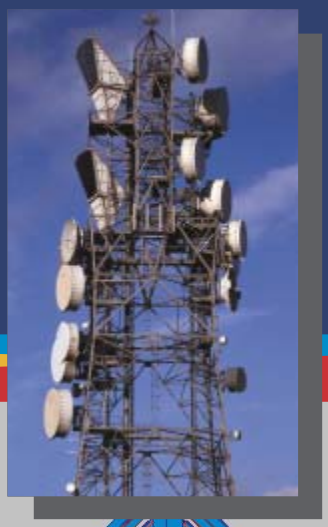
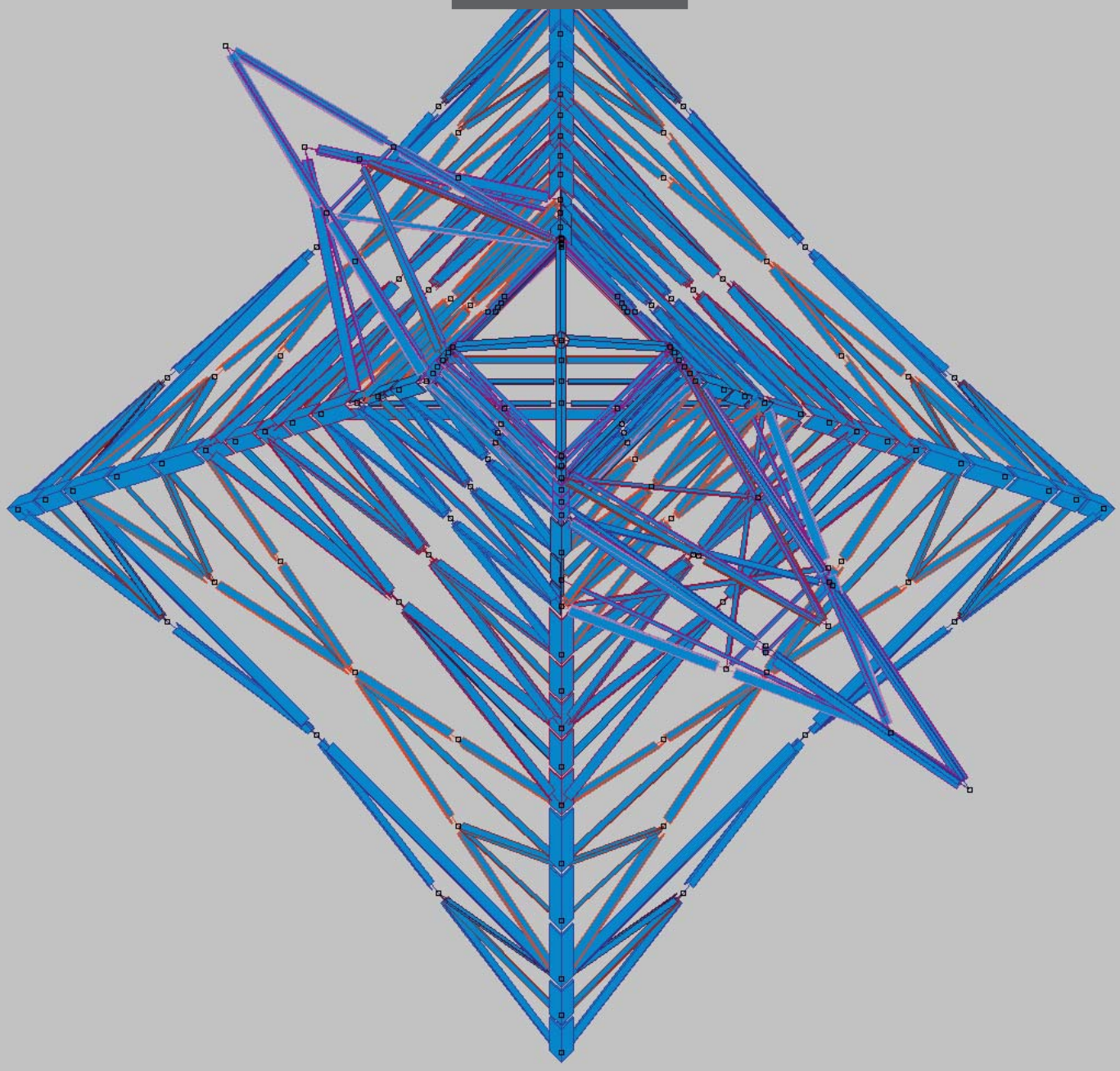
MS TOWER

