

EquationCAD™

Equation based CAD surface creator.

EquationCAD translates a surface equation into a CAD surface.

EquationCAD is a complementary tool to programs that import CAD surfaces.

Specify surface by

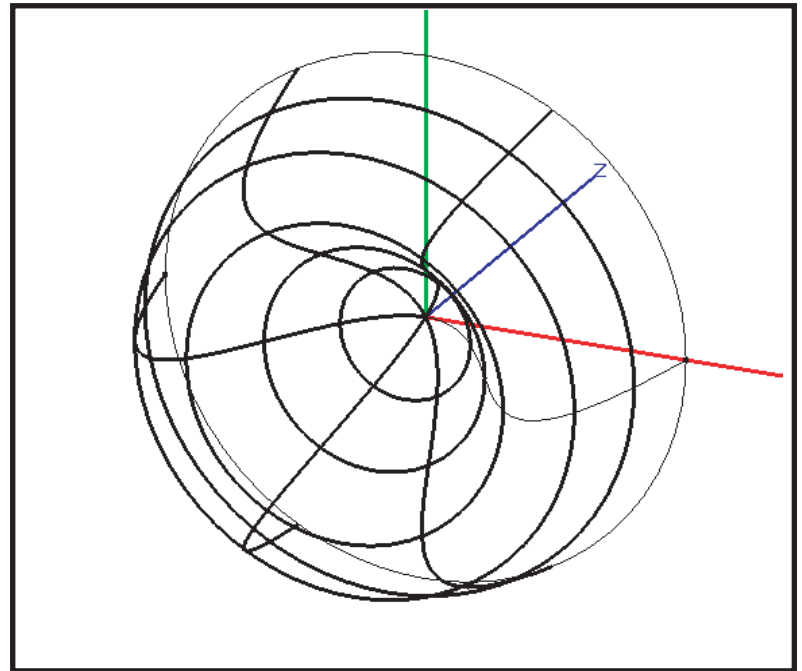
- Selecting a surface by name.
- Entering a surface equation.
- Referencing an external data file.

Created surface

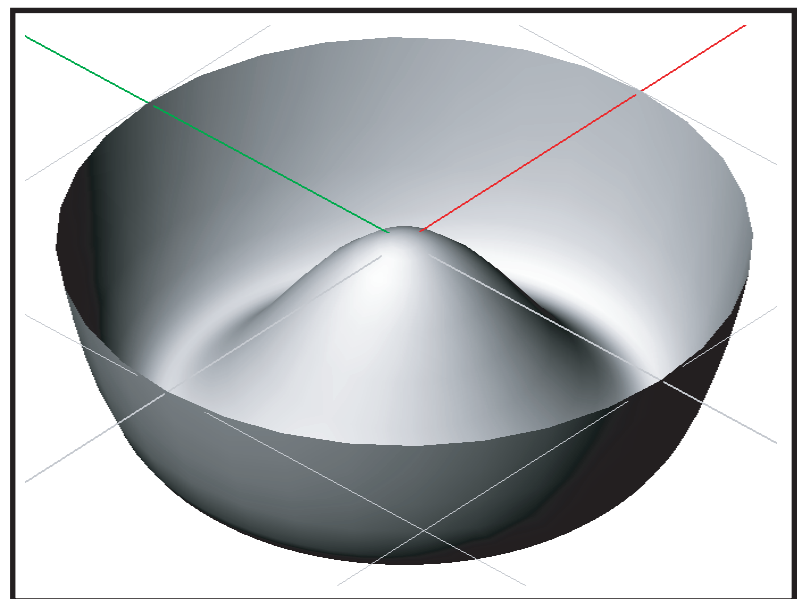
- **Non-Uniform Rational B-Spline.**
- Trimmed to make Brep face.
- Viewed, real-time rotation, zoom.
- Prescription saved for reuse.
- User controlled sampling/fit order.

Surface scalability

- Any surface may be scaled in x, y, and z.



EquationCAD creates and displays CAD surfaces. This surface is based on the equation $3.0 * r^4 - 3.0 * r^2$.



The CAD surface shown in the top figure imported and displayed in the Rhinoceros CAD program.

