Release Notes

INSTED Ver. 8.3

TTC TECHNOLOGIES, INC.

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Release Features

INSTED Ver. 8.3

The latest version of INSTED (Ver. 8.3) includes the following enhancements to INSTED 8.2.1.

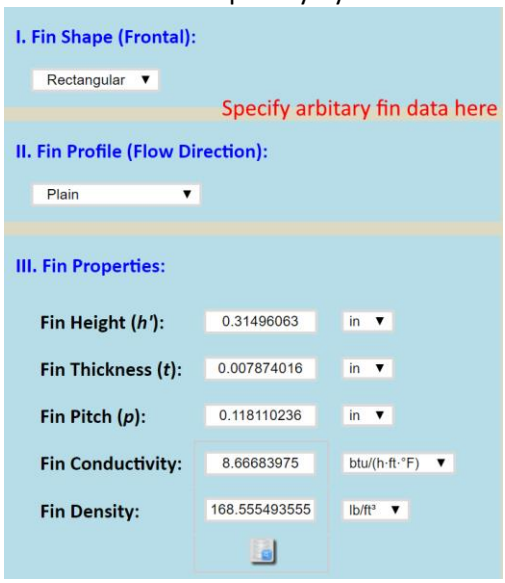
Improved Plate-Fin Solver

- The plate-fin solver now allows you to input user-defined fin data when rating a heat exchanger. This functionality allows you to use any type of fins in a plate-fin heat exchanger. Thus, if your fin type is not directly supported by INSTED, you will need to provide the following data:

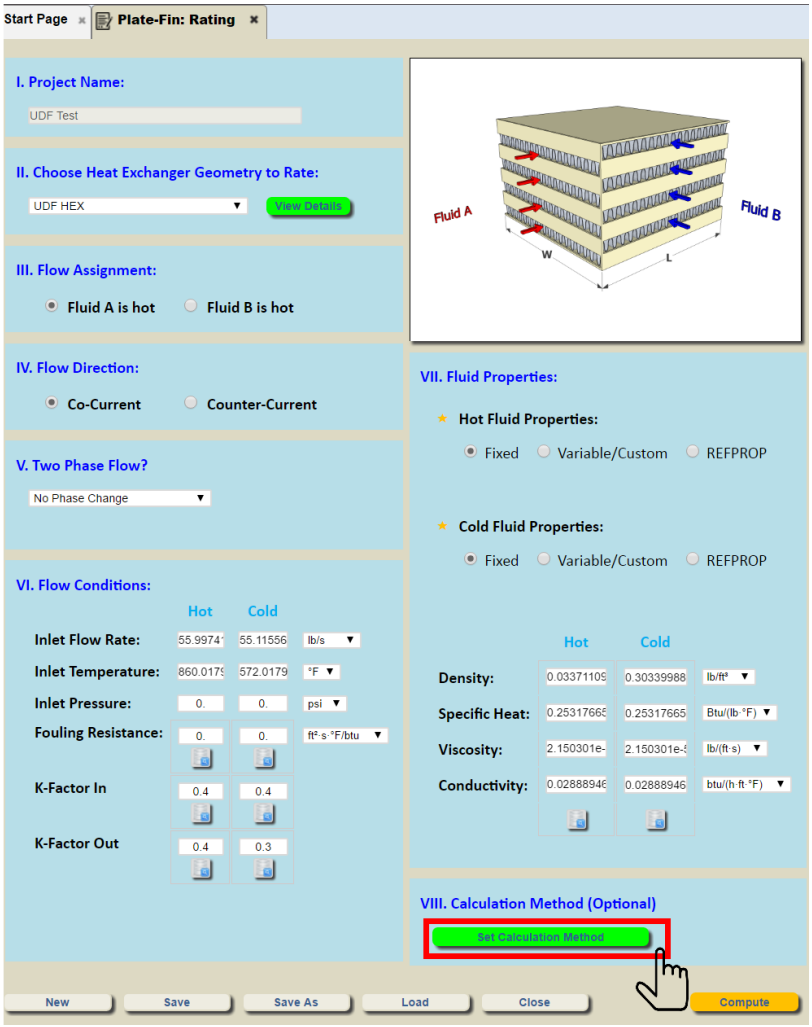
    a. Plate spacing (b), unit of [m]
    b. Equivalent diameter (D_e), unit of [m]
    c. Flow area per passage (S_a), unit of [m^2]
    d. Fin (enhancement) heat transfer area per unit plate area (A_f) per passage, non-dimensional value
    e. Base heat transfer (un-finned) area per unit plate area (A_b) per passage, non-dimensional value
    f. Fin efficiency (η_f)
    g. Fin weight per plate area (W_f) per passage, unit of [kg/m^2]
    h. Custom j/f data specified as a function of Re(D_e)

