1.1. Prepare CAD file in GDSII format

1.1.1. The software program LayoutEditor can be used to prepare CAD drawings in GDS format.
1.1.2. For any other CAD file format, it will be necessary to convert it to GDS file format.
1.1.3. The CNS provides the software program LinkCAD for this purpose, in the CNS basement computer lab.
1.1.4. LinkCAD can convert DXF, CIF, bitmap, and a few other file formats.
1.1.5. To use LinkCAD with a DXF file:
1.1.5.1. DXF files must be saved as compatible with autoCAD 2000 or earlier
1.1.5.2. All shapes must be made of closed polygons
1.1.5.3. Make note of the base unit used for the DXF drawing (microns, mm, etc.)
1.1.5.4. Launch the program LinkCAD
1.1.5.5. Select “DXF” to “GDSII” for the conversion, and make sure that the “batch” box is not selected, then click “Next”.
1.1.5.6. On the “DXF Import Options” screen, set the “1 DXF unit =” to the base unit used when making your CAD option.
1.1.5.7. Make sure that the “Ignore text” box is NOT checked.
1.1.5.8. Leave all other setting as they appear in figure 2.
1.1.5.9. Click “Next”.

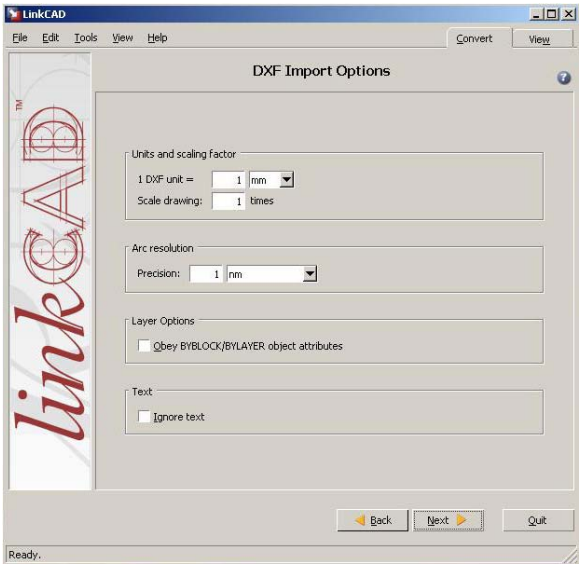

Figure 2 – DXF Import Menu

1.1.5.10. On the menu “GDSII Stream Export Options”, make sure everything is set as shown in figure 3, then click “Next”.

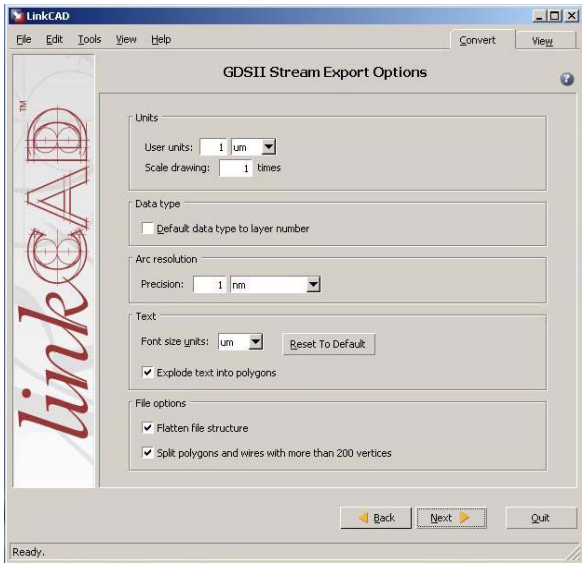

Figure 3 – GDSII Stream Export Options Menu

1.1.5.11. An open file menu will appear. Select your dxf file and click “Ok”.
1.1.5.12. A “Log Messages” screen may pop up; if it does, click “Next”.
1.1.5.13. If there are any open polygons or individual polylines in your DXF file, the menu “Repair open polygons” will appear (figure 4).

