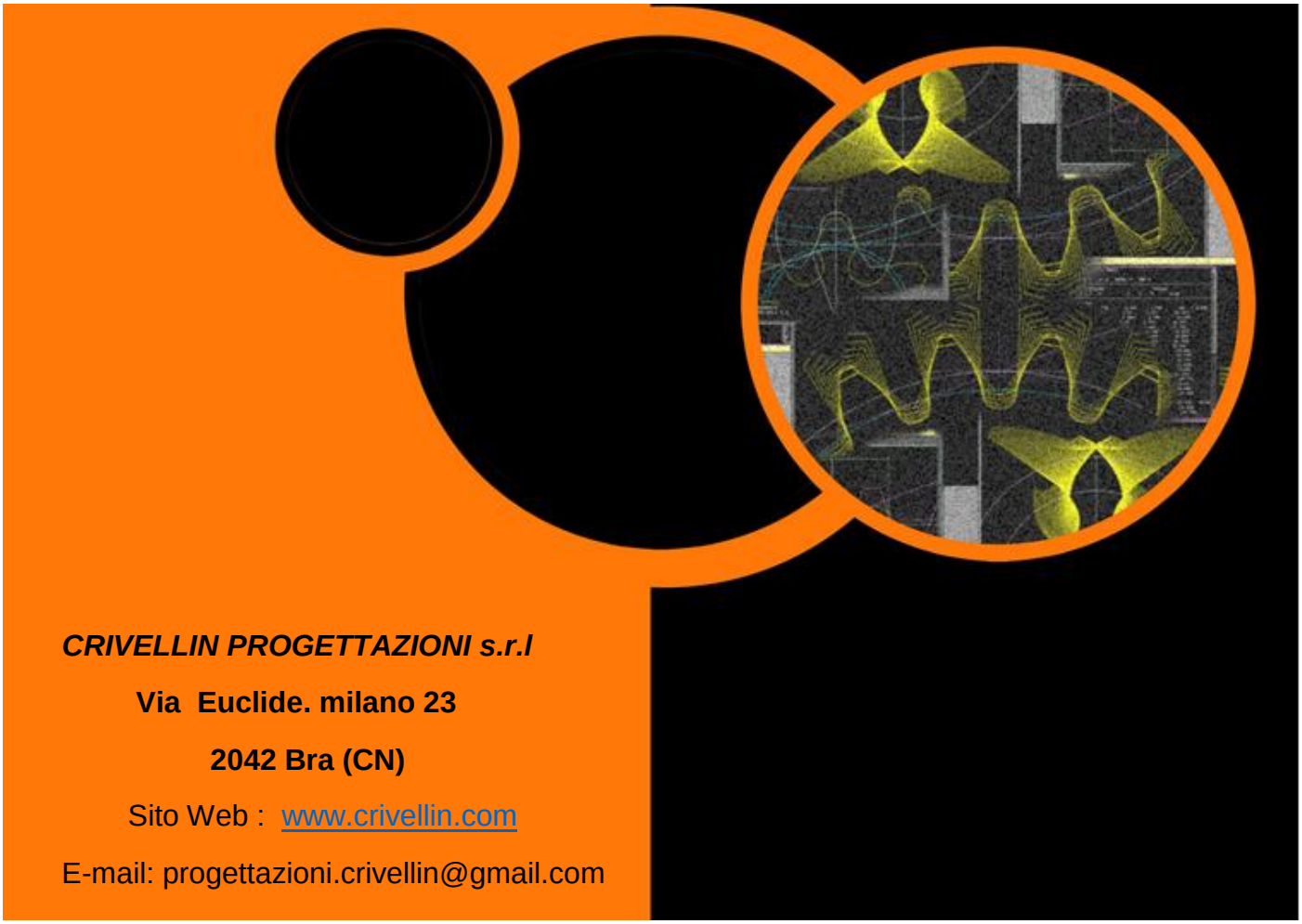

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"BEVEL GEARS"

Program for the geometric calculation of the bevel gears.

User manual

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Presentation

This program is used to calculate the geometry of bevel gears.
E 'is intended to gear manufacturers that the mechanical designers.
You can be calculated bevel-helical teeth with 4 different options:
Or bevel-helical gear spiral "GLEASON" with 2 different options.

