

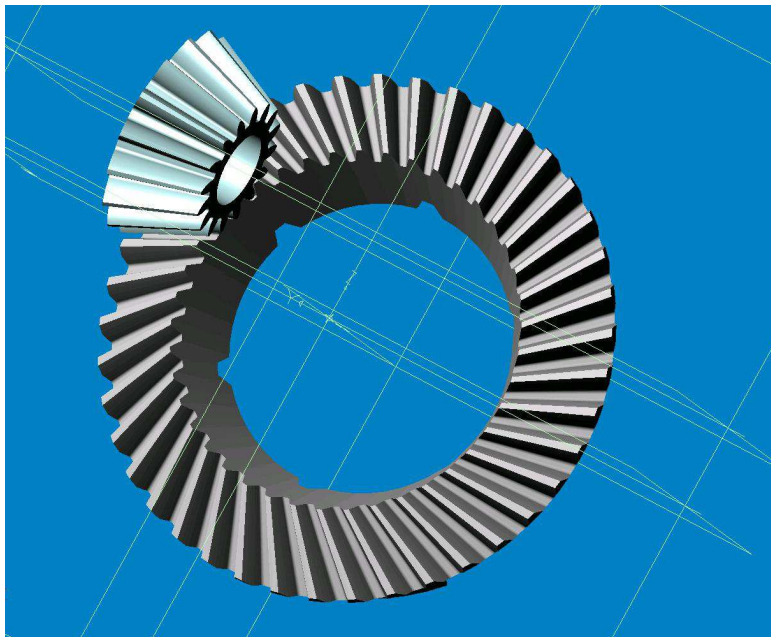
Calculation of straight tapered teeth skew bevel gear on a hyperboloid.

This guide shall be used with the spreadsheet: **BevelGearCalc.xlt**

All the design dimensions is calculated, only 5 parametres for the wanted Gear have to be filled ind.

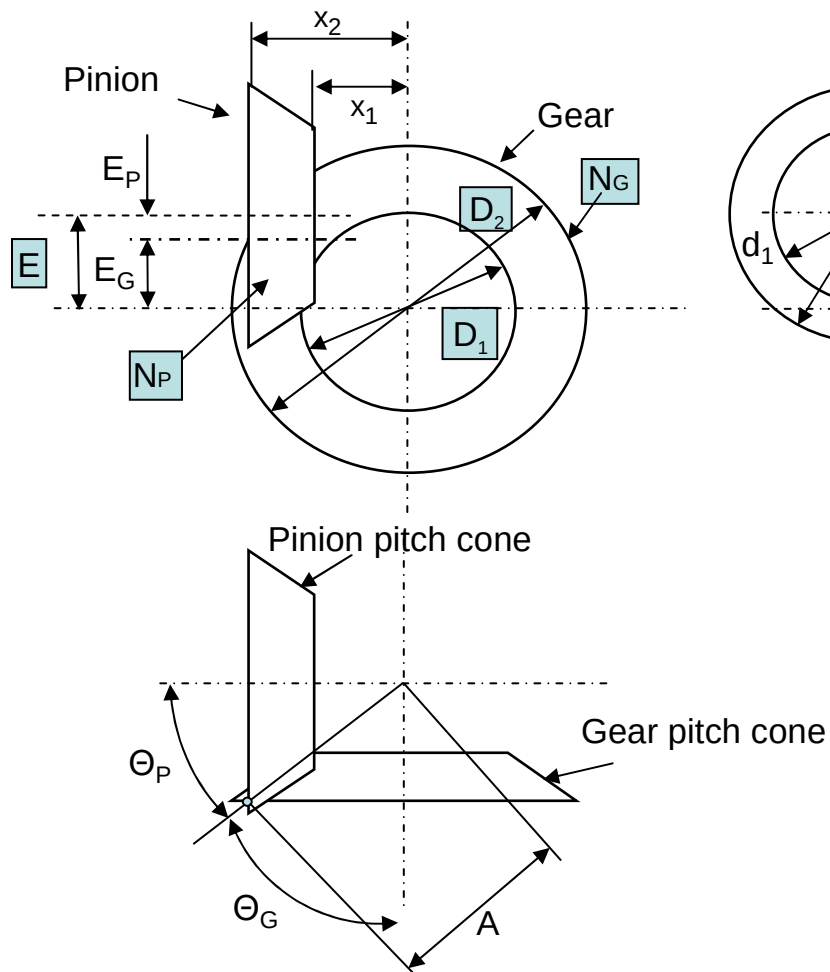
This calculation method can be used as input to model gears in any CAD system.