MStower Version 5





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MStower is a computer program designed specifically for the analysis of latticed towers and guyed masts.

A minimum of user input is required for the definition of structure geometry and loads.

After analysis, members may be checked to a wide range of national tower codes.

MStower is applicable to new structures and the reassessment of existing structures with modified loadings owing to changes in the installed equipment.

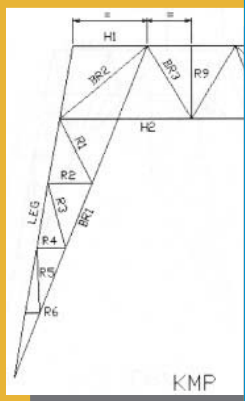
MStower operates in metric or US units as required.

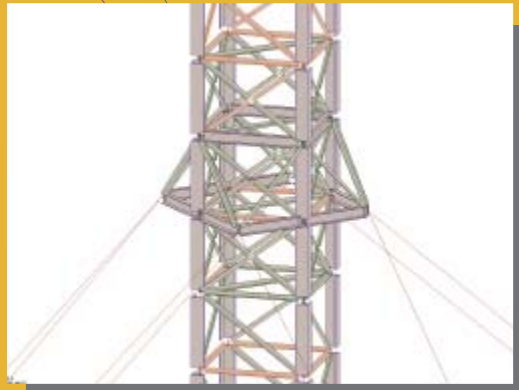
First released in 1989, MStower is now used by tower engineers worldwide. The latest Version 5 software has been redeveloped specifically for the 32-bit Windows environment and offers a number of powerful new features.

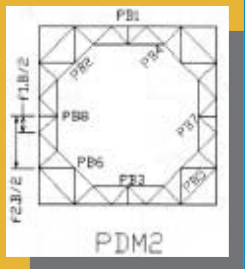
Structure geometry is developed from an extensive library of standard panel types supplemented by user defined panels which are described graphically.

