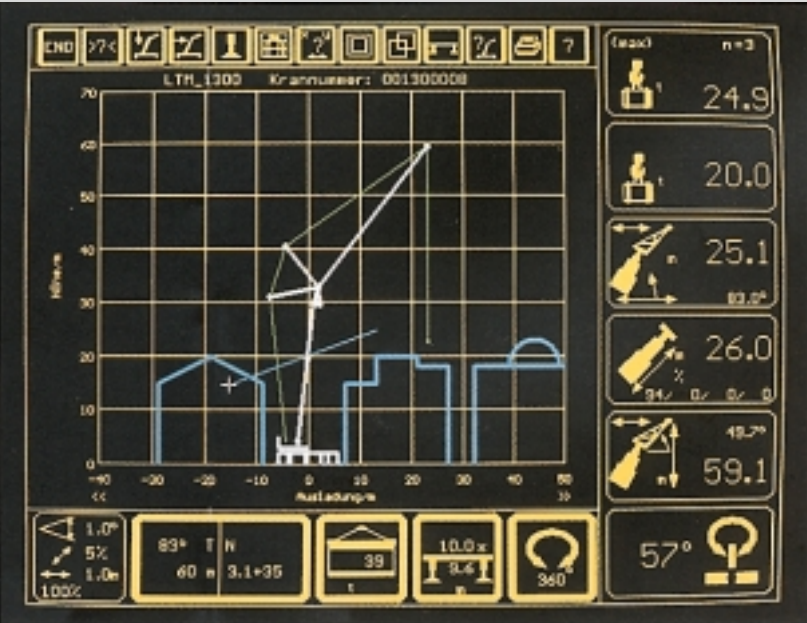


Zooming of a screen window.

A new screen window can be fixed with the mouse. The screen window can be enlarged or reduced in size by a specific factor towards the center of the plotting area.

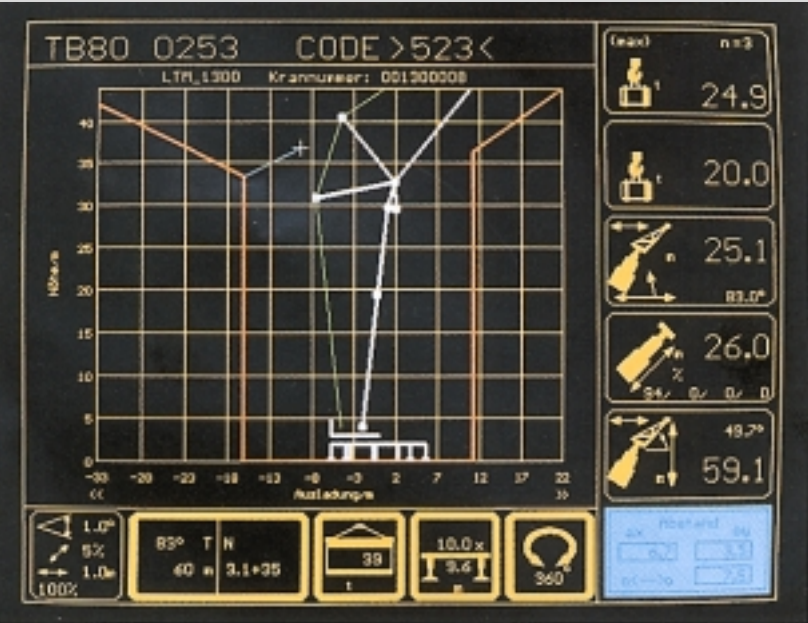
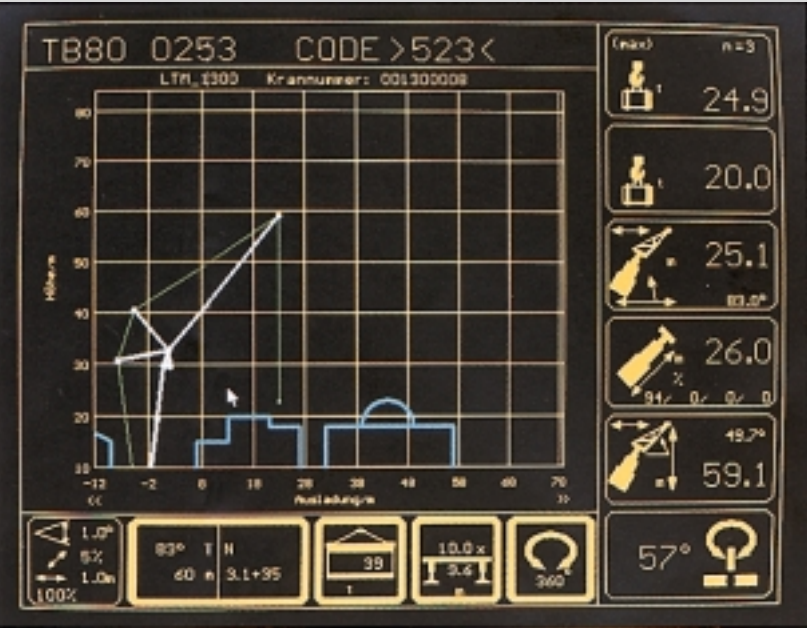


being displayed continuously. It is also possible at any time to have recourse to the supporting forces of the actual crane position. The screen of information can always be documented by a connected printer. Moreover, the load case can be stored under a specific code and re-loaded for further processing.