Bevel gears with straight teeth

1) Normal Teeth

The gearing is calculated without any adjustment (Addendum pinion and wheel = 1 * Mn)

2) Teeth correct "SORIA" system

the gearing is calculated with correction addendum, pinion and wheel, with the old "GLEASON" system

The majority of gear manufacturers know this system through the book written in Italian by Soria in 1949, which summarized in a simple and understandable all of the period toothing systems.

3) Gearing free correction

This option is used to solve the problems of gear manufacturers when they are building a sample pair, which does not match any rule.

4) Toothing GLEASON current

Suited to mechanical designers for the design of new bevel gears. According to the latest standards GLEASON (2000). Pressure angle is fixed =20°.

Spiral bevel gear.

1) GLEASON system

This is the modern spiral method recommended for the design of new bevel gears by mechanical designers. GLEASON corresponds to current standard.
The helix angle is set at 35 °, pressure angle is fixed = 20° for all couples.

2) Teeth spiral, old GLEASON STANDARD method

This toothing GLEASON system corresponds to the old system "Standard method" described in the book of Italian Soria and known by many craftsmen.
They 'a system still used as the craftsmen have old gearing GLEASON. The advantages of this method are those to execute a free helix angleThe program calculates and shows some options to the helix angle as a function of the transmission ratio and the width of the toothed band.

Menu

File

Open: Opens a data file stored on disk with the essential data and recalculates

Save As: Save a data file on disk naming
Save: During the 'running of the program saves the latest changes and overwrites the file
Save a text file: Save a text file with all results.
Exit: Exit and close the program**.**

Menu "Straight Teeth"

Normal Toothing	**(Option 1)**
Toothing correct "SORIA" system	**(Option 2)**
Toothing correct free	**(Option 3)**
Toothing GLEASON current	**(Option4)**

Menu "Teeth spiral"