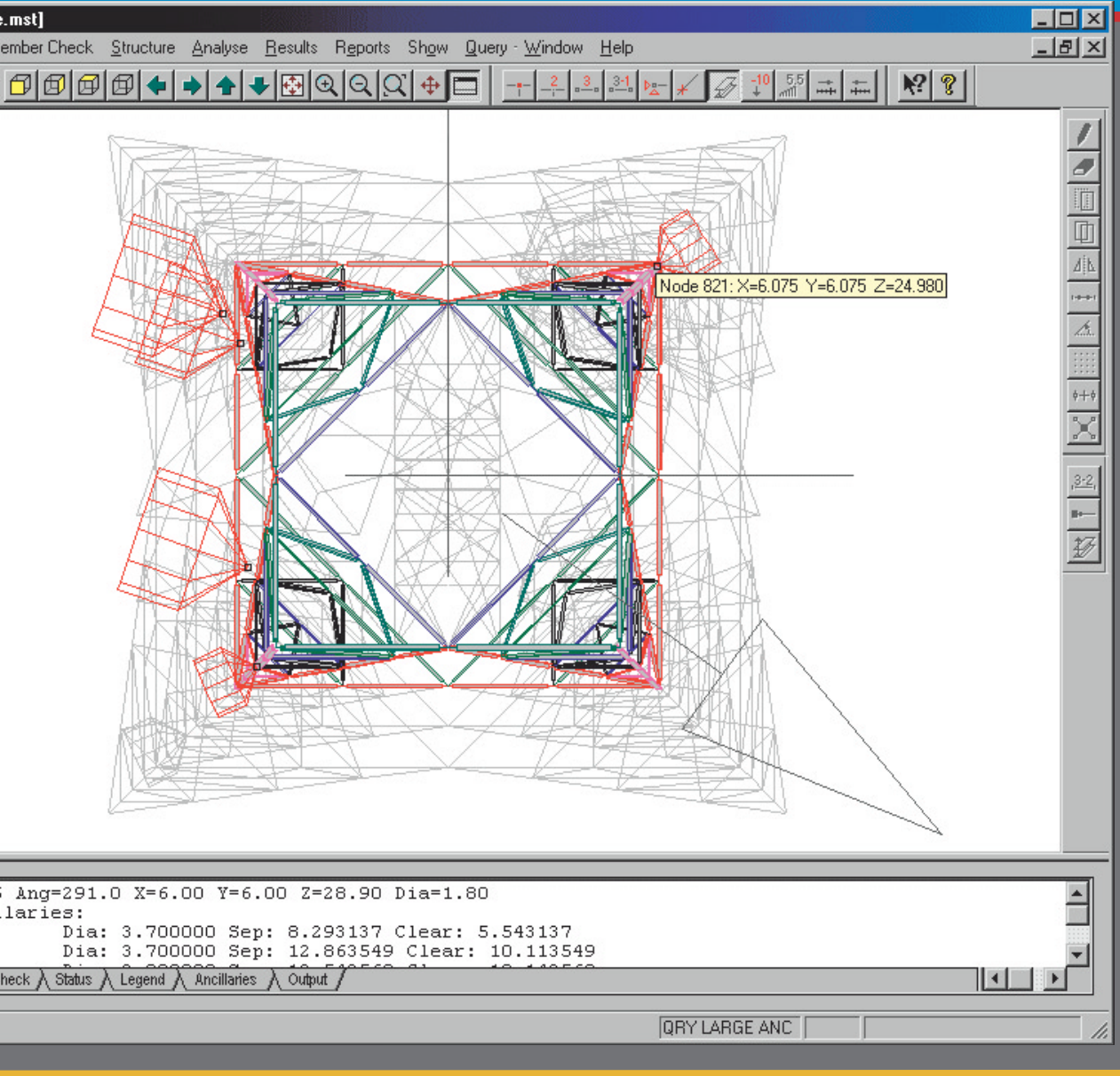
Towers may have three or four sides and are assembled from standard panels of face, plan, hip and crossarm patterns.

Some standard panels employ parameters for increased flexibility. All section properties are taken from libraries of standard steel sections. Tension-only members and cable elements may be modelled rigorously.



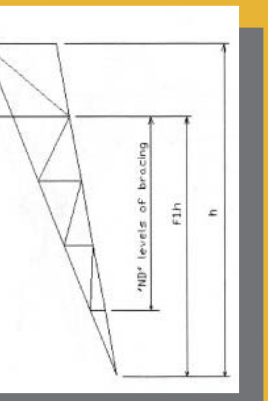


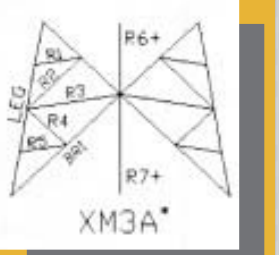




Automatic data checking detects a range of potential modelling problems in the tower geometry including overlaid and unconnected members.