Surfaces

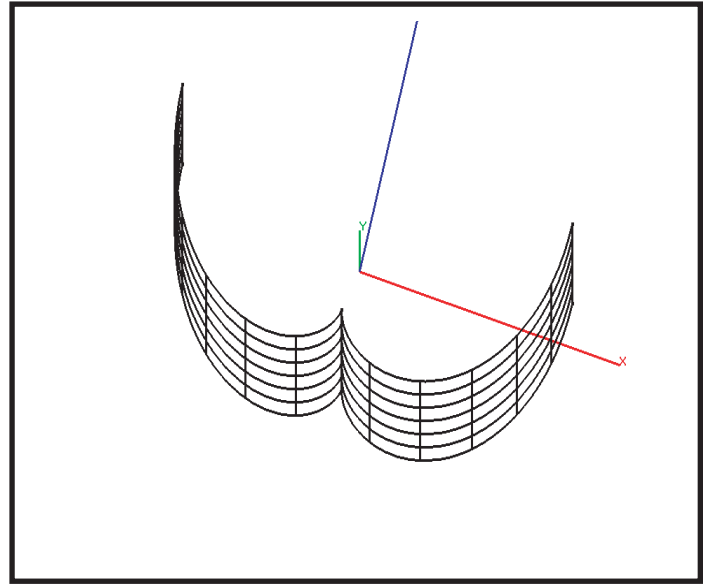
Cones, cylinders, paraboloids (3-D), parabolas (2-D extruded), Compound Parabolic Concentrators (3-D radial and 2-D extruded), Involutives (parametric surfaces 3-D radial and 2-D extruded), Spheres, Polynomial Ultra Conics (3-D radial and 2-D extruded), User entered radial ($z = f(r)$), User entered general ($z = f(x,y)$), Full Fourth order function (35 terms in an external data file).

Trimmed Surfaces (Faces)

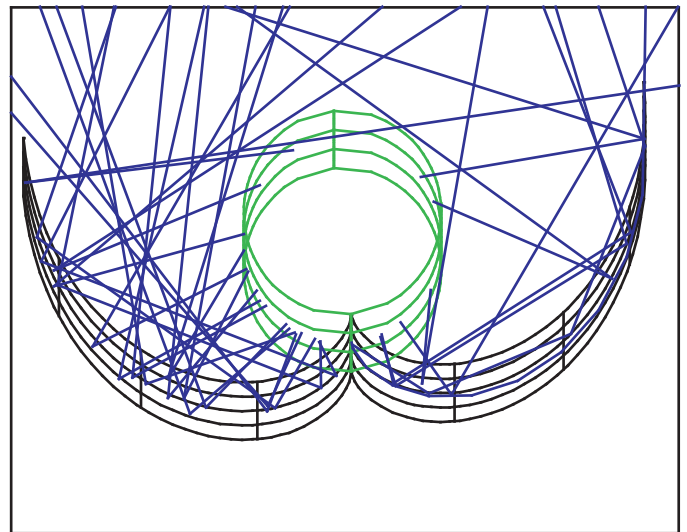
Surfaces are trimmed using either an elliptical cylinder (into z) and two planes (elliptical edges), or six planes (rectangular edges).

User Controls

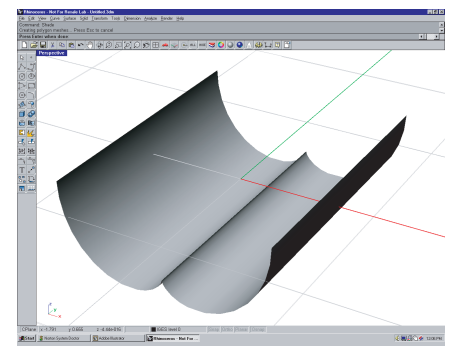
User can override default values for number of sample points and order of fit.



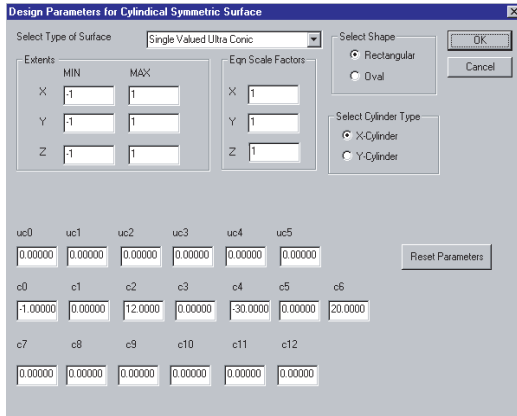
Extruded parametric surface of the form
 $x = 0.25 * (\sin(\phi) - \phi * \cos(\phi))$,
 $z = -0.25 * (\cos(\phi) + \phi * \sin(\phi))$.



