Scripting How-To: How Can I Create a New Library Cell and Add Instances from a Reference Library

Now that we know how to import a reference library from our Scripting How-To: How Can I Import an Artwork Cell Library for Use in my Design . Let's build on this by creating a new library with a new cell and adding some cell instances from the reference library into the newly created cell. The script code for this looks like the following:

```
 ' Code Module
Sub Main
        Dim cellLib As CellLibrary
        Dim libCell As Cell
        Dim x As Double, y As Double
        Dim i As Integer, j As Integer

        ' Import a reference library
        Project.CellLibraries.Import("MyRefLib", "C:\ReferenceLibs\CCADC.GDS", mwCLT_GDSII)

        ' Create a new cell library
        Set cellLib = Project.CellLibraries.Add("MyLib", mwCLT_GDSII)

        ' Add a new cell to the cell library
        Set libCell = cellLib.Cells.Add("MyCell")

        ' Add cells from our reference lib to the new cell
        x = 0
        y = 0
        For i = 1 To 10
                x = x + 100e-6
                y = 0
                For j = 1 To 10
                        y = y + 100e-6
                        libCell.Instances.Add("MyRefLib", "AND2", x, y)
                Next j
        Next i

        ' Open an editor on the cell we just created.
        libCell.EditCell

End Sub
```

We'll go through this code line by line and explain each step. The first part should look familiar from our description of importing a reference library: Scripting How-To: How Can I Import an Artwork Cell Library for Use in my Design :

```
      ' Import a reference library
        Project.CellLibraries.Import("MyRefLib", "C:\ReferenceLibs\CCADC.GDS", mwCLT_GDSII)
```

In this line we are importing the GDSII reference library located at "C:\ReferenceLibs\CCADC.GDS" into the project and giving it the name "MyRefLib". We'll use a cell from this library to start us off on the new cell. Since this is a reference library we'll probably want to create our cell in a different library so we don't disturb the reference library which others may be using in their designs.

The next step is to create a new library to hold our new cell.

```
     ' Create a new cell library
        Set cellLib = Project.CellLibraries.Add("MyLib", mwCLT_GDSII)
```

This creates a new GDSII cell library in the project called "MyLib". Well use this library to hold our new cells for this design project. Note here we retained a reference to the cell library in the variable 'cellLib' so we can use this to create a new cell in the cells collection of this library. This is done as follows:

```
    ' Add a new cell to the cell library
      Set libCell = cellLib.Cells.Add("MyCell")
```

Here we've use the Cells collection of the cell library to add a new empty cell called "MyCell". Note here again we keep a reference to the new cell in the variable 'libCell' so we can use this add the cell instances.

The next step is to populate this cell with some instances of a cell from our reference library. We do that in the a loop like this:

```
    ' Add cells from our reference lib to the new cell
      x = 0
      y = 0
      For i = 1 To 10
              x = x + 100e-6
              y = 0
              For j = 1 To 10
                      y = y + 100e-6
                      libCell.Instances.Add("MyRefLib", "AND2", x, y)
              Next j
      Next i
```

Here we create two variables x and y to represent the cell origin location and use these inside a double loop to loop over the rows and columns each time incrementing x by 100um in the outer loop to locate the column position and thin in the inner loop we increment the y by 100um to traverse up each column populating the rows.

Finally, so we can see the resulting cell we open the cell into an editor

```
  ' Open an editor on the cell we just created.
      libCell.EditCell
```

The resulting libary cell looks as follows:

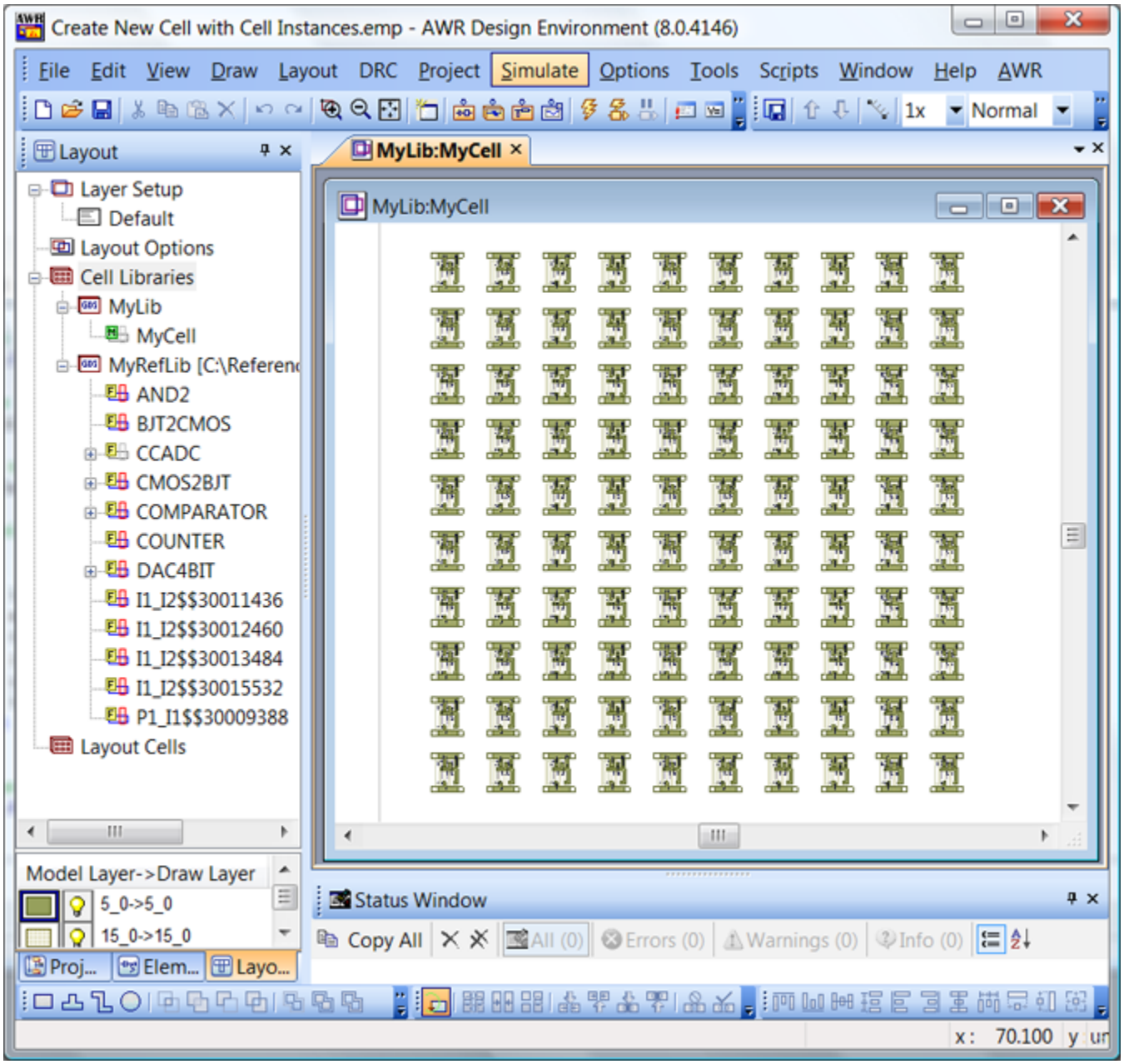

Figure 1 New Library Cell with Cell Instances added from a Reference Library

These steps can be used to provide a quick head-start for standard designs which use cells from a cell library as a starting point. Once the reference cell library is imported you can easily create a new library with a new cell and populate it with cells from the reference library. Finally you can open the newly create cell in an editor ready for further layout.