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## Diagnostics Design for Fusion Reactors prepared

Diagnostics Design for Fusion Reactors

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Understanding of the operation of fusion reactor systems is of crucial importance for the development of economical fusion power. Currently, ITER is the world's largest magnetic fusion device. It will operate with a plasma current of 15MA and produce 500MW of fusion power. The device will have a plasma volume of approximately 800m<sup>3</sup>.

ITER is now well in to its construction in France and it will have a set of diagnostics chosen to meet the needs of the ITER Research Plan. While some systems have been specifically developed for ITER, many of these diagnostic systems have been adapted from current tokamaks with key developments to make sure they can work in the new challenging environment. These so called key-developments are also crucial for the next step Fusion Machine Development. While key measurements cannot be ignored, simplification and ruggedization of the systems is crucial. This is an important development point. Also, the area of global Tokamak Systems monitoring is also a key topic going forward to ensure that all the infrastructures are well monitored and the integrity of the devices are maintained.

The presentation will outline the current state of the developments and the strategy going forward.

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