

DIGITIZING GRAPHICAL DATA

Engauge Digitizer (Version 1.6) is a convenient freeware program for digitizing graphical data. This can be useful when analyzing performance curves provided by manufacturers. The example below uses data for the ST-1.0-3.0 thermoelectric module from Advanced Thermoelectric: <http://electracool.com/ST-71-1-3.pdf>.

You can download a free copy of Engauge Digitizer from the mirror site:

http://prdownloads.sourceforge.net/digitizer/digit-exe-windows-1_6e.zip?use_mirror=unc

A description of this program, along with the newest versions:

<http://digitizer.sourceforge.net/>

Some other types of digitizers (most of these are not free):

<http://216.239.41.104/search?q=cache:998SaQZA2ZUJ:www.ccp14.ac.uk/solution/hardcopy2data.htm+scan+digitize+graphs&hl=en&ie=UTF-8>

Main steps in using Engauge Digitizer (note that Help → User Manual also gives some information but I don't find it that clear):

- First obtain an image file of the manufacturer data. It must be in one of the following formats: .bmp, .png, .pnm, or .xpm. You can either do this by scanning the graph, or when using Acrobat files, you can open the Acrobat file, then Save As a .png file.
- Open the Digitizer application
- Open the image file of interest: File → Import
- Define the coordinate system of the image: Digitize → Axis point, then click on the axis point, then enter coordinates in the popup box. You will need to do this for three different axis points. Typically I click on the (0,0) point in the bottom left, then the (Imax, 0) point in the bottom right (here Imax is 3.0), then the (Imax, Qcmax) point in the upper right (here Qcmax is 14.9). (FYI: the purpose of using 3 points to define the coordinate system instead of 2 is to account for any distortion of the graph)
- For graphs with more than one curve, it is often convenient to name each curve separately. For example, for the present graph we may want to digitize data for each individual Delta T case separately. For our purposes, however, assume we just want to create a single curve including the data at Delta T = 28°C and name it DT28. To do this:
 - Settings → Curves → New → type in DT28 → OK
 - To clearly mark this curve visually for future reference (not necessary but it often helps to make sure you've selected the right curve to pull data from): Properties → Point → Size → 5 → OK
 - Repeat the above step for as many separate curves as you want to create
 - OK
- To select the curve to automatically pull data from:
 - Digitize → Segment Fill
 - Click on the drop down menu next to "Curve1", then select DT28
 - Click once anywhere on the Delta T = 28 curve. If you click multiple times you will put the same information in the array multiple times. Make sure that the entire curve has been selected (here having large point sizes of 5 marked as done above is useful to see this). If the entire curve is not marked, click on the part of the curve that is not marked (this will then mark it)
- To save the data:
 - File → Export. (Note, you can play with the headings in Export Setup to save the files in different formats, save only certain of the curves, etc).