Toothing GLEASON	**(Option 1)**
Spiral teeth GLEAOSON STANDARD	**(Option 2)**

Menu Options

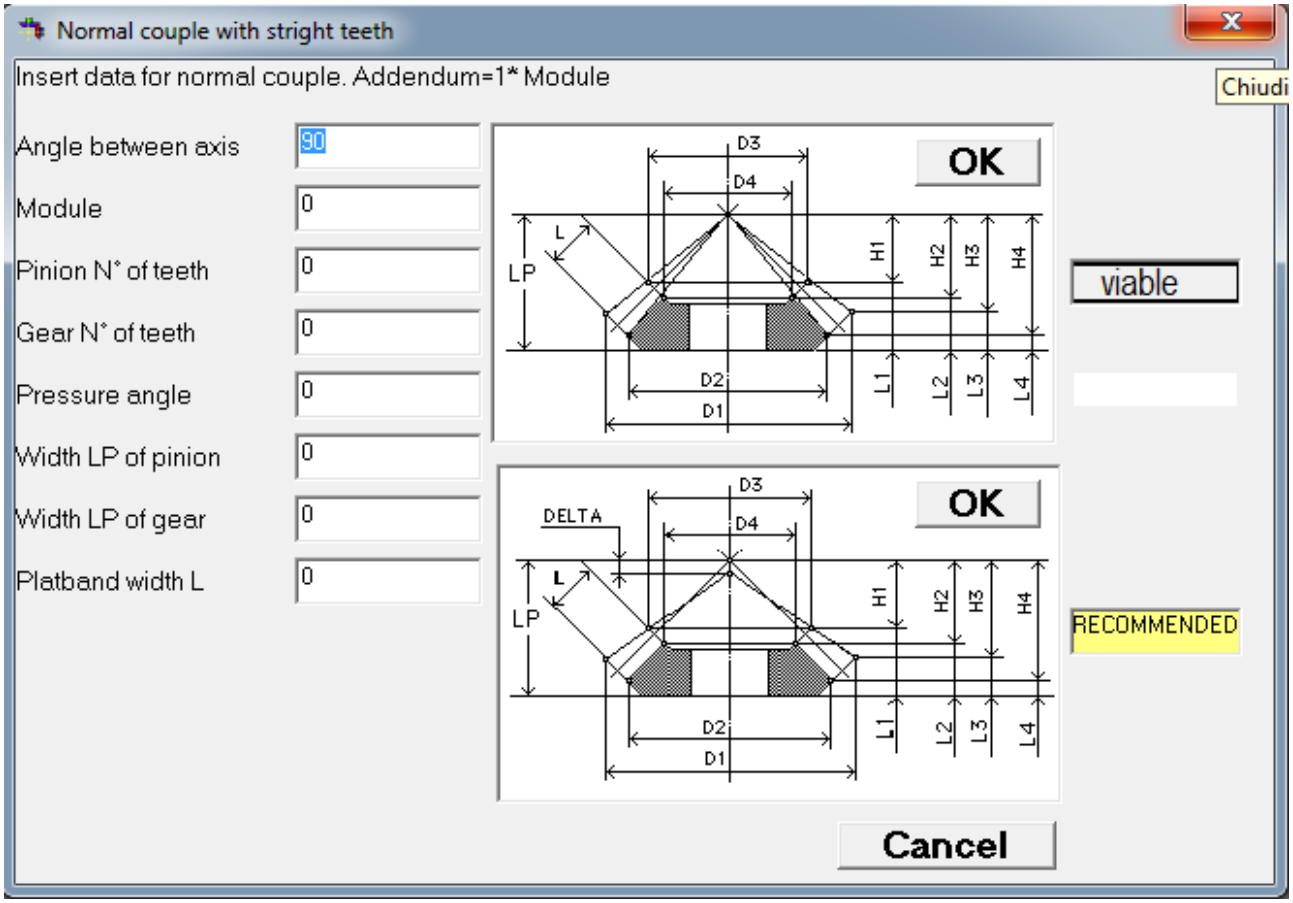
View the results

Menu "Settings"

Menu "Information"

Menu "Straight Teeth" Option 1: Normal Teeth

Teeth normal data input windows.
The "VIABLE" option provides for the outer corner converge in one point.
The "RECOMMENDED" option provides for the outer corner
It is activated so as to be parallel to the inner corner angle of the wheel.
The last option is always advisable to have a constant clearance.

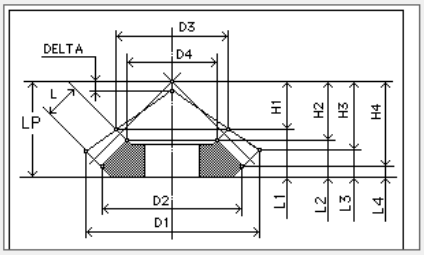


Resultats

Final data

Normal toothing		
Module	3	
Transm.ratio	.5	
Pitch generatrix	67.082	
Pression angle	20°	
Angle between axis	90°	
Tooth height	6.564	
Tooth height factor.	2.188*m	
Tooth bottom void	.564	
Void between the teeth	0	
	PINION	GEAR
N° of teeth	20	40
Pitch diameter	60	120
Addendum	3	3
Dedendum	3.564	3.564
Dedendum angle	3° 2' 28''	3° 2' 28''
Pitch semi-angle	26° 33' 54''	63° 26' 6''
External semi-angle	29° 36' 23''	66° 28' 34''
Internal semi-angle	23° 31' 26''	60° 23' 37''
Circular thickness	4.712	4.712
Outside diameter	65.367	122.683
Interasse	60	30

Dentatrice Gleason 15"
Save in txt file
Print
NOTE

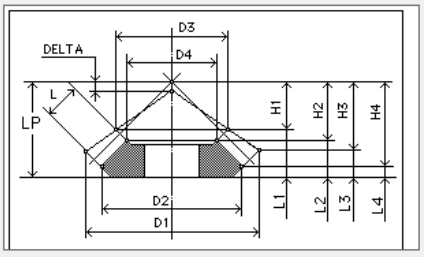


	PINION	GEAR
D1	= 65.37	122.68
D2	= 53.62	116.81
D3	= 55.47	104.32
D4	= 45.63	99.4
H1	= 49.95	23.32
H2	= 52.41	28.24
H3	= 58.66	27.32
H4	= 61.59	33.19
L	= 10	

Final data

Addendum	3	3
Dedendum	3.564	3.564
Dedendum angle	3° 2' 28''	3° 2' 28''
Pitch semi-angle	26° 33' 54''	63° 26' 6''
External semi-angle	29° 36' 23''	66° 28' 34''
Internal semi-angle	23° 31' 26''	60° 23' 37''
Circular thickness	4.712	4.712
Outside diameter	65.367	122.683
Interasse	60	30
----------Set up toothing machine Gleason 12 '' ----------		
Chordal adendum	3.083	3.021
Chordal shim	4.709	4.712
Rolling ratio	.596284793999944	
Tools sector angle	3° 6' 57''	3° 7' 3''
Toothing machine external semi-angle	29° 7' 32''	65° 59' 44''
Delta	8° 5' 24''	3° 50' 7''
Selected angle under the centre	8.1	4.1
Angle over the centre	14.9	7.5
Total angle	23	11.5
Gears cradle	36/ 36	24/ 48

