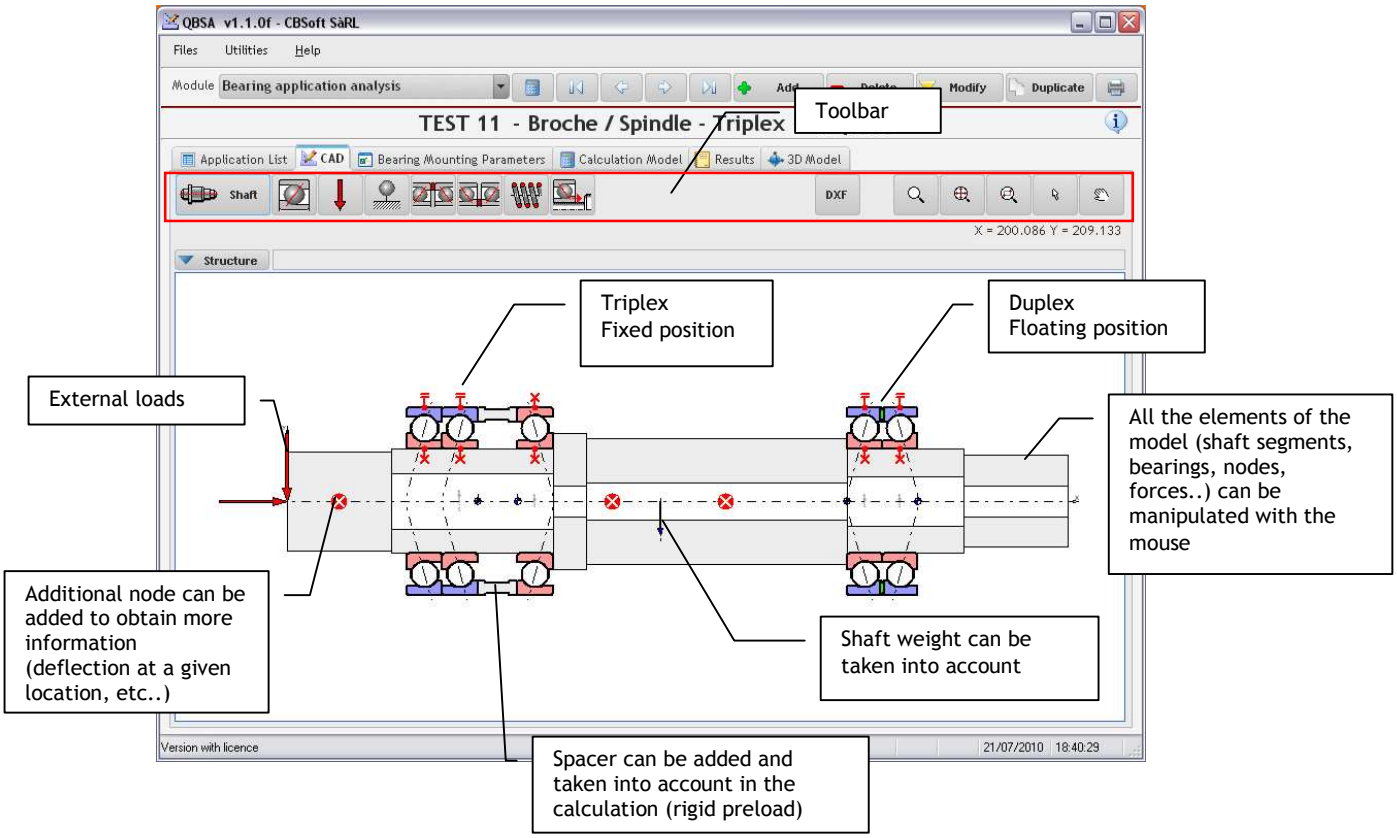
QBSA

(Quick Bearing and Shaft Analysis)

This document is providing a quick overview of the capabilities of the bearing application analysis module of QBSA.