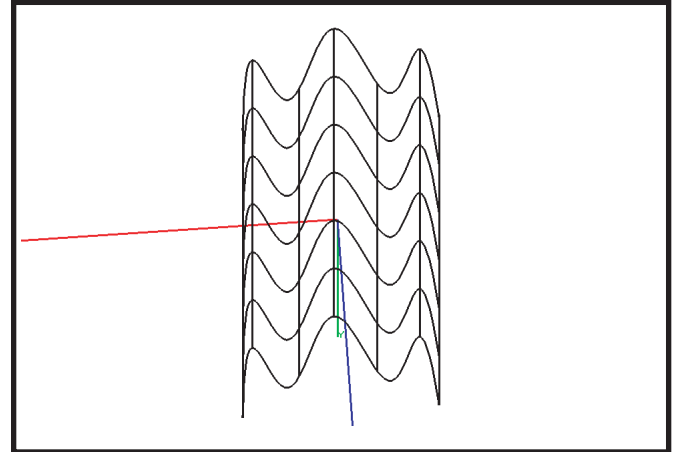
Surface shown above imported into an optical analysis program and raytraced with a cylindrically shaped light source.



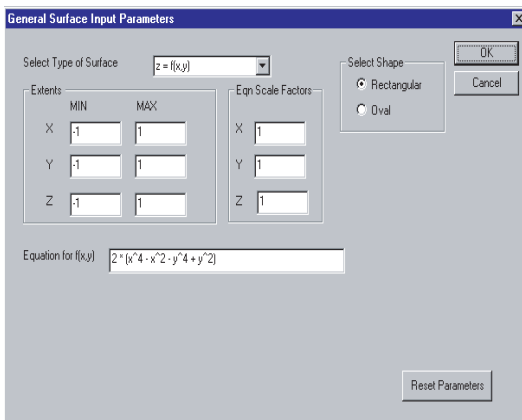
Surface shown above imported into a CAD program



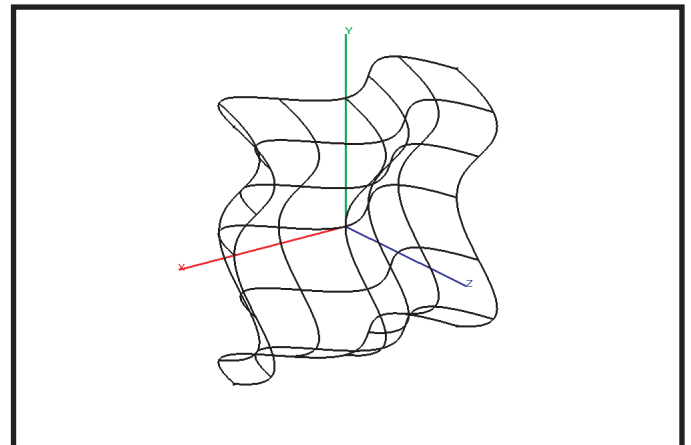
Dialog box for entering coefficients for a cylindrical UltraConic Polynomial surface. Results shown at right.



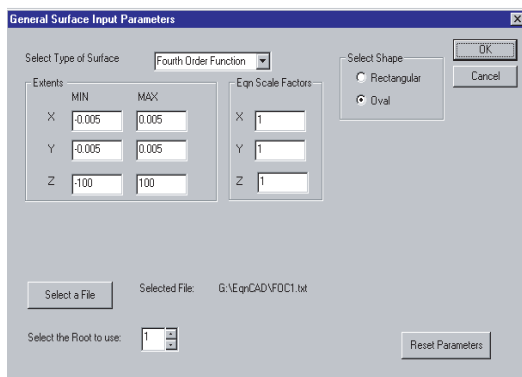
CAD surface based on a menu selected UltraConic/polynomial surface $z = 20x^6 - 30r^4 + 12x^2 - 1$.