Dentatrice Gleason 15"
Save in txt file
Print
NOTE



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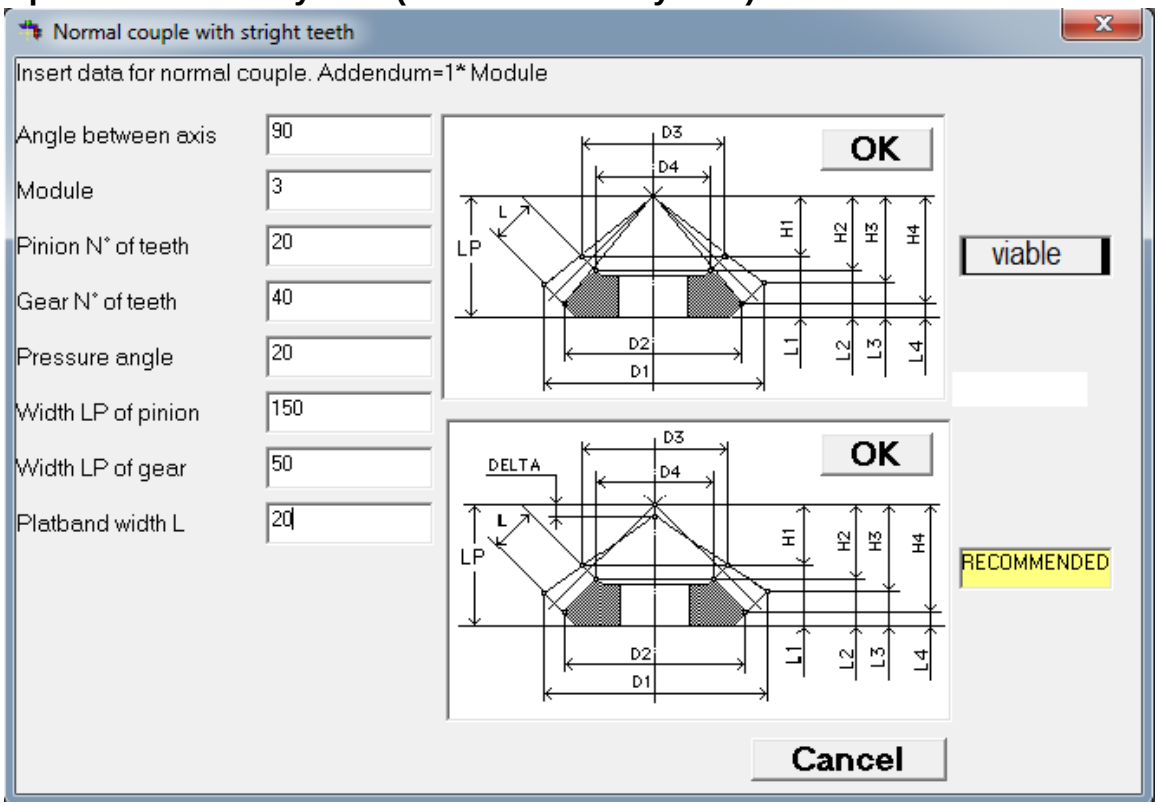