The example is based on a spindle equipped with two sets of bearings. At the nose (left end), we have a triplex arrangement. This position is supposed to be used as a reference and as such is fixed. The second set of bearings (right end) is mounted according to a duplex arrangement.
This position is floating, however, internal endplay can be adjusted to optimize the bearing life with regard to the loading conditions

Global description of the application

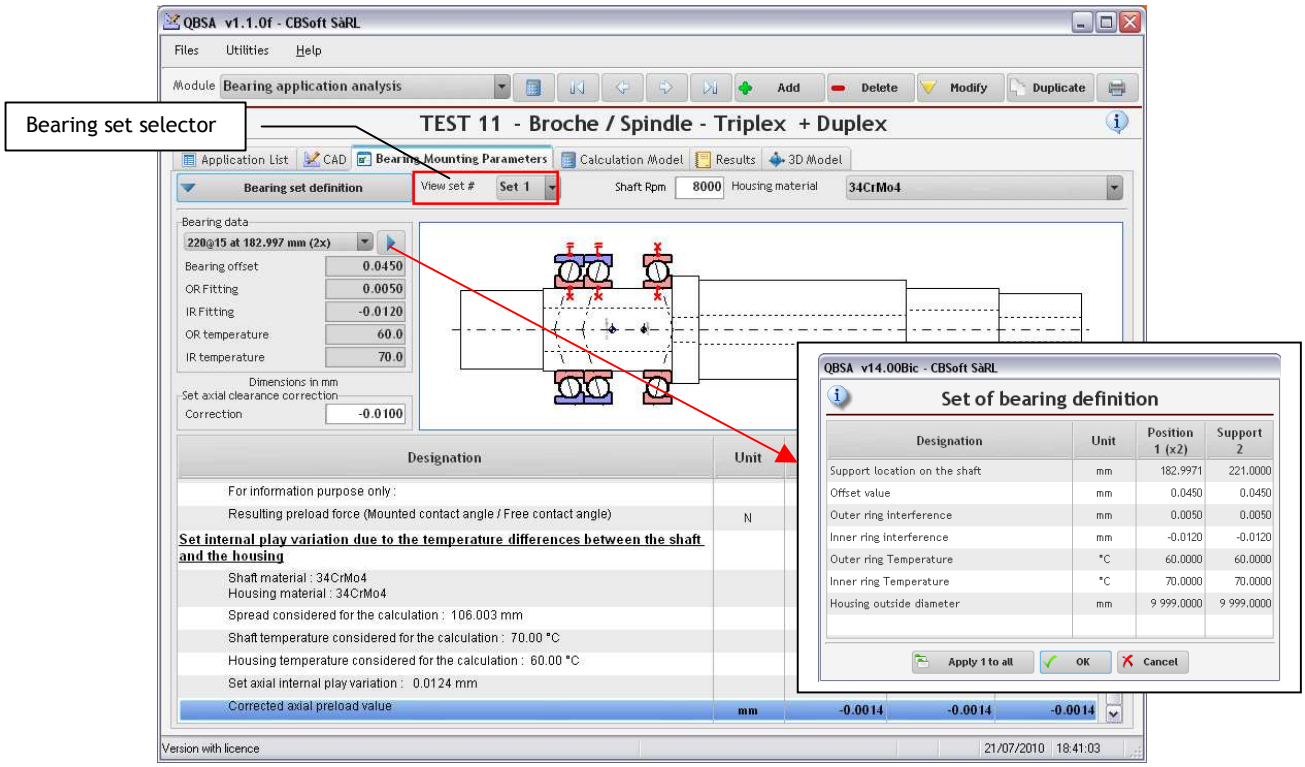


The bearing material can be changed to estimate the effect of different material like ceramic etc. This is indicated by means of different colours of the bearing components.
Double-clicking an element of the model will open the adequate window with the properties of the selected component (bearing, shaft segment, spacer, force etc..). Parameters can be modified in a very easy manner.