It is free to use for anybody and must not be a subject to trade. **Have fun!.**



Oldbelt

The software should not be relied on as a the sole basis to solve a problem whose incorrect solution could result in injury to person or property.
If software is employed in such a manner, it is at the user own risk and the author explicitly disclaims all liability for such misuse to the extent allowed by law.
In no event will the author be liable to you for any damages, claims or cost whatsoever or any consequential, indirect, incidental damages, or any lost profits or lost savings, even if the author has been advised of the possibility of such loss, damages, claims or for any claim by any third.



#1

Input parametres in spreadsheet

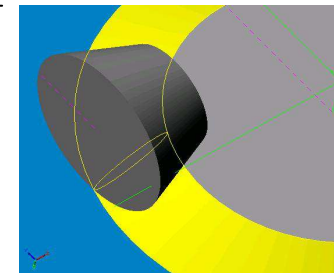
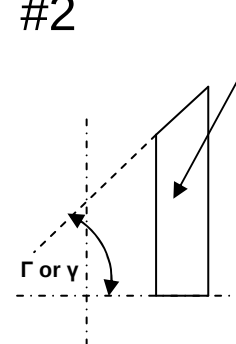
E : Offset.
 D_2 : Outer gear Pitch cirkel diameter
 D_1 : Minor gear Pitch cirkel diameter.
 N_P : Number of pinion teeth.
 N_G : Number of gear teeth.

All other parametres is calculated in the spreadsheet and can be taken there.

#2

Draw the sketches for the parts.
 Use the angls Γ and γ for the pitch cone sketches.
 Create the feature by rotation.

Create an assembly with a parallel plane in dist. E from "mainplane" and a axis between E-plan and "main", constrain the pinion to it.



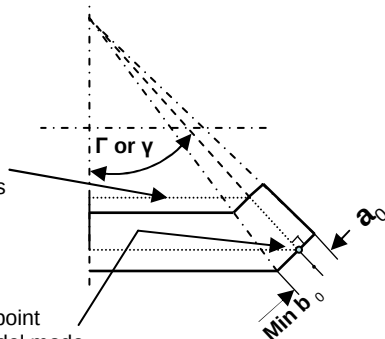
Make a interfeence check,
 Every thing is OK
 if interfeence look like
 the picture. An ellipse.

#3

Load the parts and edit the sketches as shown

Chance the original sketch to reference lines and draw the blank and rotate.