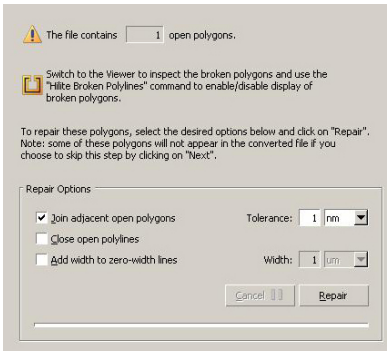

Figure 4 – Repair Open Polygons Menu

1.1.5.13.1. It is best to fix any open polygons/unjoined polylines in the CAD software. However, LinkCAD can make simple fixes, such as joining overlapping polylines (the first option) and closing open polylines.
1.1.5.13.2. After selecting your repair option(s) and clicking repair, the screen will update to show the number of remaining open polygons. The “View” tab, as discussed below, can be used to view the open polylines, as well as the results of the repair operation.
1.1.5.13.2.1. If you have open polygons or individual polylines on unused layers in your CAD, they will still show up in this repair option menu. It is best practice to delete all unused layers from your CAD before conversion.
1.1.5.13.3. Polylines/open polygons will be ignored by the DWL66 mask writer.
1.1.5.13.4. When finished with the repair menu, click “Next”.

1.1.5.14. Click on the "View" tab (upper right corner), and scroll the mouse to refresh the drawing (the initial display is always garbage). See figure 5.

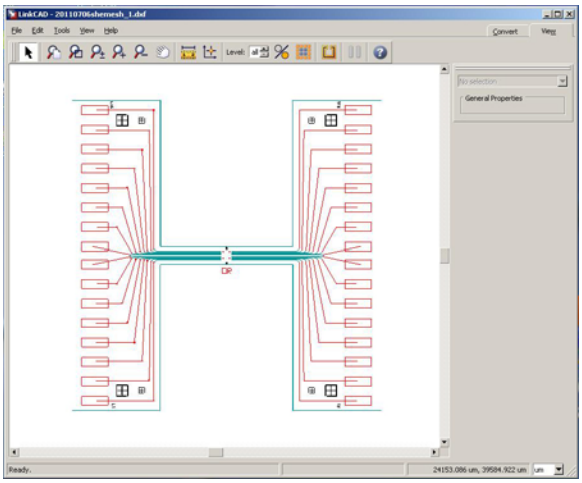

Figure 5 – View Menu

1.1.5.15. Click on the "%" icon (figure 6) to fill the enclosed polygons. The filled areas will either be transparent (for normal mask writing) or opaque (for inverted tone mask writing) on the finished mask.

Figure 6 – View Menu Buttons

1.1.5.16. (Optional) Click on the "Show open lines" icon to highlight any polylines that do not form enclosed shapes. These lines will appear dashed, with triangles indicating the ends of the lines.

1.1.5.17. Click on the "Convert" tab.

1.1.5.18. Click "Next"

1.1.5.19. Enter a file name for the converted file. The default entry is the same name as the DXF file, however, if preparing for use on the CNS Heidelberg DWL66 maskwriter please use the following naming convention. The file name should be the year, followed by the month, followed by the day, and then your name – first or last, whichever is shorter. If you have multiple files, use an underscore, followed by a single number. I.E. for a single mask file by Jim Jones on December 22, 2010, the file name would be 20101222jim.gds

1.1.5.20. If user Ping Wei, on January 4 of 2012 had 2 CAD files, the names would be 20120104wei_1.gds and 20120104wei_2.gds. Capitalization is not important

1.1.5.21. Click "Save" to start the file conversion.

1.1.5.22. Click "Next".

1.1.5.23. Click "Quit" to exit the program, or "Restart" if you have more files to convert.

1.1.5.24. (Optional) It is highly recommended that you inspect the converted GDS file in LayoutEditor to make sure the converted file appears as you want it.