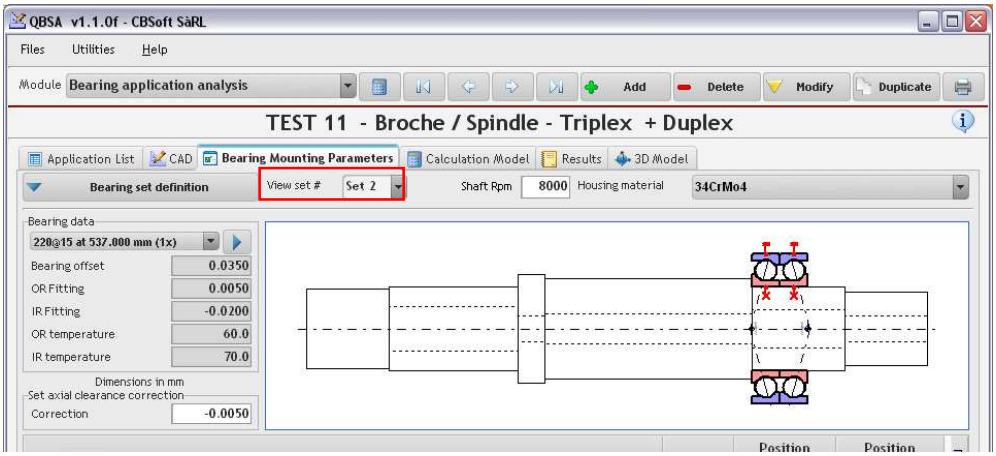
Defining the bearing sets

1-Triplex setting

This section allows a in-depth analysis of the mounting. First, the bearings are identified, then the mounting parameters can be introduced to get an estimate of the conditions in operation.