In sketch mode insert a point there can be seen in model mode

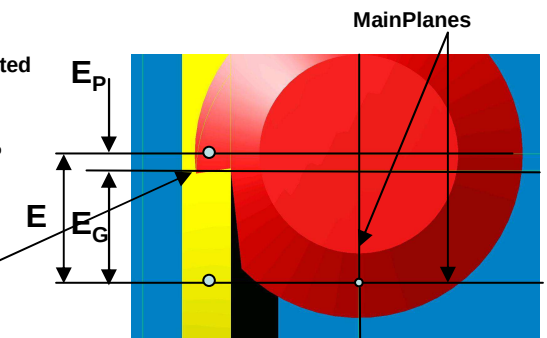


#4

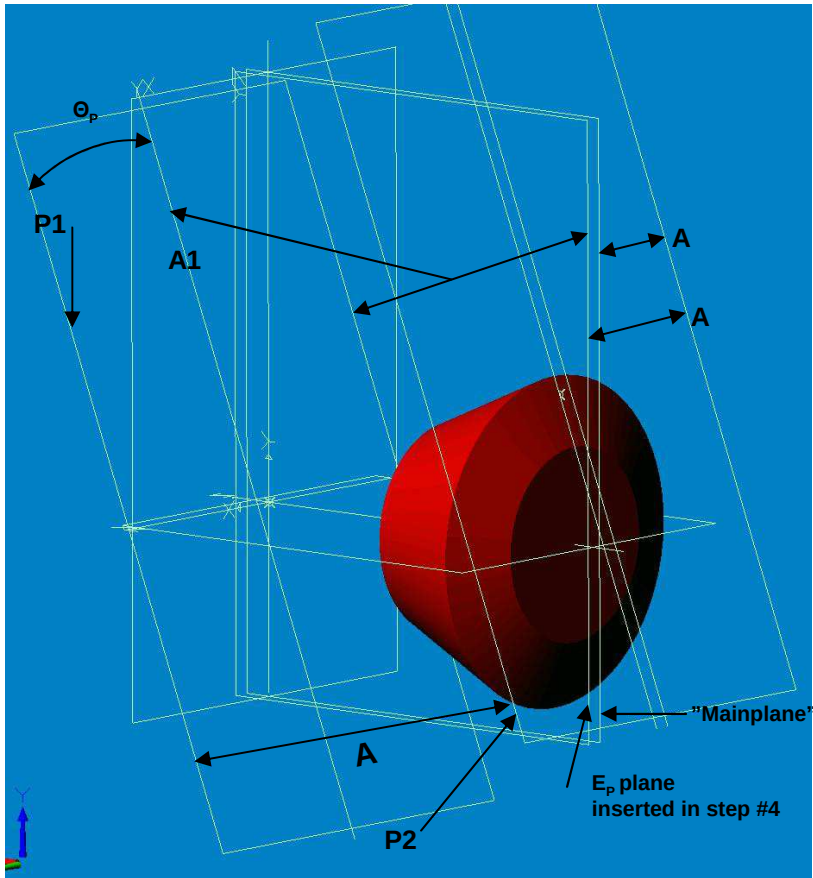
Load the assembly and rotate the parts, so the inserted points are positioned app. as shown.

Insert a plane in the pinion part model in distance E_P from "main plane"
 Insert a plane in the gear part model in distance E_G from "main plane"

If the merge of the parts looks as at the picture, every thing is OK.



#5



Load pinion and insert 2 planes.

Insert 3 axis between planes as shown with the arrows.

Do the same with the ring gear.

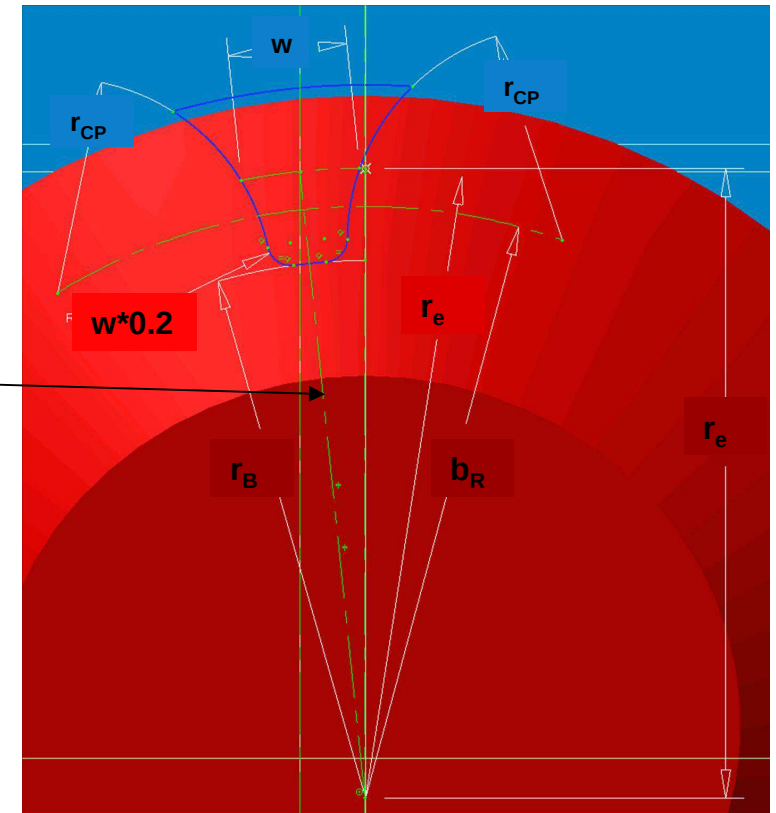
Now to creating the teeth.

