Data and code used for paper "Performance and operational effectiveness of evacuated flat plate solar collectors compared with conventional thermal, PVT and PV panels". (Applied Energy).

General note about code and data:

(1) Collector test results have been saved as a structure in a Matlab file (effectively a small database) FMtests.mat (FM=February-March, originally), also summarised in an Excel sheet. Each test typically lasted most of a day and is split into sub-sections ("parts") for each condition, e.g. illumination level. Each part was curve-fitted to remove noise and obtain mean or end-point values for temperature, heat flux etc, e.g. part(2).ifit(3)….

The structure is written and read using the function `savepoint_s`. Raw data files are included in the dataset for the more experimentally-orientated Solar Energy paper (http://wrap.warwick.ac.uk/id/eprint/95265) but are unlikely to be useful: the initial generation of the values in FMtests.mat was a painstaking and time-consuming task.

(2) The collector simulation calculates glass temperatures at a given plate temperature using a function radiation_balance, called by a script file. The input is read from a dataset structure DS for a variety of collector types; the structure being created in build_dataset1.m and given incidence angle modifiers in iam_fits.m

(3) Weather data is converted from the weather station's Excel files into a Matlab structure "S" using readallweather.m. This also estimates the beam component.
A script file run_wdata2qu47.m passes S and DS into a function wdata2qu4 to do the transient heating calculation at a given water temperature.

For odd little files, the "Find files" option in the Matlab editor may be helpful to show what calls them.

The data is in two zip files:

- WRAP_89678a.zip contains all the Matlab files.
- WRAP_89678b.zip contains the original Excel files prior to reading into Matlab. Most people won't need these.

Figure 1.

- EFP cross section 2.pptx

Figure 2.

- CIMG4990.jpg

Figure 3.

- Fig 3 EFP test schematic.pptx

Figure 4.

- P101097.jpg

Figure 5.

- Fig_ae_5.m
- Fig_ae_5.fig

Figure 6.

- Fig_ae_6.m
- Fig_ae_6.fig

Figure 7.

- fig_ae_7a.m
- fig_ae_7a.fig
- fig_ae_7b.m (click 3 times to position eta = ??" labels using crosshairs).
- fig_ae_7b.fig

Figure 8.

- Fig_ae_8.m (can also generate temperature histogram)
- Fig_ae_8.fig

Figure 9.

- fig_ae_9.m
- fig_ae_9.fig

Figure 10.

- Fig_ae_10.m
- Fig_ae_10.fig

Figure 11.

- Fig_ae_11.m
- Fig_ae_11.fig

Figure 12.

- Fig_ae_12.m
- Fig_ae_12.fig

Figure 13.

- Fig_ae_13.m
- Fig_ae_13.fig

Figure 14.

- Fig_ae_14b.m
- Fig_ae_14.fig

Figure 15.

- Fig_ae_15.m
- Fig_ae_15.fig

Table 5

- table_ae_5.m

Table 6.

- fig_ae_11.m

RWM

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