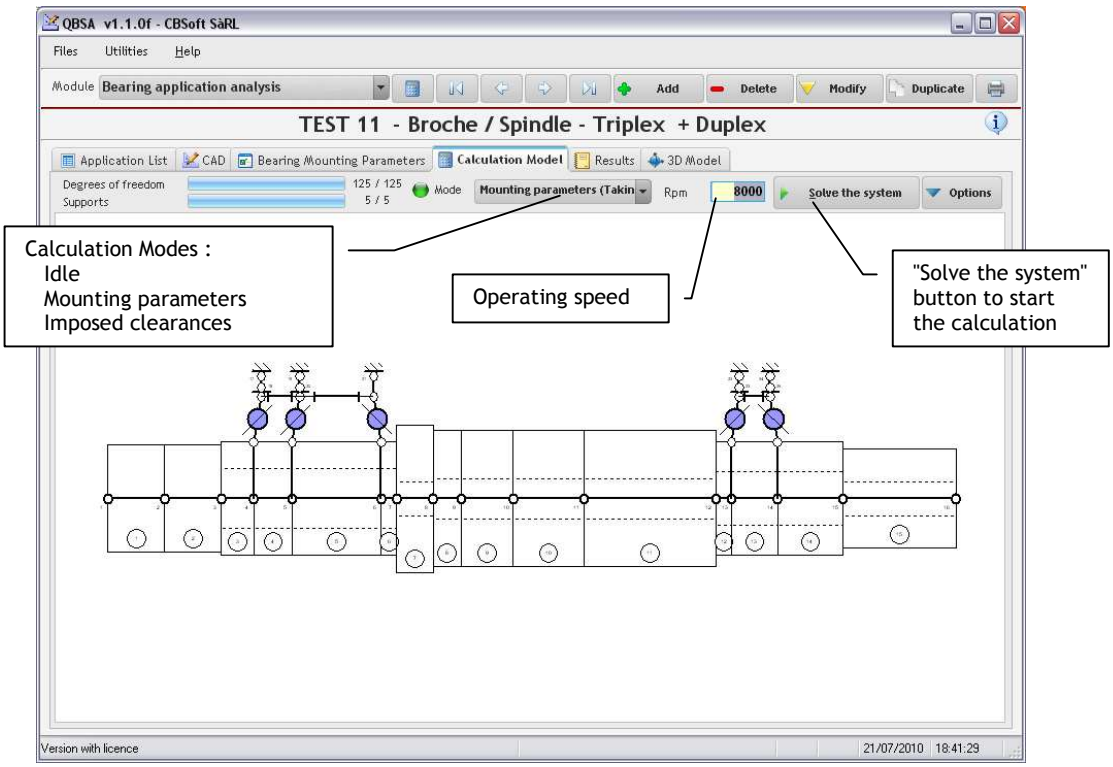


2 – Duplex setting

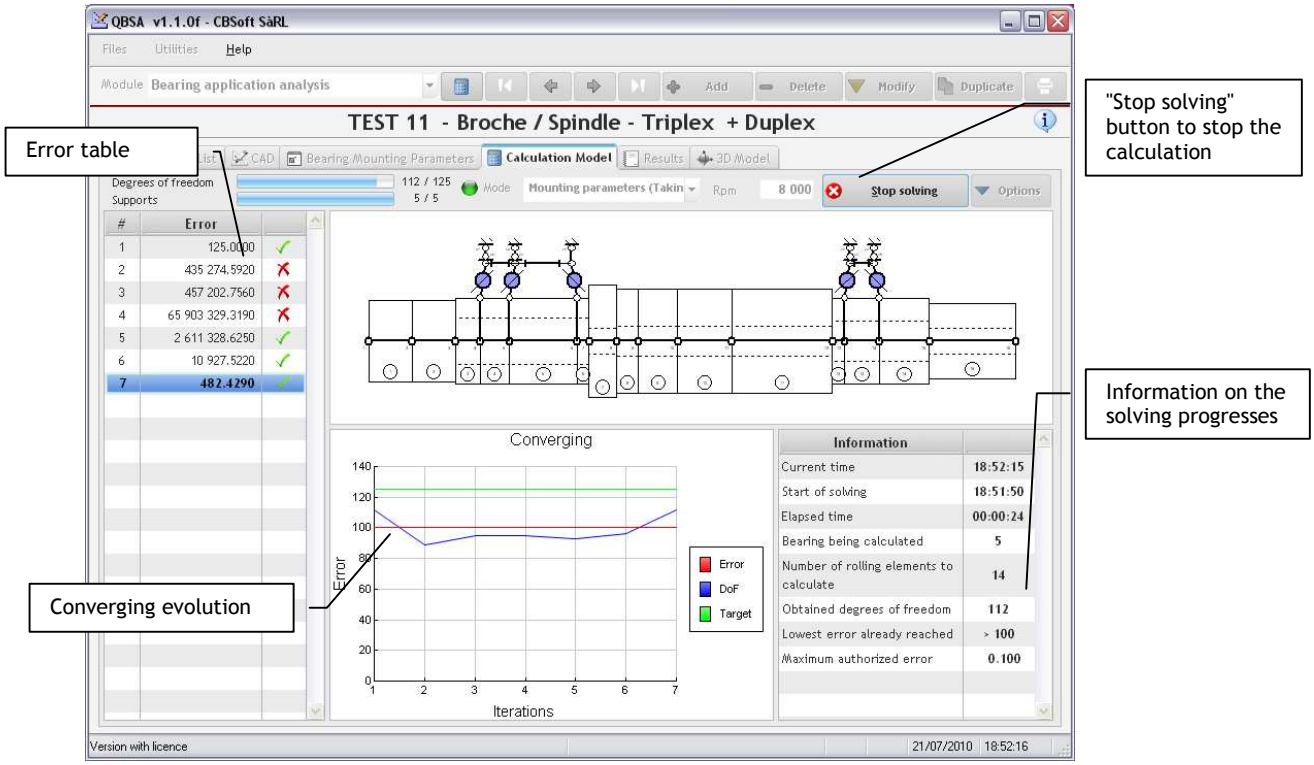


The finite element model

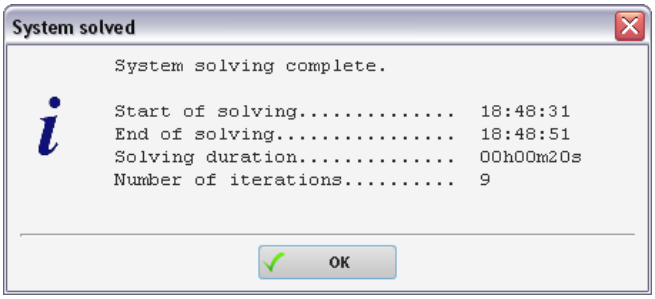
The finite element model is generated automatically. A graphical representation of this model is available for information purpose. Some commands will allow to select the mode of calculation, the operating speed, etc. Clicking the "Solve the system" button will launch the calculation process.



