Abstract

Project title: Flow over consecutive heated cylinders for a dynamic fruit cooling system

This case study aims to study the outlet temperature profiles of fluids - (water, glycerine and ethylene glycol) after they gain heat from fruits which emit constant heat flux. The 2D case setup is a channel with three cylindrical cavities in line giving out constant heat flux equal to heat of respiration of fruits. The fluid enters from the left side inlet and is observed and analysed at steady state. The other channel walls will be adiabatic and the flow is laminar with no slip boundary conditions. The buoyantSimpleFoam solver is used with constant density conditions being assumed.
The mesh has been made with blockMesh utility entirely

The aim is to analyse the general variation of temperature along the outlet for different heat fluxes, fluids and temperature and hence concluding a fitting combination for designing a system which cools fruits and can be used as a mini cold storage alternative.