G E O 1 +

Software for Calculation of Cross-Sections and Profiles

for Windows

GEO1/GEO1+

GEO1 software calculates cross-section areas, surface moment of inertia, center of gravity and mass moment of inertia of any cross-section made up of up to 2000 lines and arcs.

GEO1+ contains an additional database with the most common profile cross-sections acording to DIN, and also generates the coordinates of standard profiles like polygon, tube, sectors of circle.

Geometry Input

The contour is defined by input of the y and z coordinates of the first and last point in the xyz coordinate system. For arcs the opening angle is also required. The outer contour is entered anti-clockwise, apertures and boreholes are entered clockwise. Coordinate positions are saved in a table, import via clipboard from Excel worksheet or other Windows programs is possible.

The contour can also be imported as a polyline from a DXF file, or drawn directly in GEO1+.

Calculation

GEO1 calculates the cross-section area, the area moment of inertia 1st and 2nd grade, mixed and polar area momentv of inertia in relation to coordinate origin and center of gravity.

GEO1 also calculates the main area moments of inertia and the main gravity angle of the coordinate system. The flat surface becomes a body by entering a contour length Lx and the material density. In this case GEO1 also calculates volume, mass and mass moment of inertia relative to both, center of gravity and coordinate origin. For the calculation, arcs and circles are converted into polygons, the accuracy can be set.

Graphic Output

The defined contour is displayed on screen along with the coordinates, center of gravity and main axes. The most important result data is shown in a table. Drawings and tables can be printed on each Windows printer, or exported to CAD.

GEO1+ Profile Calculation - PROFIL.go1

File Edit View CAD Database Document OLE Help

Select

profile

I-girder DIN 1025 page 1
I-girder DIN 1025 page 2-5
T-girder DIN EN 10055 / DIN 1024
Z-girder DIN 1027
L-girder DIN 1029 / DIN EN 10056-1
angle girder DIN 1028 / DIN EN 10056-1
U-girder DIN 1026
flat steel DIN 1017 / DIN EN 10058
circular (shaft)
tube
rectangular tube
polygon

OK   Cancel   Help Text   Aux. Image

	mm³	378
	mm³	6539
	mm³	2809
	mm4	207096
	mm4	46176
	mm4	20923
	mm4	253272
	mm	7,43
	mm	17,30
	mm4	93985
	mm4	25300
	mm4	-27670
	mm4	119285
	mm4	103746
Main area moment of inertia 2	I2	mm4	15540
Main angle	phi	°	19.43
Mass	m	kg	2,949
Mass moment of inertia	Js	kgm²	0,00093
Mass moment of inertia	J0	kgm²	0,00198

GEO1+ Profile Calculation - PROFIL.go1

File Edit View CAD Database Document OLE Help

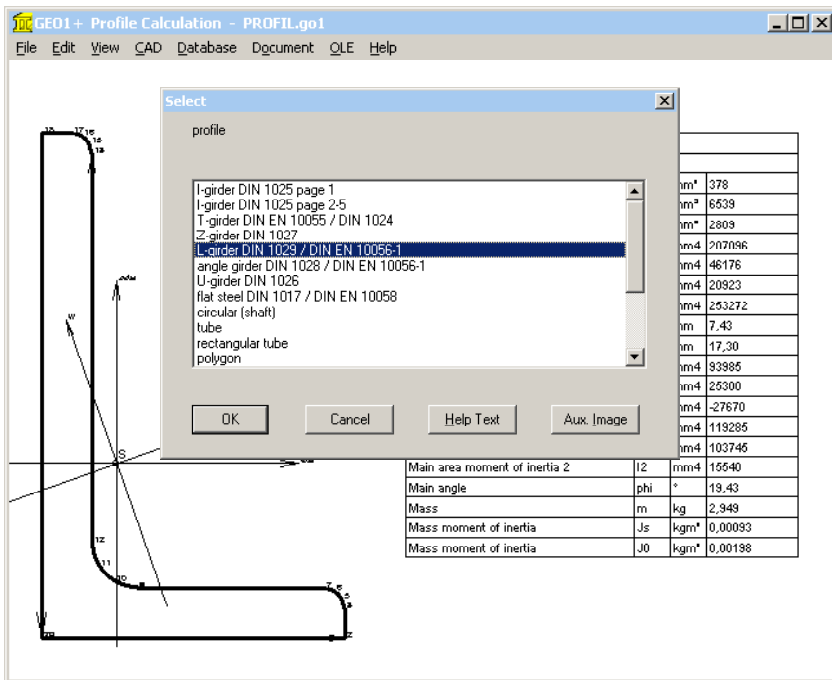| RESULTS Profile Z144Z			
Cross section area	A	mm²	732,3
Area moment of inertia 1 grd.	Hy	mm³	25,583
Area moment of inertia 1 grd.	Hz	mm³	25,6583
Ax.Area moment of inertia Z.grd.	Iy	mm4	1271114
Ax.Area moment of inertia Z.grd.	Iz	mm4	1272732
Mix.Area moment of inertia Z.grd.	Iyz	mm4	895191
Pol.Area moment of inertia Z.grd.	Ip0	mm4	2543246
Ctr.of grav.coordinates	ys	mm	36
Ctr.of grav.coordinates	zs	mm	34,97
Ax.Area moment of inertia ctr.grv.	Ieta	mm4	375736
Ax.Area moment of inertia ctr.grv.	Izeta	mm4	375633
Mix.Area moment of inertia ctr.grv.	Iez	mm4	3,122
Pol.Area moment of inertia ctr.grv.	Ip5	mm4	751469
Main area moment of inertia 1	I1	mm4	375736
Main area moment of inertia Z	I2	mm4	375633
Main angle	phi	°	-1,749
Mass	m	kg	5,712
Mass moment of inertia	Js	kgm²	0,00636
Mass moment of inertia	J0	kgm²	0,0196

Profile

21442

GEO1+ Profile Database
The extended Version GEO1+ contains databases with standard profiles according to DIN: T profiles to DIN 1024, double-T to DIN 1025, L-profile to DIN 1027, angular profile to DIN 1028, U profile to DIN 1026 and rectangular profile to DIN 1017 can be selected from GEO1+ database. GEO1+ generates coordinates from the database values and calculates cross-section.