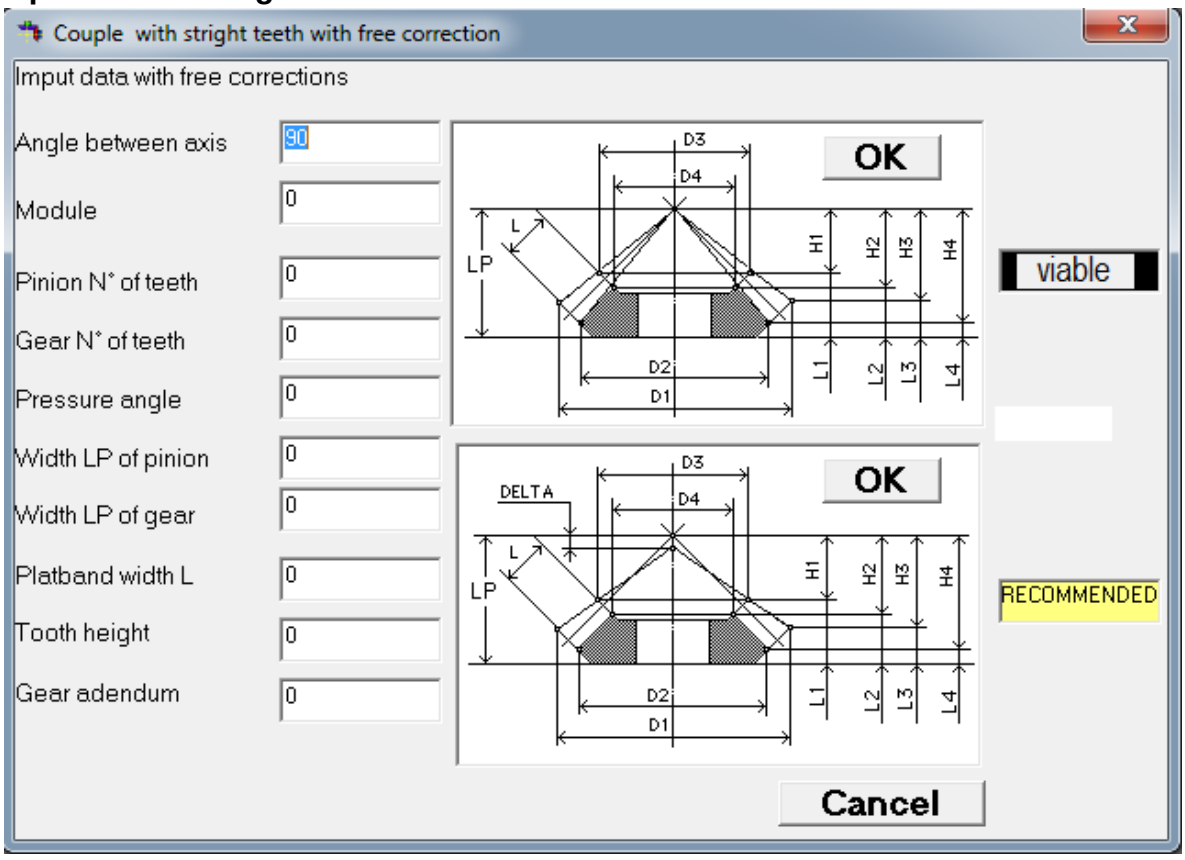
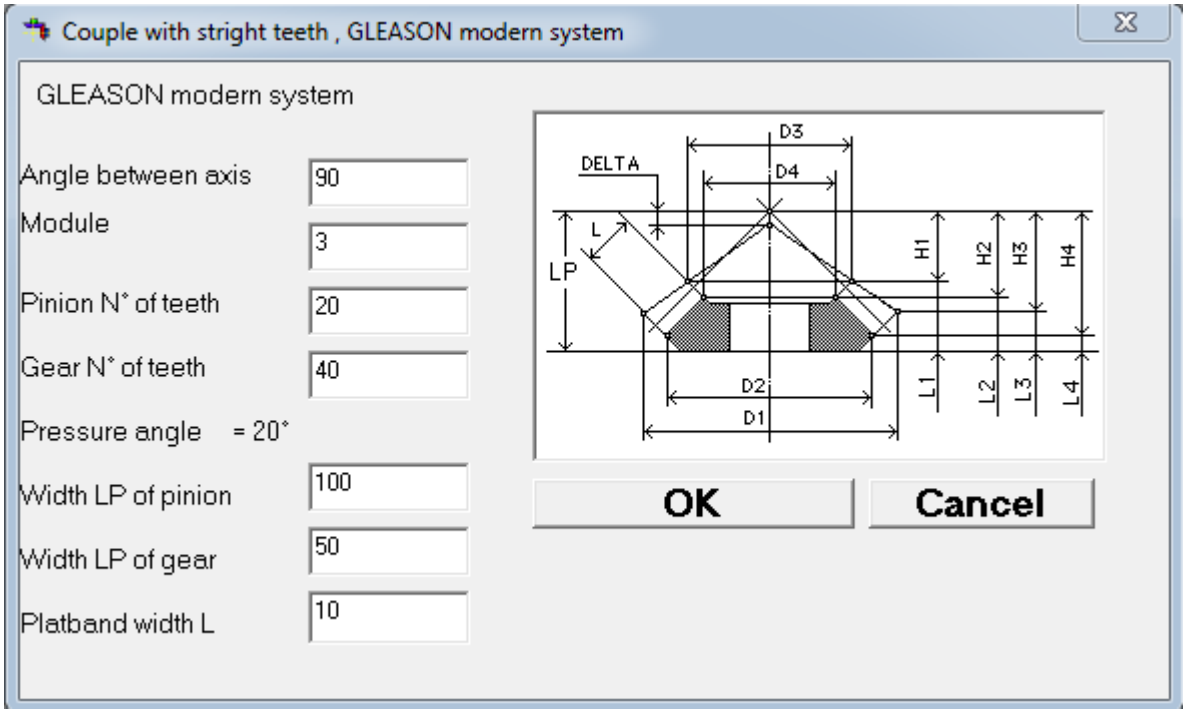
Option 2: SORIA System (Old GLEASON system)