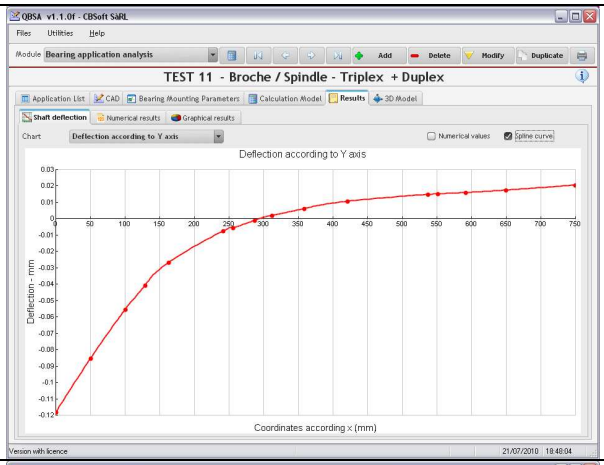
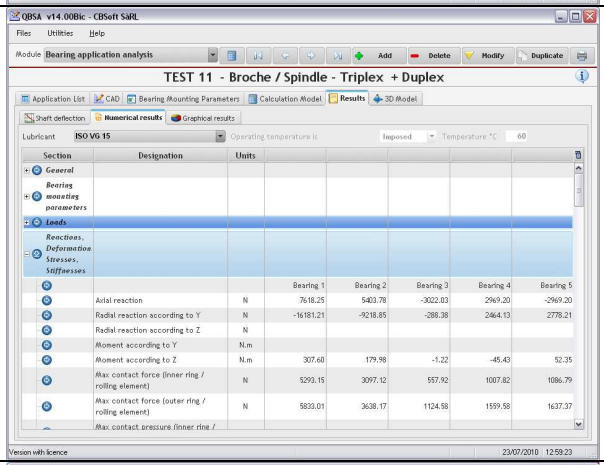
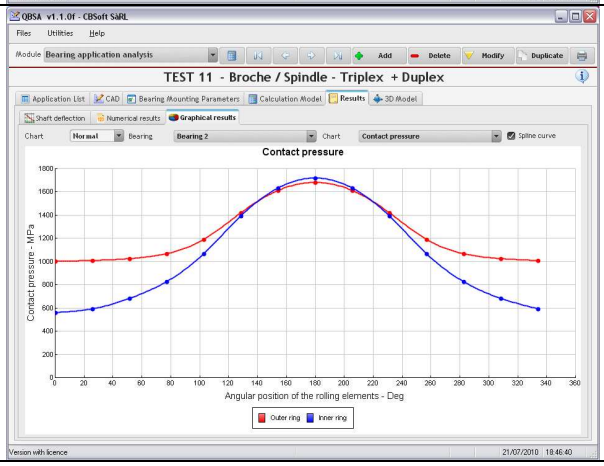
The next picture is showing the same section while QBSA is solving the model



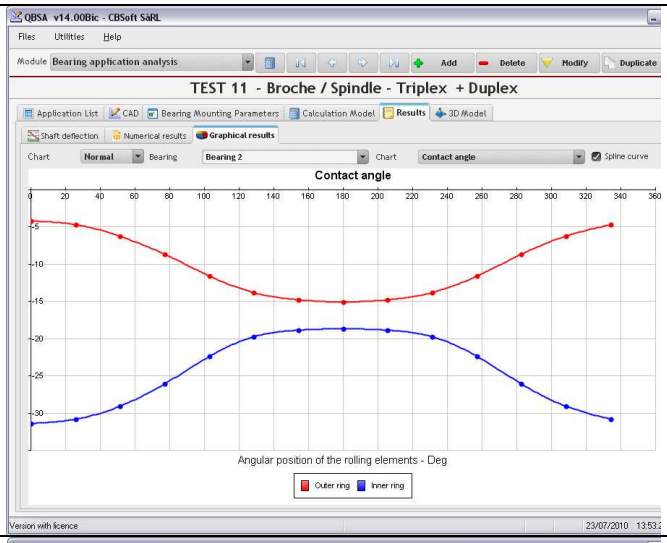
The following message will inform the user once QBSA has solved the system.

