Release Notes

INSTED Ver. 8.1.1

TTC TECHNOLOGIES, INC.

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Release Features

INSTED Ver. 8.1.1

The latest version of INSTED (Ver. 8.1.1) includes the enhancements, changes, and bug fixes to INSTED 8.1.

Improved Plate-Fin Solver

- New Colburn factor j and friction factor f correlations were implemented for fins with herringbone/wavy profile along the stream direction. The new j/f correlations replaced the old equations so that more accurate results can be obtained.
- Additional inputs of wavelength and wave amplitude to define the geometry of herringbone/wavy fins were added.

- In the multiple-rating mode, the new parameters "Fin Wavelength" and "Fin Wave Amplitude" have been added to allow the parametric calculation of their effects.

"Fin Wavelength" and "Fin Wave Amplitude" are added to the control parameters in "Multiple Rating" module if "herringbone/wavy" fins are used.
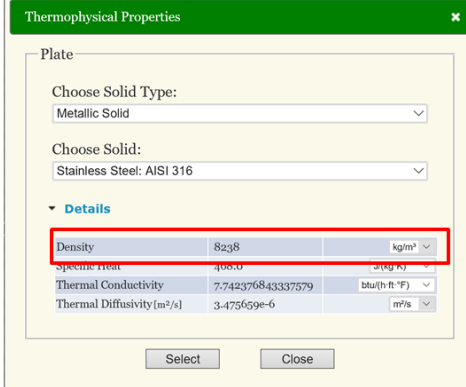
Issues Fixed in the Plate-Fin Module

- In INSTED Ver. 8.1 there was a bug related to the incorrect unit conversion between the solid material database and plate-fin plate/fin density inputs. The issue can be reproduced as follows using INSTED Ver. 8.1:

1. Try to get density from solid material database

Plate Density: [ ] kg/m³ ▾

2. Density for Stainless Steel 316 is 8238 kg/m³

Thermophysical Properties ✕

Plate

Choose Solid Type:
Metallic Solid ▾

Choose Solid:
Stainless Steel: AISI 316 ▾

▾ **Details**

Density	8238	kg/m³ ▾
Specific Heat	468.0	J/(kg·K) ▾
Thermal Conductivity	7.742376843337579	btu/(h·ft·°F) ▾
Thermal Diffusivity [m²/s]	3.475659e-6	m²/s ▾

Select   Close

3. If change the density unit to lb/ft³, density value is changed to 514.28 lb/ft³

| Density | 514.2815392249996 | lb/ft³ ▾ |

4. Click "Select" button to transfer density value back to Plate-Fin module

Select   Close
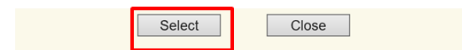
5. The value of 514.28 is set for plate density while the unit is still kg/m³, which is wrong.

Plate Density: 514.281539 kg/m³ ▾

Wrong!

Value should be 8238 for kg/m³

This issue has been fixed in INSTED Ver. 8.1.1.

- A re-evaluation of the other conversion processes from the Database was also completed for all the native database properties in INSTED to ensure that a similar issue did not exist for any other data.