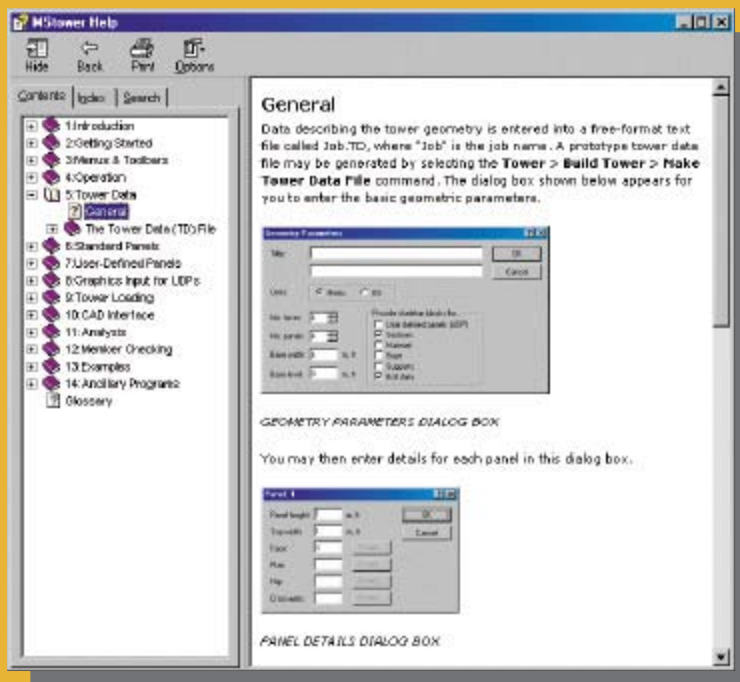
Rendered views with hidden line removal and a virtual reality viewer are powerful visualization tools for the assembled structure.





User friendly operation simplifies the input and verification of all data. Long file names assist data management. *Context menus* have been implemented throughout the system for more convenient access to commonly used tools.

Comprehensive help is available throughout in the form of tool tips and data tips (small pop-up help windows to identify toolbar buttons, nodes and members), and pop-up help for all dialog box items. There is a fully indexed on-line manual that can be searched for any topic.



Tower loads are generated automatically. Dead load, wind load and ice loads on members, antennas and ancillaries are specified using simple keywords and may be computed in accordance with:

- **TIA/EIA-222-F**
- **BS 8100 : Part 1 : 1986 (Towers)**
- **BS 8100 : Part 4 : 1995 (Masts)**
- **AS 3995-1994**
- **Malaysian Electricity Supply Regulations 1990**

Wind speeds may be derived from a standard wind velocity profile or a user specified profile. Wind forces may be computed using either gust speed or mean wind velocity. If mean wind speed is used, member wind forces are increased after analysis using gust factors calculated in accordance with BS8100. Patch loadings may be applied to masts.

Fast analysis engines use an inbuilt profile optimizer to minimize solution time.