Standard Profiles
For circular profile (shaft), tube, rectangular tube, polygon, polygon tube, sector of circle, sector of annulus, sector of annulus with bore, rectangle with bore, and circle with eccentric bore, just enter inner and outer width, diameters etc. and GEO1+ calculates coordinates and cross-section.

Coordinate transformation
When coordinates have been saved in a table, you have all possibilities to shift, enlarge or reduce, rotate or mirror the cross-section profile.
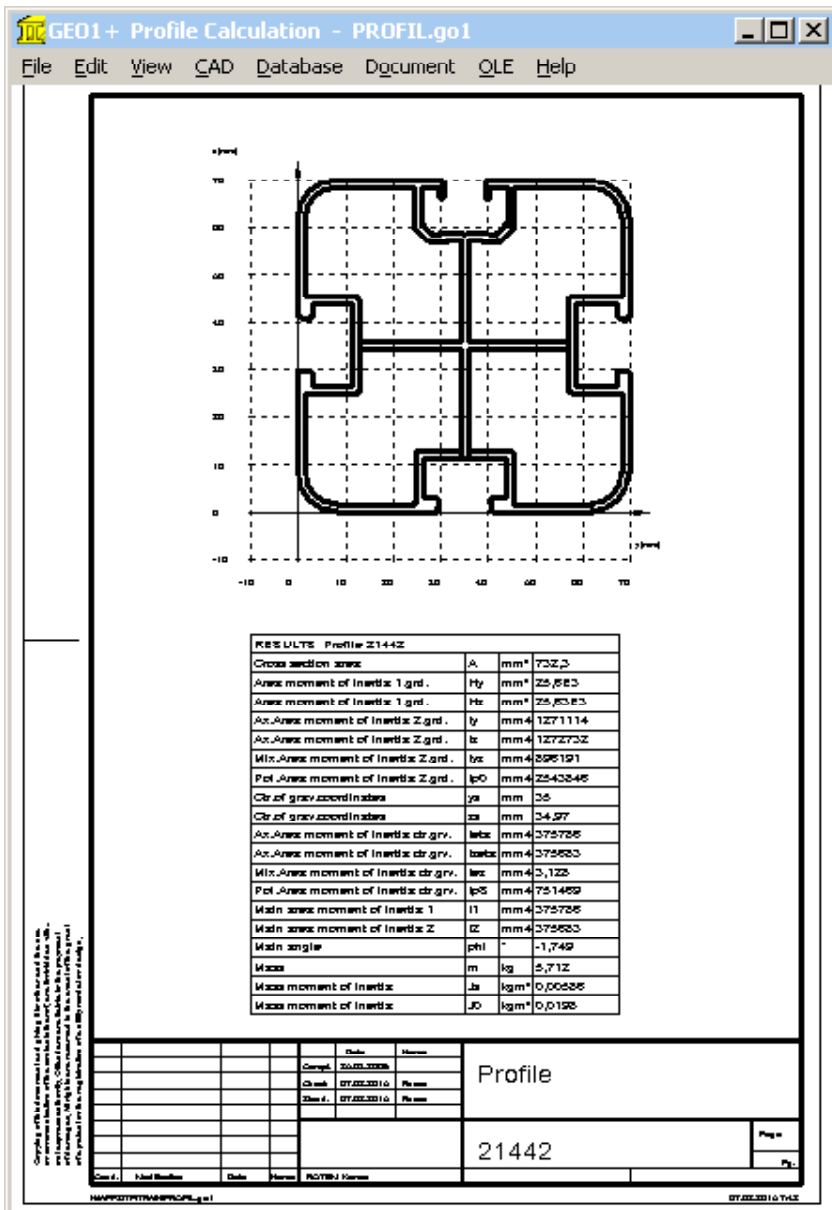
CAD Interface
Geometry and result tables are generated by GEO1 as DXF or IGES files. This enables export to CAD systems or word-processing programs. On the other hand the contour need not be input in GEO1, but can be imported as a DXF file if the contour has been drawn as a polyline (POLYLINE command).

HEXAGON Help System
For each input there is a help text and auxiliary picture available in the HEXAGON Help System. When error messages occur you can have a description and remedy suggestion for the error displayed.

Import Formats
DXF, DBF, Excel, GO1.

Export Formats
DXF, IGES, HTML, TXT, DBF, Excel, GO1.

System Requirements
GEO1+ is available as 32-bit app or as 64-bit app for Windows XP / Windows Vista / Windows 7 / Windows 8 / Windows 10.

Scope of Delivery
GEO1+ program with database files, example applications and help images, user manual (pdf), non-expiring license for unlimited time use.

Software Maintenance
HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.

Guarantee
HEXAGON gives a 24 month guarantee on full functionality of the software. We provide help and support by email and hotline without extra charge.