Load the pinion and choose plane P2 as sketch plane.

#6

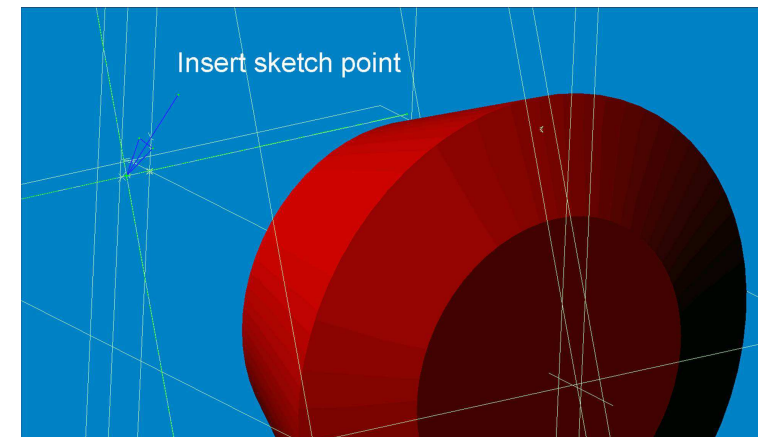
Make this sketch,
it's one of two
for the loft to cut
the teeth.

Sketch symmetri line

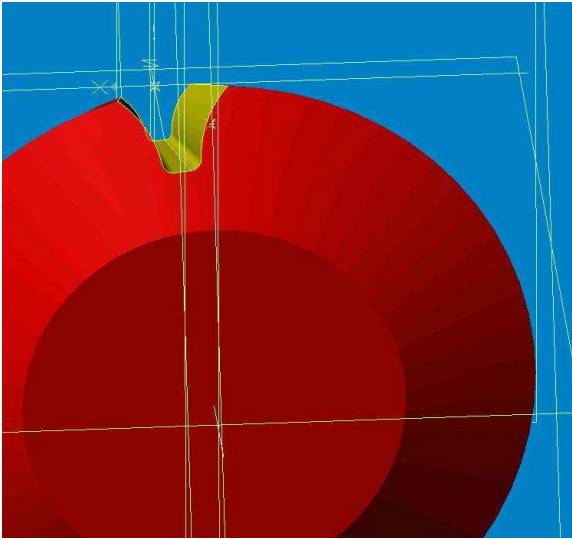


#7

Insert Sketch point, at plane P1
constrained to the
main axis and axis A1

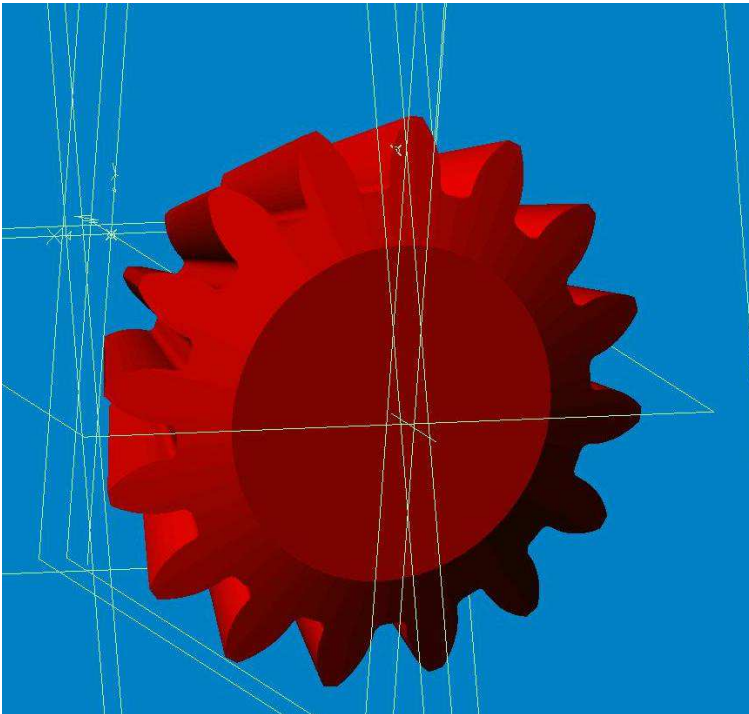