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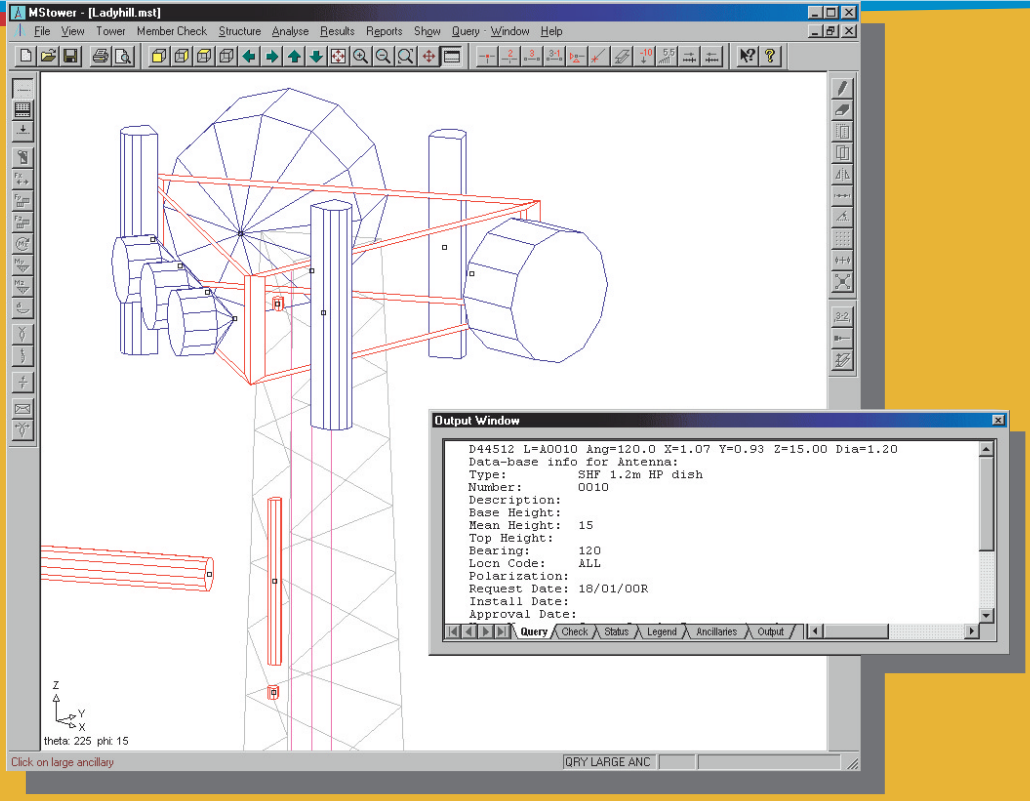


Member checking. Tower members can be checked automatically using member forces extracted directly from the analysis results. Member checks may be to:

- **ANSI/ASCE 10-90**
- **TIA/EIA-222-F**
- **BS 8100 : Part 3 (DD 133 : 1986)**
- **BS 449 Part 2**
- **AS 3995-1994**

Ancillary equipment attached to the tower is readily specified by reference to standard libraries. Libraries are supplied for *linear ancillaries* (items within the body of the tower such as ladders, feeders and waveguides) and *large ancillaries* (equipment mounted external to the tower such as large dishes with significant wind resistance).

For dish antennas, the library includes the diameter, mass, centre of gravity, surface area liable to ice coating, and projected area, with drag coefficients for a range of angles of incidence. The use of six drag coefficients for each angle of incidence enables all forces on the antenna to be computed automatically.

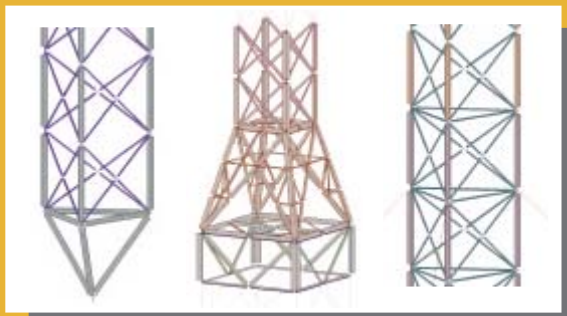
Ancillaries may be displayed graphically and the *Query* function displays the ancillary ID and location.

All libraries – section properties and ancillary equipment – may be modified and augmented by the user if required.

Results from analysis and member checking may be displayed graphically and printed as required. Results may be annotated on the screen, and the *Query* function provides immediate access to detailed information for any particular element in the model including ancillary equipment.

Serviceability requirements may also be checked. A special report gives tower reactions and angular displacements of ancillary equipment.

Flexible reporting. MStower allows you to generate analysis and checking reports for selected members in varying levels of detail. The *Page Setup* and *Print Preview* functions enable a high degree of control over the appearance of printed reports and graphical output. You can set page orientation, text size, and multiple columns for maximum flexibility. Data may be exported to CAD and SDNF formats.



Responsive support. MStower users with current software are entitled to professional technical support.

For more information
Contact Engineering Systems or your local distributor.
You can visit our website at www.mstower.com.

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