

Helping visualise what happens inside a nuclear reactor

The Impact

It is now straightforward for researchers at the Culham Centre for Fusion Energy (CCFE) to visualise what happens inside a nuclear fusion reactor. This gives them a greater insight into the physics that drives nuclear fusion, and brings us closer to harnessing the cheap and clean energy it could provide.

The problem

The visualisation software used by researchers at CCFE was not optimised for their requirements. Data from the nuclear fusion reactor needed to be converted before it could be visualised, which took time and could introduce errors. The visualisation software was difficult to install, because there was inadequate documentation. Finally, the researchers wanted to generate movies of the environment inside the reactor, but the visualisation software made this a lengthy and repetitive task.

The solution

A plug-in was developed for the visualisation software, which allowed it to read the data from the reactor and overcame the need to convert the data. This significantly increased the speed with which data could be visualised and made the process easier to complete.

The installation process for the visualisation software was studied and step-by-step documentation was written to describe the process. The documentation made it much easier for researchers to install the visualisation software.

A program was written to automate the lengthy and repetitive tasks required to generate a movie using the visualisation software. Movies of the environment inside the fusion reactor are now straightforward to create. What's more, instructions were written to detail how the movie program could be extended to cover new visualisation scenarios.