    To use this functionality:

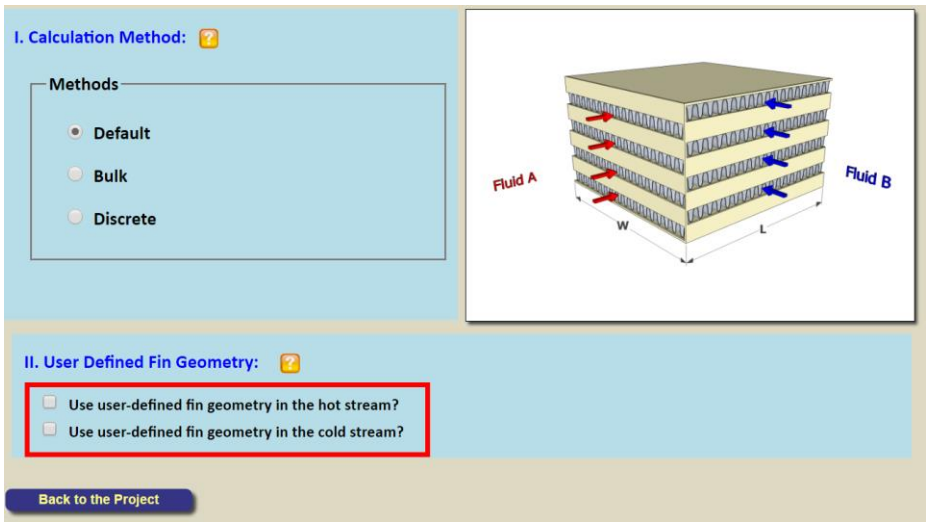
    (1) When defining plate-fin HEX geometry in the standard INSTED Rating procedure, you will still need to input arbitrary geometry data for the fins. However, the values entered will be overwritten subsequently by the user-defined fin data.