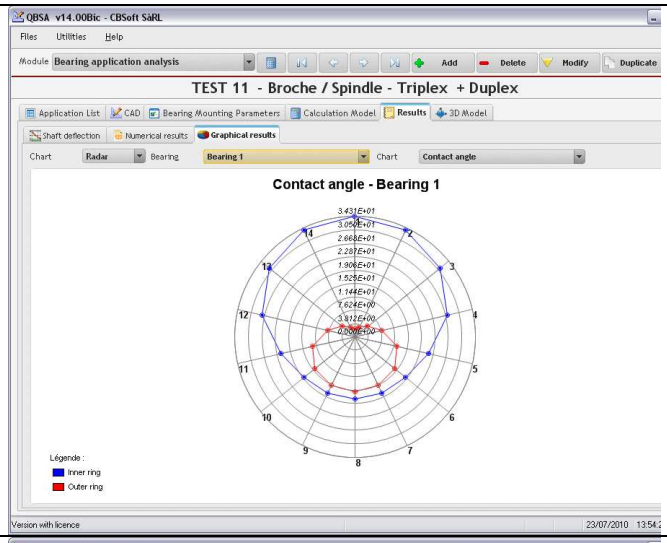


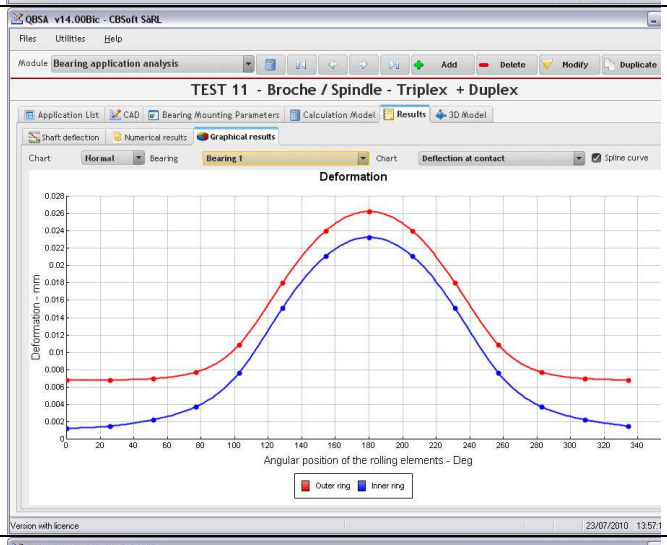
The result report section, is then available and can be consulted. Several section are at the disposal of the user.

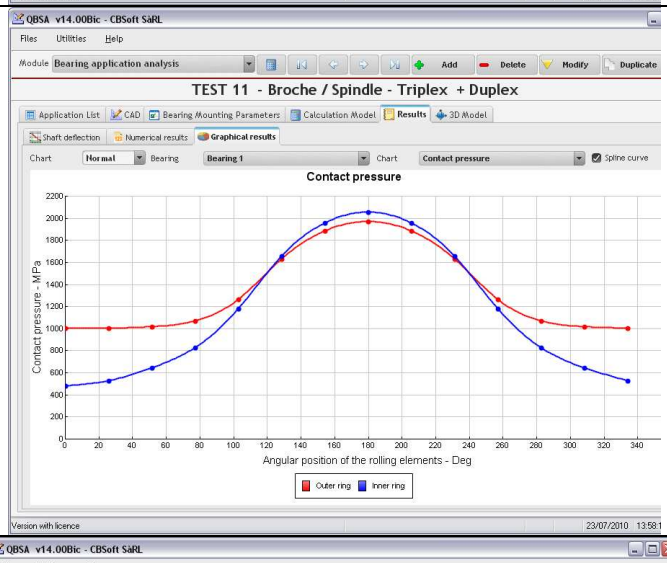
1 - Shaft deflection	
2 – Numerical results (Detailed output report can be downloaded from www.bearing-analysis.com in the download page)	
3 – Graphical results	

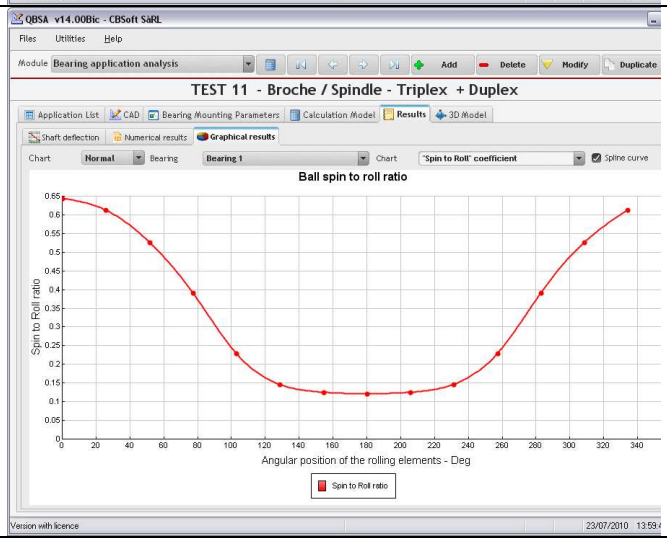
Example of graphs (curves or polar)

