CHAM Product Update

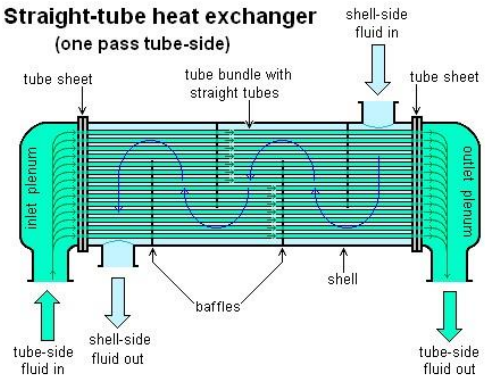
Pioneering CFD Software for Education & Industry

SHELLFLO

Release 1st May 2009

Heat exchanger design software

Picture courtesy of www.shell-and-tube-heat-exchangers.com



Picture courtesy of www.absoluteastronomy.com

Throughout the world, most shell-and-tube heat exchangers are designed by means of computer programs which, to CFD specialists, appear to be rather primitive. Thus, instead of calculating the true pattern of flow within the shell, they make presumptions about which are still based on proposals made by T Tinker in 1958, namely that the pattern can be characterised as consisting of the 4 streams (A, B, C and E) shown in the following diagram.

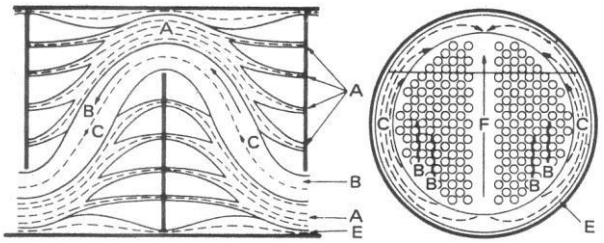
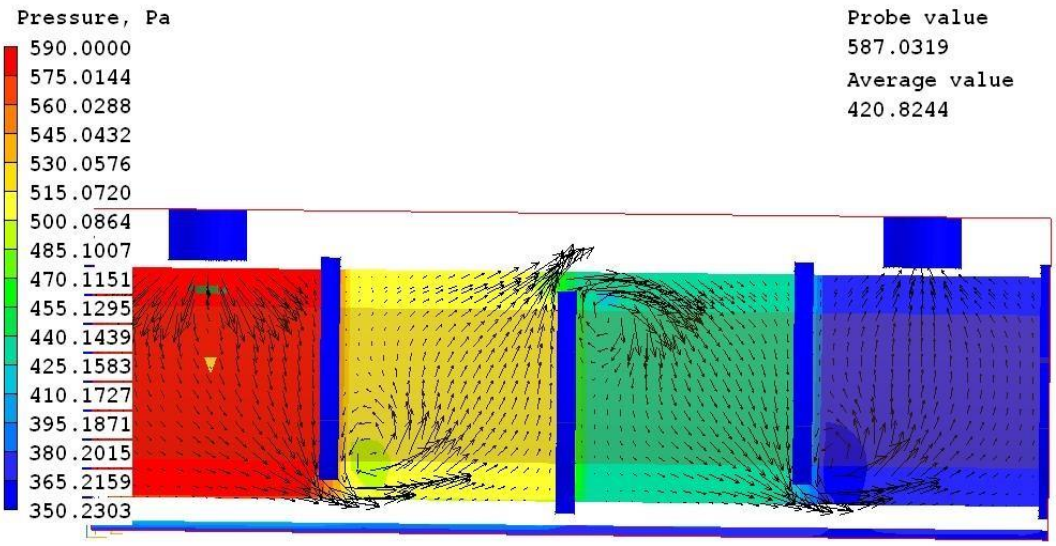


Figure 1 Schematic flow distribution diagram for baffled shell-side flow. Based on Tinker [14].

Whether or not this presumption suffices for the prediction of heat transfer rates (probably not, as CFD specialist suppose), it is certainly does not provide answers to questions asked by many designers, such as:

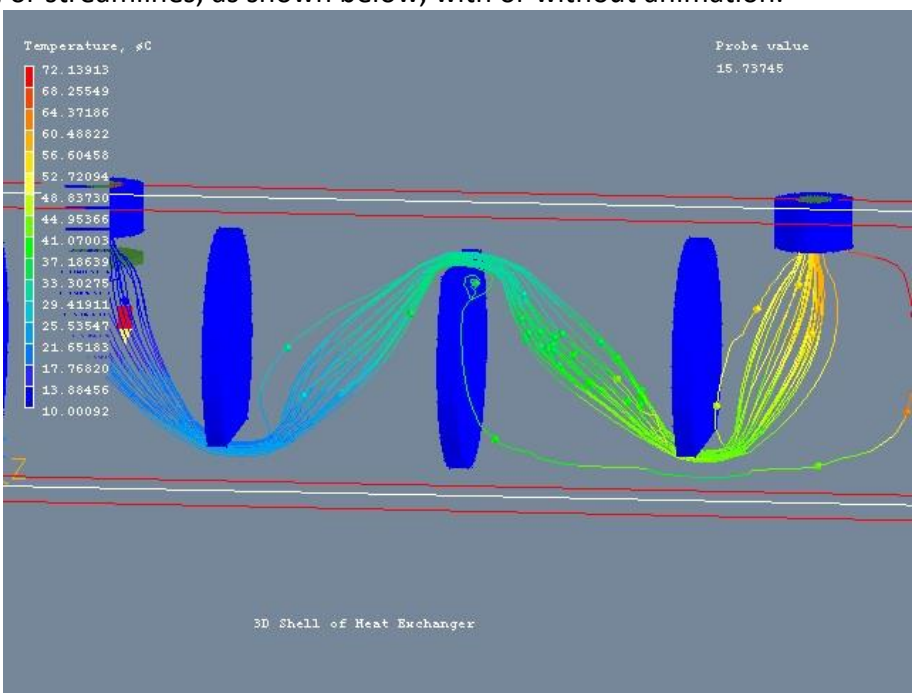
- At what locations are the highest cross-flow velocities to be found (where tube supports may be required to prevent vibration and mechanical failure)?
- Where are the velocities likely to be so low that deposits may settle and cause 'fouling'?
- How can the flow pattern be favourable influences by the proper placing of impingement plate or changing the 'cut percentage' of the baffles?

Answers can now be provided by a new PHOENICS Gateway called SHELLFLO.



3D Shell of Heat Exchanger

The results of the PHOENICS can be presented to inexperienced users graphically by way of macros; but, aided by tutorials, new users soon find that they can extract from them the information which interest them, whether pressure distribution and velocity vectors as above, or streamlines, as shown below, with or without animation.



Email: info@arcofluid.fr
Web: http://www.arcofluid.fr