3D Simulation of Air-Glass Heat Exchange in a Set of Vials

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Abstract

In this model a three-dimensional heat transfer analysis was performed by using COMSOL Multiphysics' Heat Transfer Module. The model is about the heating of a set of vials (Figure 1) in a current of hot air in the laminar regime. We used time dependent studies to predict the thermal behavior of the glass and to estimate the temperatures in the various points of the bottles at various times. Simultaneously in the model is placed an ordinary differential equation in which the temperature is considered as known and the solution of which provides a function of particular interest in the sterilization process of the glass.
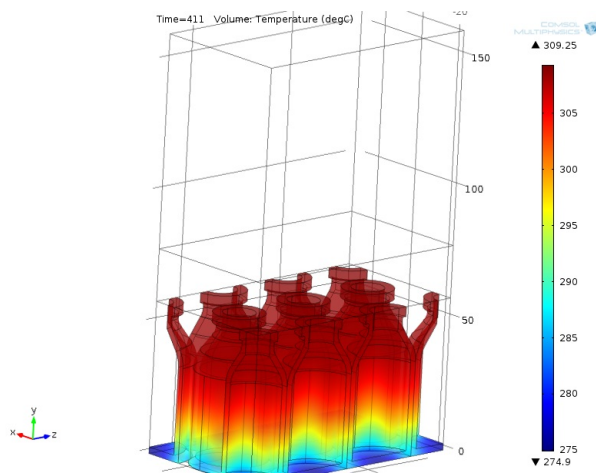
Figures used in the abstract

Figure 1