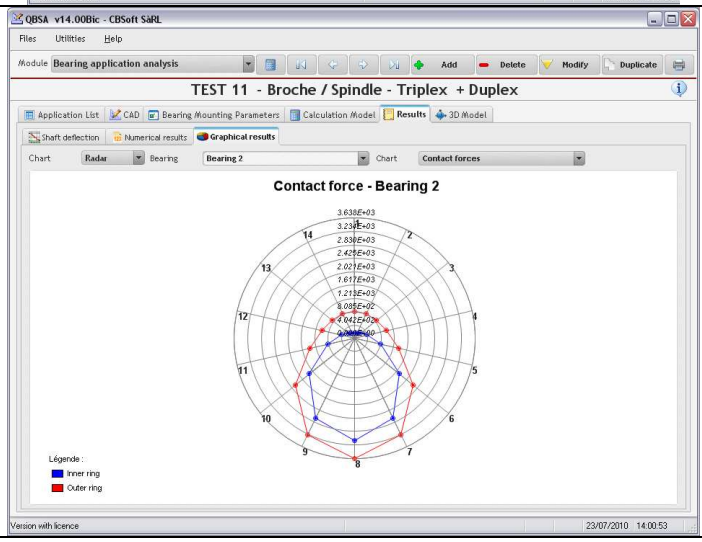




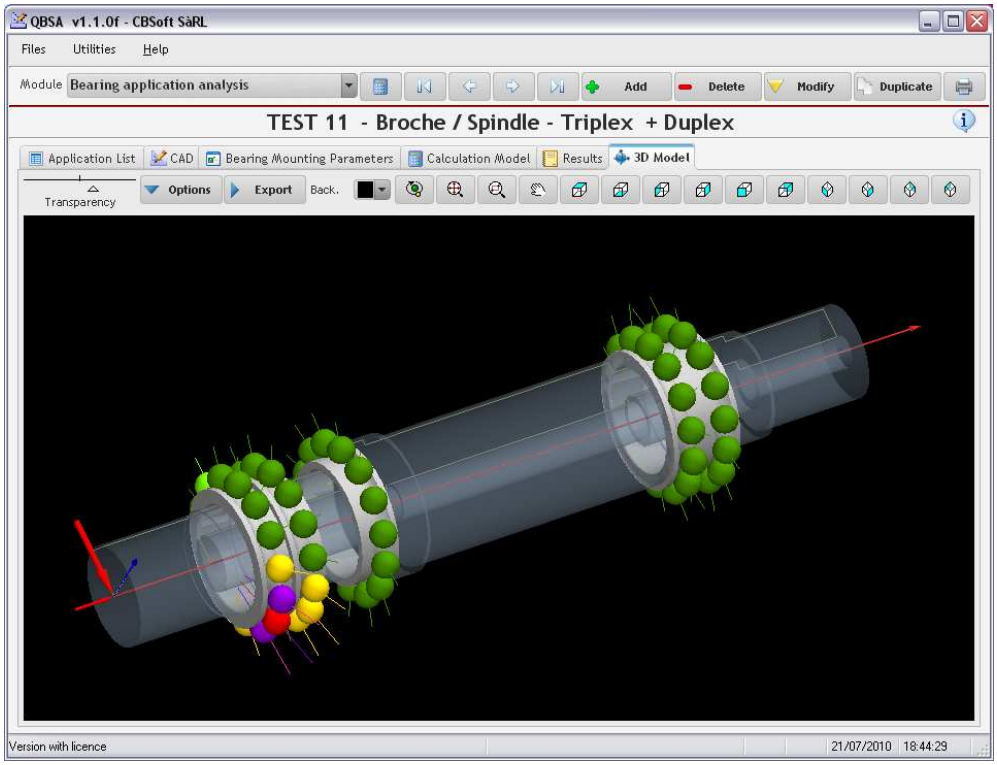








Finally a 3D model is automatically created (no user intervention)- different colors used to indicate the contact pressure level of each rolling elements. At this point the view of the 3D model can be changed with the mouse or by clicking the predefined views.



The 3D model can be exported to Iges® or Step® format.