#8

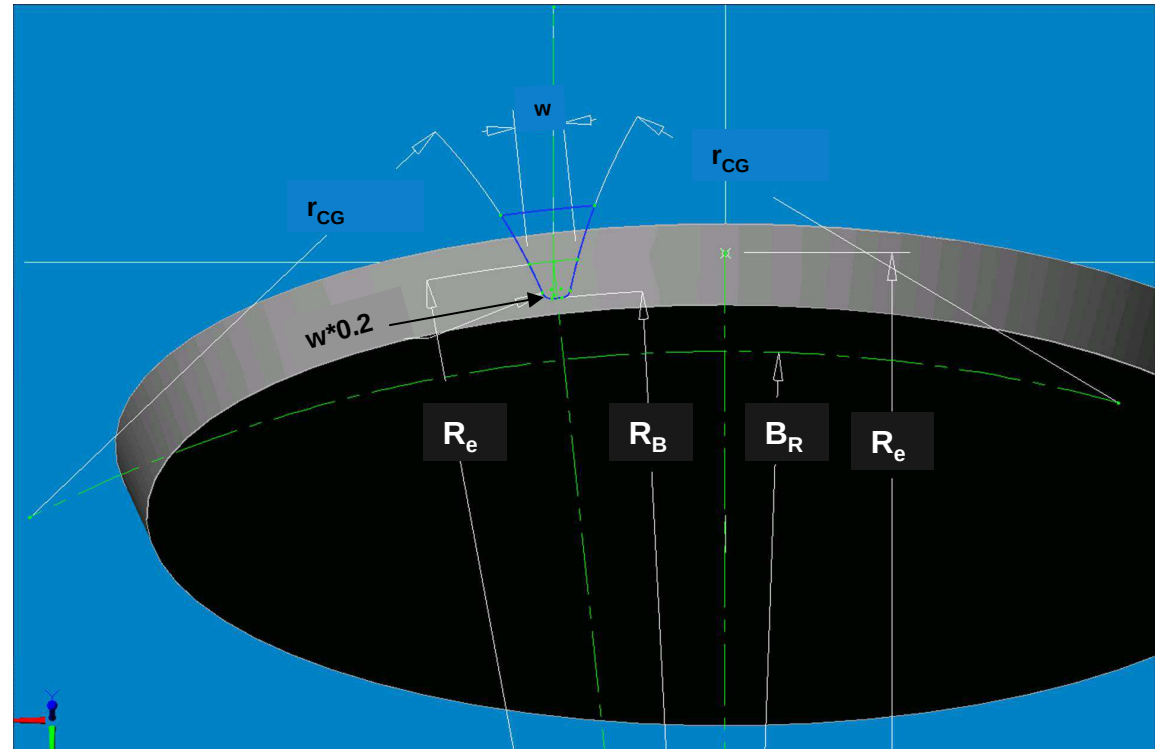


Make a loft cut with the sketches made in #6 and #7.

Then make a circular pattern N_p copies and a angle at $360/N_p$



Do the same steps to the ring gear. The sketch shall look like this



and you have:

A straight tapered teeth skew bevel gear on a hyperboloid