Shifting of screen window.

The mouse in conjunction with the PAN symbol enables to shift the actual screen window within the plotting area. The shifting path is predetermined by two dots.



Plotting of obstructing contours and measuring of spaces.
Buildings and overhead cables can restrict the working area of the crane. These obstructing contours can be plotted into the crane display and will be taken into account during the automatic crane selection. The obstructing contours can be represented by entering of the coordinates or directly plotted with the mouse. With activated measuring mode, spaces can be measured within the crane display. The spaces in the x- and y-direction and the direct distance are displayed in a coordinate window.

Display of supporting forces.

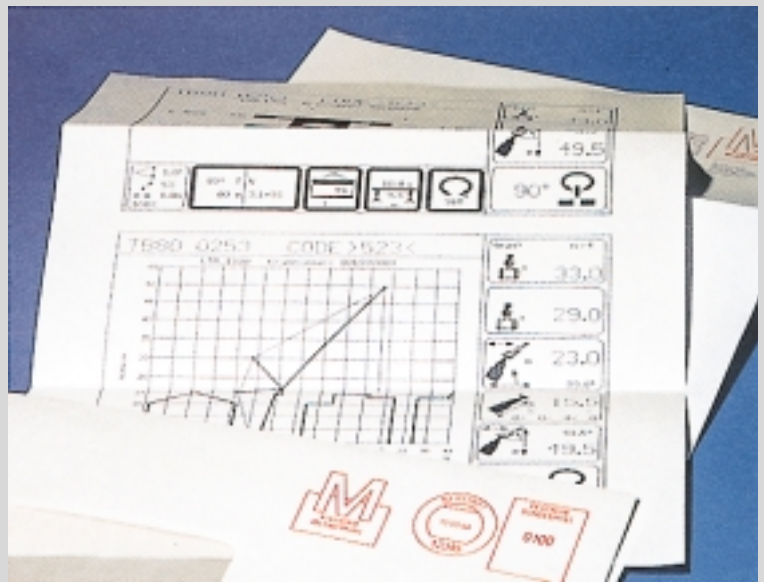
The supporting forces, acting on the individual rams, are indicated in tons in the top view of the vehicle contour. The supporting forces are actualized continuously when slewing the superstructure by means of the mouse key. The value in brackets indicates the max. forces which could occur during a full 360° rotation of the superstructure.



More benefit through the LICCON work planner.

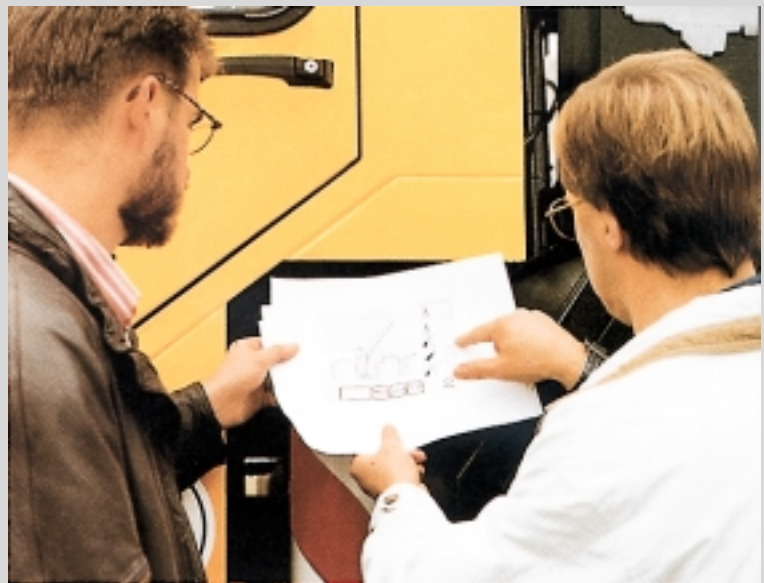
Submission of offers with more transparency.

The actual screen of information can be documented by a connected printer. This will enable you to enclose media copies with your offer, e.g. side and top view of the construction side as well as the supporting forces envisaged; your customer certainly will appreciate the "transparency" of your offer.



Briefing of crane operators with more information.

Often enough your operators are confronted with irregularities at the working site. Now, the LICCON work planner makes the job more transparent and all details can be discussed in advance. The media copies are working papers with valuable information for the operators, for smoother and safer performance of the job.



The LICCON work planner on the Laptop offers even more flexibility.

A battery-powered Laptop calculator is recommended for field service. Thus you will be in a position to make full use of the LICCON work planner's capacity, everywhere and any time.



Subject to modifications.

P 197a. 6.01

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