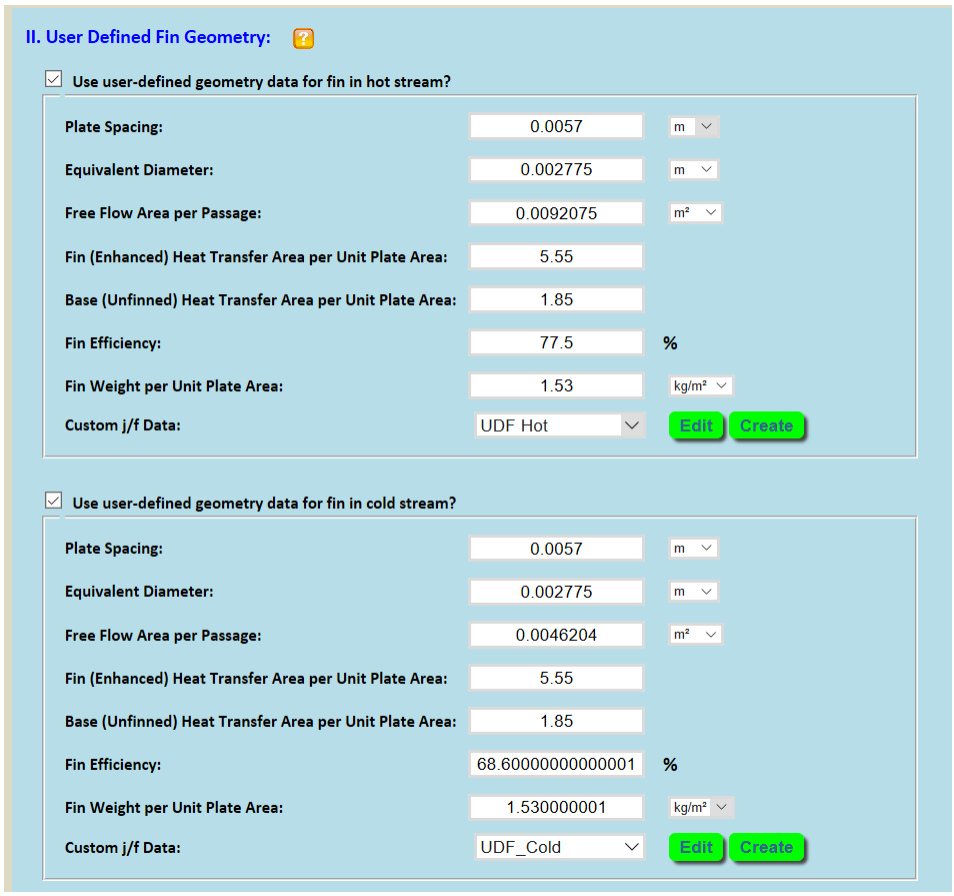
(2) When rating the HEX, click "**Set Calculation Method**" button.



(3) Check "Use user-defined fin geometry in the hot stream?" and "Use user-defined fin geometry in the cold stream?" if you want to specify user-defined fin data for the fins in the hot and cold streams. Note that you can specify user-defined fin geometries for the hot stream, the cold steam, or both streams.

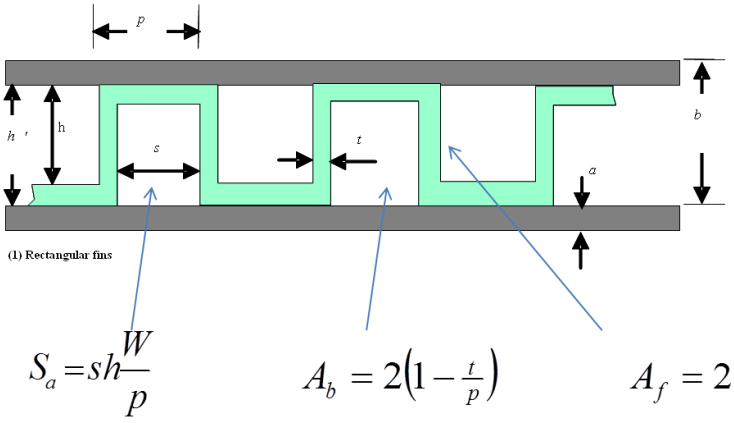


(4) After clicking the check box, e enter the custom fin data. The data input here will override any previously entered fin geometry data defined in the "Heat Exchanger Geometry" task, as mentioned above



(5) Save the project, and you are now ready to rate with your user-defined fin data.

The required variables in user-defined fin data are illustrated below using the rectangular fin as an example:



Note that the number of enhancement flow passages = *W/p*, where *W* is the width of the passage. Note that *W* is the width of the heat exchanger and *L* in the flow direction.

The base area for heat transfer per passage is *2(p – t) *WL/p*. It is non-dimensionalized by *WL*.

The fin area for enhanced heat transfer per passage is *2h * W/p*. It is non-dimensionalized by *WL*.

The effective heat transfer area per passage is *WL* ($A_b + \eta_f A_f$)