Option 3: Gearing free correction

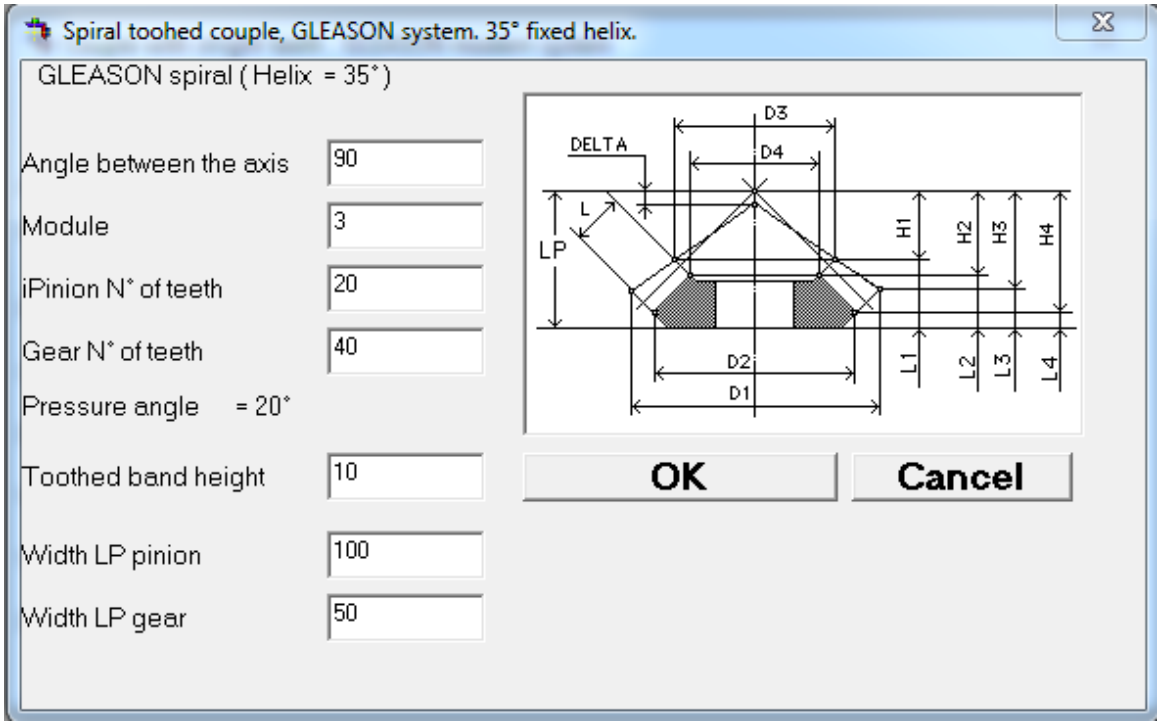


Option 4: Toothing GLEASON current
Pressure angle is fixed =20°.

