



LOTUS CONCEPT VALVE TRAIN

Lotus Concept Valve Train is a user-friendly approach to cam design. Fully populated model templates provide 'one-click' model creation. The use of this tool can be extended through direct connections to other Lotus Engineering products (for coupled simulation) and by a range of supported file export options.

CAM PROFILE DESIGN

Cam profile design is performed by manipulating the profile lift or derivative curves. The resulting analysis summary is interactively updated as the curves are changed for immediate feedback.

Alternative methods of profile design are available, including segmented polynomials and piecewise Bezier curves.

PROFILE DATA IMPORT

A range of data import filters are provided. Data imported in this way can be smoothed, filtered and fitted.

MECHANISM DATA

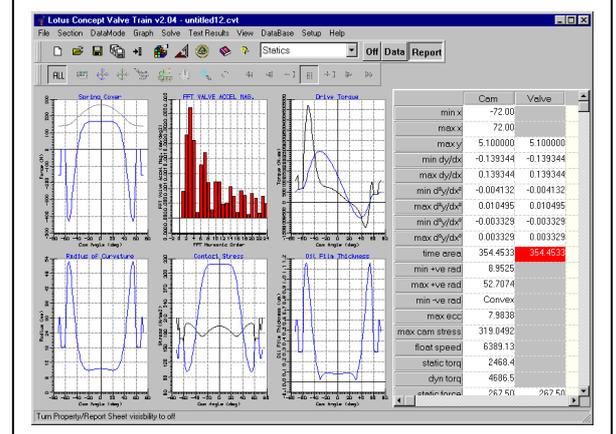
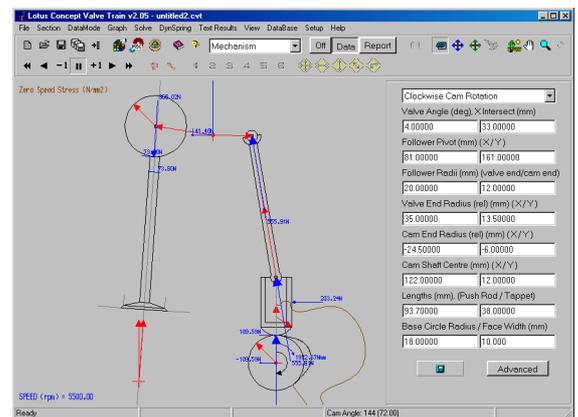
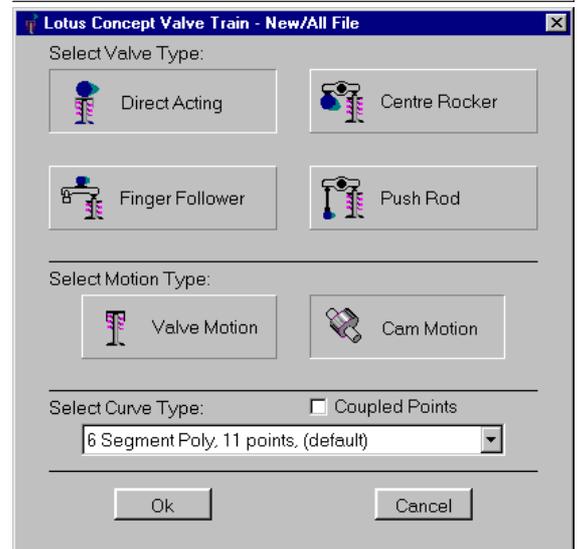
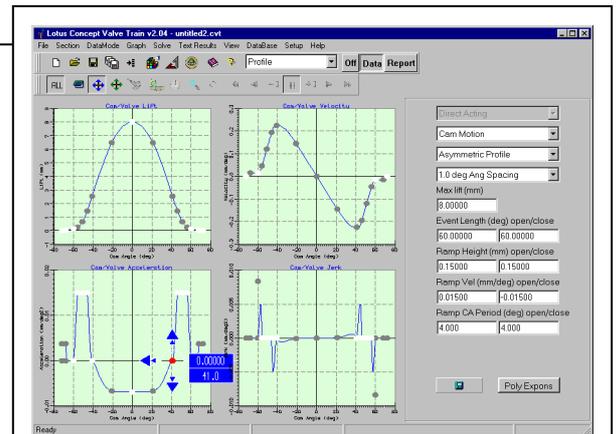
Mechanism geometry is displayed through a scaled graphical display allowing the user to interactively change centres, radii, angles and lengths. The mechanism display also is used to animate the mechanism and display the calculated forces.

GEOMETRY EXPORT

A link to ADAMS/Engine™ includes the conversion of the defined 2D template data into the 3D ADAMS environment.

STATICS ANALYSIS

The static's analysis section includes all conventional kinematic results such as eccentricity, contact stress, radius of curvature, system forces and oil film thickness. A range of alternative display options are provided.



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VALVE/PISTON CLASH

A simplified flat top piston model using rigid body motion is included to calculate the variation in valve to piston clearance with changes in profile and valve timing.

SPRING DESIGN

A utility is provided that allows the rudimentary design of a cylindrical compression spring to be completed. The resultant spring load characteristics can be linked to the static's data section.

VALVE OVERLAP

The calculation of valve overlap areas is provided to enable numerical comparison between valve timing events and alternative profiles.

DYNAMIC ANALYSIS

Dynamic analysis is integrated within the application so that the current kinematic model can be used to automatically generate a 1-D dynamic model. Mechanical and hydraulic tappets can be modelled, as can single or double wire springs and air springs.

DYNAMIC RESULTS

All calculated results for links and masses can be displayed on screen during the calculation or listed/plotted once the run is complete. Overall summary plots for items such as seating force, valve bounce, spring surge and tappet leakage can also be simply produced.