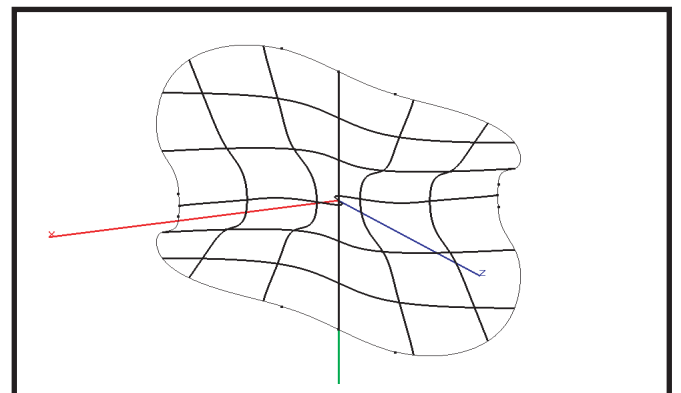
Dialog box for entering an equation. Results shown at right.



CAD surface based on an entered equation $z = 2*(x^4 - x^2 - y^4 + y^2)$.



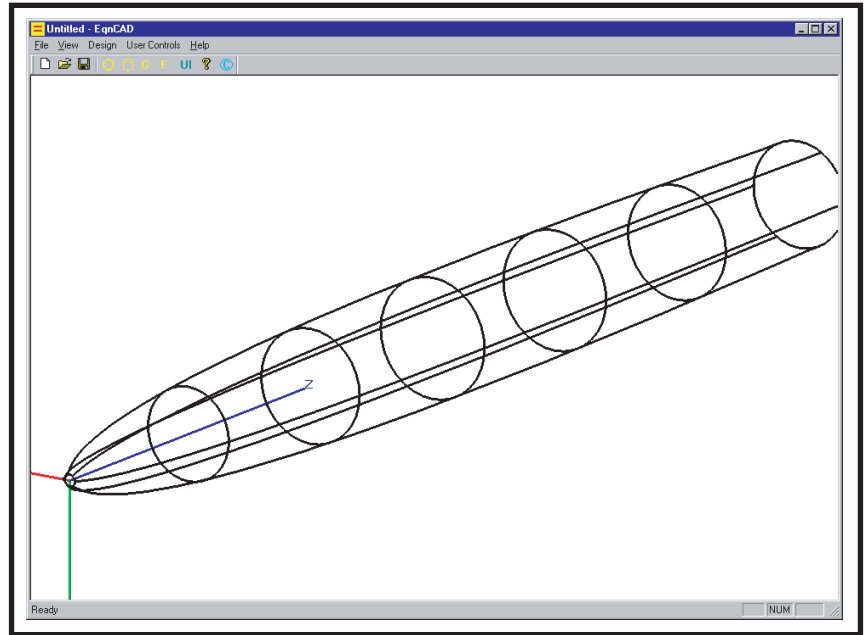
Dialog box for accessing coefficients in an external data file. Results shown at right.



CAD surface based on a full xyz fourth order equation. Coefficient values are read from an external data file.

CAD Equation Tool

- Easy to use.
- Menu driven.
- Surface creation:
 - Select a surface type.
 - Type in an equation.
 - Reference external data.
- Windows Application:
 - 98, 2000, NT, XP, ME.
- Written from scratch.
- IGES output.
- X,Y,Z surface scaling.
- Rectangular trimming.
- Elliptical trimming.
- Open GL surface display.
- User controlled fit parameters.



EquationCAD creates a CPC light concentrator.

EquationCAD

Equation based CAD surface creator.

EquationCAD \$495.00

Shipping, North America/International \$10.00/20.00

EquationCAD is bundled (included) with OptiCAD 8 and later.

Prices are good through December 31, 2002. Prepaid orders, Visa/MasterCard/AMEX/Discover accepted. Checks must be payable in U.S. dollars drawn on a U.S. bank. Customers are responsible for any duties and taxes. New Mexico customers add applicable state sales taxes. EquationCAD is a tradename of EquationCAD corporation. OptiCAD is a tradename of OptiCAD Corporation, Rhinocera is a trademark of Robert Mcneel & Associates. Copyright 2002.

