Computational hazards (air pollution) · heating and ventilation

Business, Industries

Computational fluid dynamics (CFD) is a method by with theflow of gas and liquids can be seen. The program uses maths, physics andcomputational software to create the conditions surrounding the liquid or gasand is able to give a better understanding of the mechanism behind fluid flow. It can also be used to see how the fluid flow interacts with objects in thesurrounding environment.

Fluids are governed by differential equations, whichillustrate the conservation laws for energy, momentum and mass. Fluidflow can be seen in everyday situations such as:· Weather (rain, wind)· Environmental hazards (air pollution)· Heating and ventilation· Combustion in engines CFDprovides a prediction of fluid flow by utilising:· Mathematic models· Numerical methods· Software tools Itis used where other methods of insight into fluid flow are either difficult orexpensive CFDuses a computer to solve these problems and does so by working on the followingprinciple: 1. The useridentifies the problem to the program2. The problemis expressed mathematically3.

Thecomputer then takes the problem, now expressed mathematically and provides instructions4. Thecomputer hardware takes these instructions and preforms the necessarycalculations5. The userthen interprets the results 15In recent years, computational fluid dynamics hasshown to be a method in which we have been able to predict and furtherunderstand subcooled boiling flow. The reason for this is due to CFD being ableto provide more detail into the behaviour of these flows than any other method. As shown in this report and as mentioned before, it is clear that subcooledboiling has applications in

the numerous industries, most notably, the nuclearfield. In being able to use CFD to accurately model the behaviour of thesetypes of flows, will be beneficial to many sectors of industry. Further workinto this subject will develop our understanding and will be able to be appliedconfidence to research in industries.

Next semester, CFD will be used in order to comparethe values previously calculated mathematically in order to see the accuracy ofusing CFD to study subcooled boiling.