

## Development of 3D CFD simulation method in nuclear reactor safety analysis

### ABSTRACT

One of the most prevailing issues in the operation of Nuclear Reactor is the safety of the system. Worldwide publicity on a few nuclear accidents as well as the notorious Hiroshima and Nagasaki bombing have always brought about public fear on anything related to nuclear. Most findings on the nuclear reactor accidents are closely related to the reactor cooling system. Thus, the understanding of the behaviour of reactor cooling system is very important to ensure the development and improvement on safety can be continuously done. Throughout the development of nuclear reactor technology, investigation and analysis on reactor safety have gone through several phases. In the early days, analytical and experimental methods were employed. For the last three decades 1D system level codes were widely used. The continuous development of nuclear reactor technology has brought about more complex system and processes of nuclear reactor operation. More detailed dimensional simulation codes are needed to assess these new reactors. This paper discusses the development of 3D CFD usage in nuclear reactor safety analysis worldwide. A brief review on the usage of CFD at Malaysia's Reactor TRIGA PUSPATI is also presented.

**Keyword:** CFD; 3D simulation; Nuclear reactor safety