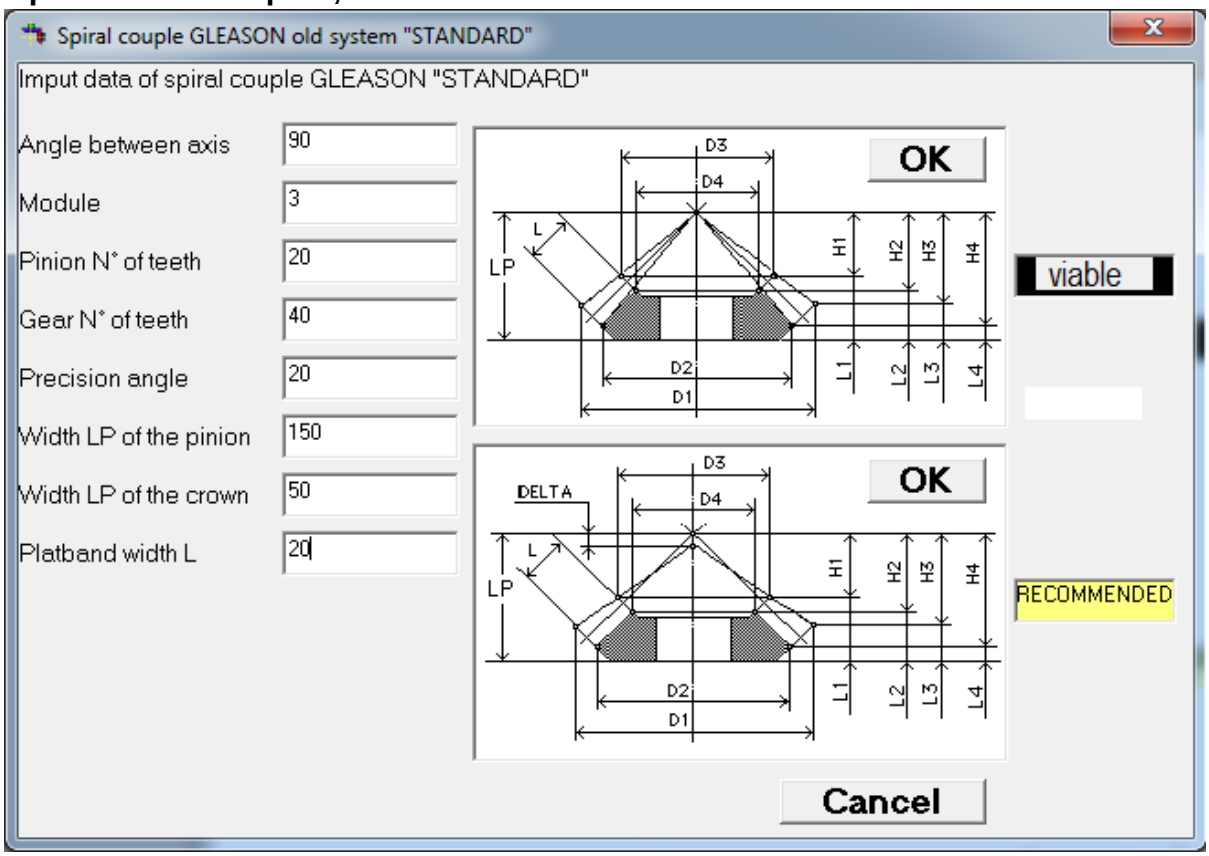
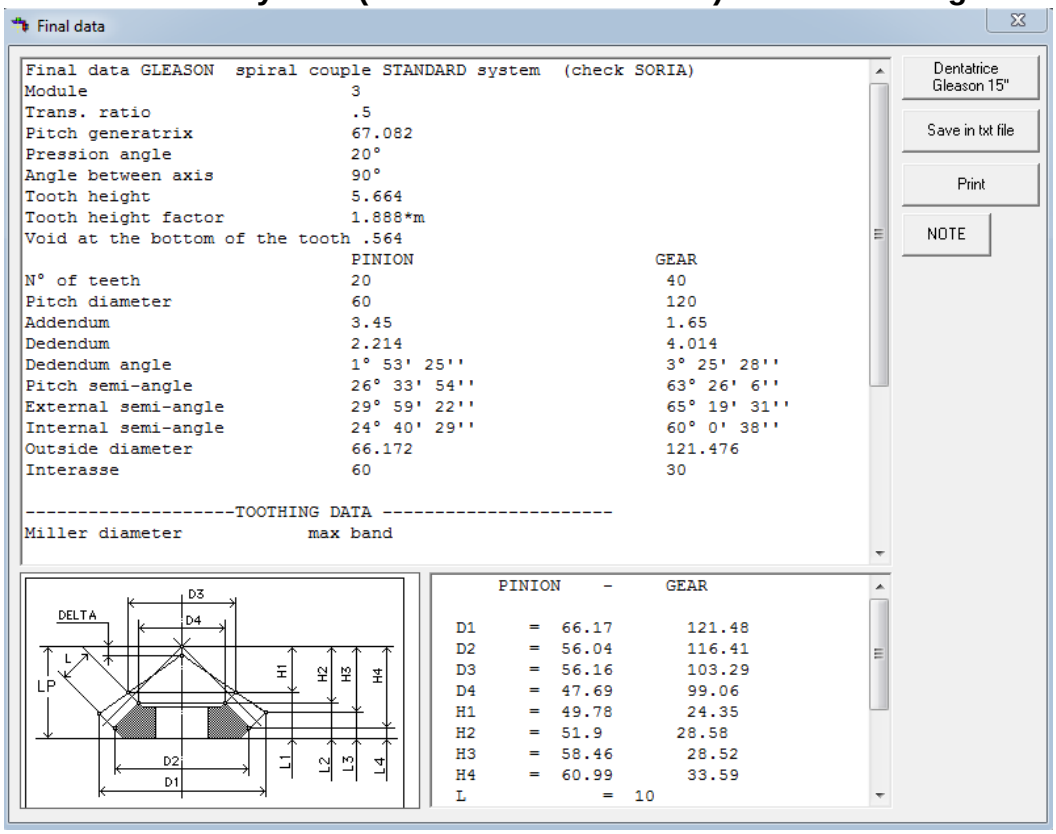
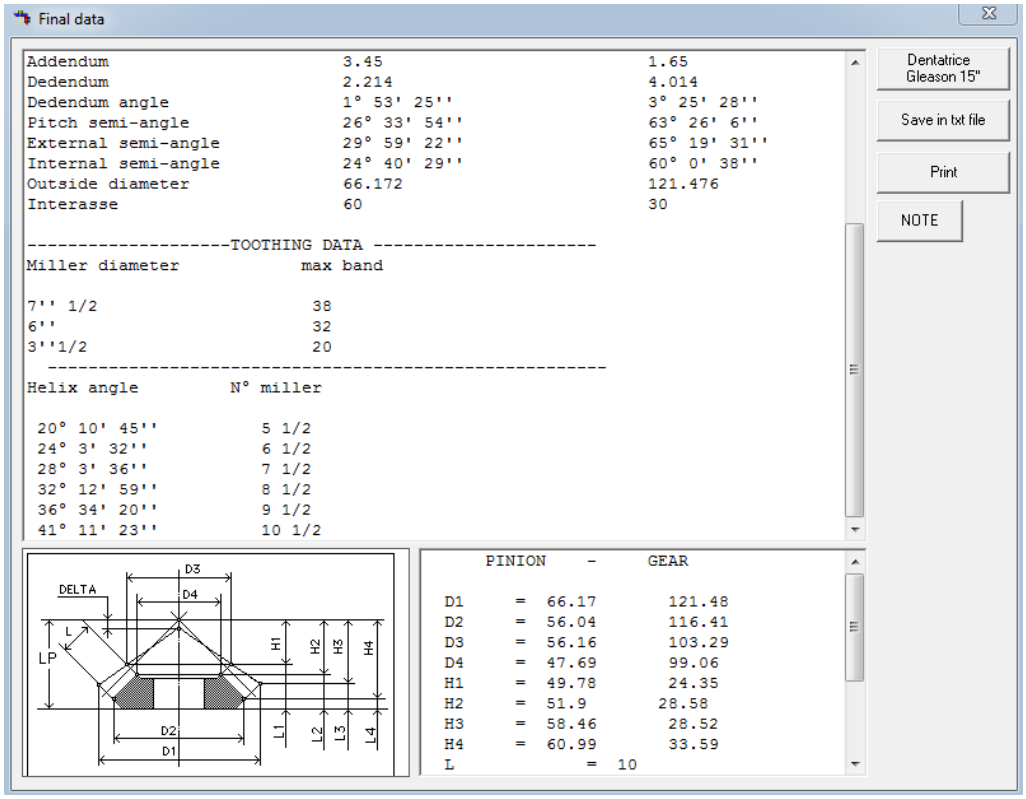


Spiral bevel gear. Option 1: Spiral bevel gear, GLEASON system

The helix angle is set at 35 °, pressure angle is fixed = 20° for all couples.



Option 2: Teeth spiral, old GLEASON STANDARD method



Results SORIA system (Old GLEASON method) with the setting data for the cutting.